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REPORT ON OIL ENGINE ELECTRIC GENERATOR SETS.

No. 14170

Date of writing Report 8th May, 1950. When handed in at Local Office 16th June, 1950. Port of MANCHESTER. Received at London Office 21 JUN 1950

No. in Survey held at MANCHESTER. Date, First Survey 30th Nov. 1949. Last Survey 27th April, 1950. Reg. Book. Number of Visits 8.

on the ^{Single} ~~Twin~~ ~~Triple~~ ~~Quadruple~~ Screw vessel. **ATHELSULTAN** Tons Gross Net.

Built at South Bank-on-Tees. By whom built Smiths Dock Co. Installation No. Yard No. EW. 1212 When built 12/49

Owners. Port belonging to. Oil Engines made at Ashton-under-Lyne. By whom made National Gas & O.E. Co. Ltd. Engine Contract No. 62315. When made 1949.

Generators made at Sunderland. By whom made Sunderland Forge & Eng. Co. Generator Contract No. 41349. When made 1950.

No. of Sets 1. Engine Brake Horse Power 77. M.N. as per Rule 19. Total Capacity of Generators 50. Kilowatts.

Is Set intended for essential services Yes. OIL ENGINES, &c.—Type of Engines Vertical Solid Injection Heavy Oil. RA.3 2 or 4 stroke cycle 4. Single or double acting Single.

Maximum pressure in cylinders 750 lbs/sq. inch. Diameter of cylinders 8. Length of stroke 12. No. of cylinders 3. No. of cranks 3.

Mean indicated pressure 88 lbs/sq. inch. Firing order in cylinders 1,3,2. Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 10 1/2.

Is there a bearing between each crank Yes. Moment of inertia of flywheel (16 m² or Kg.-cm.²) 745,000 lbs ins². Revolutions per minute 500.

Flywheel dia 43. Weight 2342 lbs. Means of ignition Compression. Kind of fuel used Diesel Oil.

Crank Shaft, dia. of journals as per Rule approved. as fitted 5 5/8. Crank pin dia 5 1/2. Crank Webs Mid. length breadth 7 1/2. Mid. length thickness 2 5/8 shrunk. Thickness parallel to axis. Thickness round eyehole.

Flywheel Shaft, diameter as per Rule. Intermediate Shafts, diameter as per Rule. General armature, moment of inertia (16 m² or Kg.-cm.²) 59,000 lbs in².

Are means provided to prevent racing of the engine when declutched. Means of lubrication Forced. Kind of damper if fitted. Are the cylinders fitted with safety valves Yes. Are the exhaust pipes and silencers water cooled or lagged with non-conducting material Watercooled.

Cooling Water Pumps, No. 1 F.W. centrifugal 1800 G.P.H. Is the sea suction provided with an efficient strainer which can be cleared within the vessel. Lubricating Oil Pumps, No. and size 1 S.W. centrifugal 1800 G.P.H. 1 gear type 360 G.P.H.

Air Compressors, No. No. of stages. Diameters. Stroke. Driven by. Scavenging Air Pumps, No. Diameter. Stroke. Driven by.

AIR RECEIVERS:—Have they been made under Survey. State No. of Report or Certificate C.10894.

Is each receiver, which can be isolated, fitted with a safety valve as per Rule. Can the internal surfaces of the receivers be examined. What means are provided for cleaning their inner surfaces.

Is there a drain arrangement fitted at the lowest part of each receiver. High Pressure Air Receivers, No. Cubic capacity of each. Internal diameter. thickness.

Seamless, lap welded or riveted longitudinal joint. Material. Range of tensile strength. Working pressure by Rules.

Starting Air Receivers, No. Total cubic capacity. Internal diameter. thickness. Seamless, lap welded or riveted longitudinal joint. Material. Range of tensile strength. Working pressure by Rules.

ELECTRIC GENERATORS:—Type Open type, drip-proof, compound wound. Pressure of supply 110 volts. Full Load Current 454. Amperes. Direct or Alternating Current Direct.

If alternating current system, state the periodicity. Has the Automatic Governor been tested and found as per Rule when full load is suddenly thrown on and off Yes. Generators, are they compounded as per Rule Yes. is an adjustable regulating resistance fitted in series with each shunt field Yes.

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.

If the generators are under 100 kw. full load rating, have the makers supplied certificates of test Yes. and do the results comply with the requirements Yes.

If the generators are 100 kw. or over have they been built and tested under survey. Details of driven machinery other than generator Hamworthy S.W. Pump No. 80533 R.W.S. 16.12.49.

PLANS.—Are approved plans forwarded herewith for Shafting 20.3.48. Receivers. Separate Tanks. Have Torsional Vibration characteristics if applicable been approved (state date of approval). Armature shaft Drawing No.

SPARE GEAR AS PER RULE REQUIREMENTS.

The foregoing is a correct description,

E. K. Smith Manufacturer.

THE NATIONAL GAS AND OIL ENGINE Co. Ltd.



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005069-005074-0104

Dates of Survey while building: During progress of work in shops - 1949. Nov. 30, Dec. 1, 5, 6, 12, 1950. Jan. 2, Apr. 24, 27.
 During erection on board vessel -
 Total No. of visits

Dates of Examination of principal parts - Cylinders 30.11.49. Covers 5.12.49. Pistons 6.2.49. Piston rods -

Connecting rods 12.12.49. Crank and Flywheel shafts 2.1.50. Intermediate shafts -

Crank shaft: Material O.H. Steel. Tensile strength 33.2 Tons/sq. inch.
 Elongation 32%. Identification Marks 6215 J.A.C. T.H.S. 18.8.49.

Flywheel shaft, Material - Identification Marks -

Identification marks on Air Receivers -

Is this machinery duplicate of a previous case - If so, state name of vessel Hawthorn Leslie, Engs. Nos. 4054 & 5. See Mch. Reports 13950/1.

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.) This engine has been constructed under special survey of tested materials and in accordance with the Secretary's letters and Rule requirements. The materials and workmanship are good. The engine was found satisfactory when tested at the Builders' Works under the following conditions of loading, and coupled direct to its electric generator: -
 4 hours at 100% Load.
 1 hour at 110% Load.

This diesel generator set is, in my opinion, suitable to be installed in a vessel classed with the Society for the purpose intended.

Attached herewith copies of the following certificates:
 Air Receiver C.10894, Crankshaft F.6268, Generator Test Cert. 41349, Serck Radiator C.8975 and Hamworthy Pump D.3598.

The amount of Fee ... £ 4 : 0 : 0. When applied for 16/5/1950 (R.M.)
 Travelling Expenses (if any) £ 1 : 5 : 6. When received 19

G.H. Kersey
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 13 APR 1951
 Assigned See F.E. Kersey rpt.

B.L.S.-T. (MADE AND PRINTED IN ENGLAND)
 (The Surveyors are requested not to write on or below the Rules for Committee Minutes.)

Rpt. 13. No. 19344
REPORT ON ELECTRICAL EQUIPMENT.
 (OTHER THAN FOR THE PROPULSION OF THE VESSEL)
 Received at London Office 30 MAR 1951

Date of writing Report 19 51. When handed in at Local Office 28.3.1951. Port of MIDDLESBROUGH.
 No. in Survey held at SOUTHBANK - ON - TEES. Date, First Survey 30.11.50. Last Survey 8.3.1951.
 Reg. Book. 91026 on the M.V. "ATHELSULTAN." (No. of Visits 10) Gross 9148.88 Tons Net 5222.98
 Built at SOUTHBANK - ON - TEES. By whom built SMITH'S DOCK CO., LTD. Yard No. 1210. When built 1951.
 Owners. ATHEL LINE LTD. Port belonging to LIVERPOOL.
 Installation fitted by CAMPBELL & ISHERWOOD LTD. When fitted 1951.
 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 110 Power 110 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. Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing - Have certificates of test for machines under 100 kw. been supplied YES, and the results found as per Rule YES.
 Position of Generators FORE & AFT, ENGINE ROOM FORWARD ON STARTING PLATFORM LEVEL.
 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 THWARTSHIPS FACING AFT ON PLATFORM ABOVE GENERATORS AND ADJACENT ENG. RM. FORWARD BULKHEAD.
 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 SINDANYO EBONY FINISH, if of synthetic insulating material is it an Approved Type YES, 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. 500 AMP. TRIPLE POLE AIR BREAK CIRCUIT BREAKER. FITTED WITH OVERLOADS AND OIL DASH POT TIME LAGS ON TWO POLES, REVERSE CURRENT RELEASE, AND THIRD POLE COUPLED TO EQUALISER.
 and the switch and fuse gear (or circuit breakers) for each outgoing circuit DOUBLE POLE SINGLE THROW QUICK BREAK KNIFE SWITCH THROUGH DOUBLE POLE FUSES.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule YES. Instruments on main switchboard 5 ammeters 3 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 EARTH LAMPS COUPLED TO EARTH THROUGH SWITCHES AND FUSES.
 Switches, Circuit Breakers and Fuses, are they as per Rule YES, are the fuses an Approved Type YES, make of fuses SIEMENS 'Z', are all fuses labelled YES. If circuit breakers are provided for the generators, at what overload do they operate 10%, and at what current do the reversed current protective devices operate 15%
 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 < 6.6V, 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 YES. 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 CABLES ALONG PORT & STARBOARD SIDES OF FORE & AFT GANGWAY CLEATED TO SOLID STEEL TRAY PLATE & COVERED WITH SOLID STEEL PLATE. CABLES IN MACHINERY SPACES CLIPPED TO PERFORATED STEEL TRAY PLATES. CABLES IN PUMP ROOMS IN PLUMBERS PIPES. L.C. COVERED CABLES IN ACCOMMODATION CLIPPED TO WOOD GROUNDS.
 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 effectually bushed YES. Refrigerated chambers, are the cables and fittings as per Rule YES.

