Rpt. 4b.

REPORT ON OIL ENGINE MACHINERY.

No. 11024

Received at London Office 20 OCT 1939

Date of writing Report October 09 1939 When handed in at Local Office ..... 19 Port of Copenhagen

No. in Reg. Book. ✓ Survey held at Elsinore & Copenhagen Date, First Survey 14th January Last Survey 1st October 1939. Number of Visits 53

✓ on the ~~Single~~ Twin ~~Triple~~ ~~Quadruple~~ Screw MOTOR vessel **INDIAN REEFER** Tons Gross 2814.86 Net 1557.72

A/S Helsingör Jernskibs-

Built at Elsinore By whom built og Maskinbyggeri A/S Helsingör Jernskibs- Yard No. 259 When built 1939.

Engines made at Elsinore By whom made og Maskinbyggeri Engine No. 354 355 When made 1939.

Donkey Boilers made at ✓ By whom made ✓ Boiler No. ✓ When made ✓

Brake Horse Power 2 × 1850 = 3700 ✓ Owners J. Lauritzen Port belonging to Esbjerg

Nom. Horse Power as per Rule 811 ✓ Is Refrigerating Machinery fitted for cargo purposes yes. Is Electric Light fitted yes

Trade for which vessel is intended Open sea service

OIL ENGINES, &c.—Type of Engines Heavy oil, solid injection trunk pistn ✓ 2 or 4 stroke cycle 2 ✓ Single or double acting S.A. ✓

Maximum pressure in cylinders 49 kg/cm² ✓ Diameter of cylinders 500 7/16 19 11/16" ✓ Length of stroke 900 7/16 35 7/16" ✓ No. of cylinders 2×6 ✓ No. of cranks 2×6 ✓

Mean Indicated Pressure 6.1 kg/cm² ✓

Span of bearings, adjacent to the Crank, measured from inner edge to inner edge 686 7/16 ✓ Is there a bearing between each crank yes. ✓

Revolutions per minute 160 ✓ TYRNING 40² = 1400 kg/ft² Flywheel dia. BALANCE WEIGHT = 4800 kg Weight ✓ Means of ignition compression ✓ Kind of fuel used Crude oil F.P. above 150°F.

Crank Shaft, ~~Solid forged~~ ~~Semi built~~ All built dia. of journals as per Rule ✓ as fitted 340 7/16 with 115 7/16 central hole ✓ Crank pin dia. 340 7/16 ✓ Crank Webs Mid. length breadth 740 7/16 ✓ Mid. length thickness 208 7/16 ✓ shrunk Thickness parallel to axis 208 7/16 ✓ Thickness around eyehole 195 7/16 ✓

Flywheel Shaft, diameter as per Rule ✓ as fitted ✓ **Intermediate Shafts,** diameter as per Rule 9.18" as fitted 9.375" ✓ **Thrust Shaft,** diameter at collars as per Rule 245 7/16 ✓ as fitted 300 7/16 with 115 7/16 central hole. ✓

Tube Shaft, diameter as per Rule ✓ as fitted ✓ **Screw Shaft,** diameter as per Rule 10.58" as fitted 10.625" ✓ Is the ~~tube~~ screw shaft fitted with a continuous liner ✓ yes ✓

Bronze Liners, thickness in way of bushes as per Rule 0.62" as fitted 0.75" ✓ Thickness between bushes as per Rule 0.462" as fitted 0.625" ✓ Is the after end of the liner made watertight in the propeller boss yes ✓ If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner liner in one length

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓

If two liners are fitted, is the shaft lapped or protected between the liners ✓ Is an approved **Oil Gland** or other appliance fitted at the after end of the tube shaft ✓ If so, state type ✓ Length of Bearing in **Stern Bush** next to and supporting propeller 5'-1" ✓

Propeller, dia. 10'-6" ✓ Pitch 11'-1" No. of blades 4 ✓ Material bronze ✓ whether Moveable No Total Developed Surface 40 sq. feet

Method of Reversing Engines direct reversible ✓ Is a governor or other arrangement fitted to prevent racing of the engine when declutched yes. ✓ Means of lubrication forced ✓ Thickness of cylinder liners 34 7/16 ✓ Are the cylinders fitted with safety valves yes ✓ Are the exhaust pipes and silencers water cooled or lagged with non-conducting material lagged ✓ If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine exhaust led to funnel

Cooling Water Pumps, No. 2 off sea water each 200 / 1 off fresh water 5 Tons/hour ✓ Is the sea suction provided with an efficient strainer which can be cleared within the vessel yes. ✓

Bilge Pumps worked from the **Main Engines,** No. ✓ Diameter ✓ Stroke ✓ Can one be overhauled while the other is at work ✓

Pumps connected to the **Main Bilge Line** No. and Size 1 off ballast pump, 150 Tons/hour, 2 off bilge pumps, each 20 Tons/hour ✓ How driven electrically electrically

Is the cooling water led to the bilges No ✓ If so, state what special arrangements are made to deal with this water in addition to the ordinary bilge pumping arrangements ✓

Ballast Pumps, No. and size 1 off, 150 Tons/hour ✓ **Power Driven Lubricating Oil Pumps,** including Spare Pump, No. and size 3 off 95 Tons/hour. ✓

Are two independent means arranged for circulating water through the **Oil Cooler** yes ✓ **Suctions,** connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Machinery Spaces 2 off 3" DIRECT: 1 off 5", 1 off 3½", 1 off 3" TUNNEL: 2 off 3" In Pump Room P. 1 à 3½" P. 2 à 3½" AFT TANKS I-II-III In Holds, F.P. H I: 2 off à 3" - H II: 2 off à 3" - H III: 2 off à 3" - H IV 2 à 3" A.P.: 1 off 3" TANK I: 1 à 3" - T II 2 à 3" T III: 2 à 3½" T IV 4 à 3" T V: 2 à 3", S.I.D.E TANKS 1 à 3½" S.T.B. S 1 à 3½" EACH 1 off 3".

Independent Power Pump Direct Suctions to the Engine Room Bilges, No. and size Ballast pump: 1 off 5". Bilge pumps 1 off 3½", 1 off 3" ✓

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes yes ✓ Are the Bilge Suctions in the Machinery Spaces led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges yes. ✓

Are all **Sea Connections** fitted direct on the skin of the ship yes. ✓ Are they fitted with Valves or Cocks Valves ✓

Are they fixed sufficiently high on the ship's side to be seen without lifting the platform plates yes. ✓ Are the Overboard Discharges above or below the deep water line above ✓

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel yes ✓ Are the Blow Off Cocks fitted with a spigot and brass covering plate No cocks. ✓

What pipes pass through the bunkers None ✓ How are they protected ✓

What pipes pass through the deep tanks None ✓ Have they been tested as per Rule ✓

Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes. ✓

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another yes ✓ Is the Shaft Tunnel watertight yes ✓ Is it fitted with a watertight door yes ✓ worked from engine casing ✓

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork ✓

Main Air Compressors, No. 2 off, 2.54 M³/MIN. ✓ No. of stages 2 ✓ Diameters 115 7/16 / 130 7/16 Stroke 120 7/16 ✓ Driven by electromotors ✓

Auxiliary Air Compressors, No. ✓ No. of stages ✓ Diameters ✓ Stroke ✓ Driven by ✓

Small Auxiliary Air Compressors, No. 1 ✓ No. of stages 2 ✓ Diameters 110 7/16 / 45 7/16 Stroke 70 7/16. ✓ Driven by hand ✓

What provision is made for first Charging the Air Receivers the hand driven air compressor. ✓

Scavenging Air Pumps, No. 2 off, 97 M³/MIN / 160 REV/MIN Diameter rotary ✓ Stroke ✓ Driven by main engines. ✓

Auxiliary Engines crank shafts, diameter as per Rule 147 7/16 ✓ as fitted 155 7/16 ✓ No. 3 ✓ Position In the engine room ✓

Have the Auxiliary Engines been constructed under special survey yes ✓ Is a report sent herewith yes. ✓

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AIR RECEIVERS:— Have they been made under survey yes ✓ State No. of Report or Certificate 862

Is each receiver, which can be isolated, fitted with a safety valve as per Rule yes. ✓

Can the internal surfaces of the receivers be examined and cleaned yes Is a drain fitted at the lowest part of each receiver yes.

~~Injection~~ Air Receivers, No. 1 Cubic capacity of each 200 Litres Internal diameter 380 7/4 thickness 11 7/4.

Seamless, lap welded or riveted longitudinal joint lap welded Material Siemens M. Steel Range of tensile strength 28.7 Tons/□" Working pressure by Rules 29.8 Atm Actual 28 Atm ✓

Starting Air Receivers, No. 1 ✓ Total cubic capacity 11.84 Cubic Internal diameter 6'-2"-6"-0" thickness 1"

Seamless, lap welded or riveted longitudinal joint double butt strap Material S. M. S ✓ Range of tensile strength SHELL: 28-32 Tons/□" END: 26-30 Working pressure by Rules 356 lbs/□" Actual 356 lbs/□" ✓

IS A DONKEY BOILER FITTED? No If so, is a report now forwarded? ✓

Is the donkey boiler intended to be used for domestic purposes only ✓

PLANS. Are approved plans forwarded herewith for Shafting yes (If not, state date of approval) Receivers yes Separate Fuel Tanks yes.

Donkey Boilers ✓ General Pumping Arrangements yes Pumping Arrangements in Machinery Space yes.

Oil Fuel Burning Arrangements yes.

SPARE GEAR.

Has the spare gear required by the Rules been supplied yes. ✓

State the principal additional spare gear supplied 2 bronze propellers, 1 propeller shaft, 2 cylinder covers, 2 cylinder liners 2 pistons complete with rings, 2 crank pin bearings, 2 top end bearings, 1 connecting rod.

Mark on injection air receiver: No 862 Lloyds Test 56 Atm WP 28 Atm C.V. 28.8.39

" " starting air receiver " " 41 " WP 25 " L.H. 5.8.39.

The foregoing is a correct description,

A/S. ACTIESELSKABET HELSINGORS JERNSKIBS- OG MASKINBYGGERI

Manufacturer.

Dates of Survey while building — During progress of work in shops: 1939: 1/1 - 19/1 - 21/1 - 16/2 - 25/2 - 12/3 - 8/3 - 9/3 - 10/3 - 17/3 - 23/3 - 25/3 - 29/3 - 30/3 - 13/4 - 20/4 - 25/4 - 29/4 - 3/5 - 6/5 - 13/5 - 16/5 - 23/5 - 1/6 - 8/6 - 16/6 - 22/6 -

During erection on board vessel: 1939: 14/7 - 17/7 - 19/7 - 24/7 - 27/7 - 2/8 - 5/8 - 8/8 - 11/8 - 17/8 - 23/8 - 1/9 - 7/9 - 8/9 - 11/9 - 15/9.

1939: 17/7 - 19/7 - 24/7 - 27/7 - 2/8 - 5/8 - 8/8 - 11/8 - 17/8 - 23/8 - 26/8 - 1/9 - 4/9 - 7/9 - 9/9 - 11/9 - 12/9 - 15/9 - 19/9 - 2 28/9 - 29/9 - 30/9 - 1/10

Total No. of visits 53.

Dates of Examination of principal parts—Cylinder Covers 25/3 - 13/4 - 25/4 - 29/4 - 13/5 - 23/5 / 8/6 - 16/6 - 14/7 Pistons 17/3 - 23/3 - 25/3 - 13/4 - 23/5 - 1/6 - 16/6 - 3/7 - 7/7 / 13/7 - 27/7 - 2/8 Rods 5/8 - 8/8 - 7/8 - 7/9 Connecting rod 13/4 - 6/5 - 8/6 - 22/6 - 3/7 - 14/7 - 2/8 - 7/9

Crank shaft 14/1 - 19/1 - 21/1 - 16/2 - 23/2 - 9/3 / 19/3 - 23/3 - 30/3 - 20/4 Flywheel shaft 25/4 - 3/5 - 13/5 - 16/5 - 1/6 Thrust shaft 13/6 - 8/3 - 30/3 - 25/4 / 29/4 - 23/5 - 17/7 Intermediate shafts 25/4 - 29/4 - 6/5 - 13/5 If tube shaft 16/5 - 23/5 - 1/6

Screw shaft 25/4 - 6/5 - 17/7 - 24/7 Propeller 19/9 Stern tube 25/4 - 6/5 - 17/7 - 19/9 Engine seatings 19/7 - 24/7 - 27/7 Engines holding down bolts 27/7 - 2/8 - 8/8 - 22/8 - 26/8 - 1/9 / 24/7 - 1/8 - 22/8 - 23/9 - 29/9 - 30/9

Completion of fitting sea connections 17/7 - 19/9 Completion of pumping arrangements 2/8 - 17/8 - 19/8 - 27/8 - 30/8 Engines tried under working conditions 8/6 - 17/7 - 24/7 - 27/7 - 2/8 - 8/8 - 11/8 - 17/8 - 26/8 - 1/9

Crank shaft, Material Siemens M. Steel Identification Mark HL 25.4.39 PORT: LLOYD'S No 4703 & 4704 - STARB: LLOYD'S No 4662 & 4663 Flywheel shaft, Material HL 30.3.39 Identification Mark

Thrust shaft, Material Siemens M. Steel Identification Mark HL 25.4.39 PORT: LLOYD'S No 4705 - STARB: LLOYD'S No 4664 Intermediate shafts, Material HL 30.3.39 Identification Marks

SCREW Tube shaft, Material Siemens M. Steel Identification Mark SPARE: LLOYD'S PORT: LLOYD'S No 1291 S.W. 17.3.39 - STARB. LLOYD'S No 1289 S.W. 17.3.39 Screw shaft, Material No 1290 S.W. 17.3.39 Identification Mark

Identification Marks on Air Receivers INTERMEDIATE SHAFTS: PORT: LLOYD'S No 2870 LH 23.5.39, 2873 LH 25.4.39, 1325 LH 23.5.39, 1316 LH 25.4.39, 1314 LH 8.6.39. STARB. LLOYD'S No 1315 LH 25.4.39, 1335 LH 16.5.39, 2871 LH 16.5.39, 2872 LH 25.4.39, 2874 LH 25.4.39. MATERIAL: Siemens Martin Steel

Is the flash point of the oil to be used over 150° F. yes. ✓

Have the requirements of the Rules for oil fuel pipes and tank fittings been complied with yes. ✓

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo No If so, have the requirements of the Rules been complied with ✓

If the notation for Ice Strengthening is desired, state whether the requirements in this respect have been complied with yes. ✓

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 machinery has been constructed under Special Survey and in accordance with the Society's Rules. The approved plans and the requirements contained in the Secretary's letter. The material has been tested as required by the Rules either by us or as per certificates produced - The workmanship is good.

On completion and on the trial trip the whole of the machinery was tested under working conditions and found good and the manoeuvring was tested and found satisfactory.

An interim certificate issued as per copy enclosed.

Recommend the vessel to have notation of ✠ L.M.C. 10.39 - OILENGINES. CL. " Strengthened for navigation in ice " subject to the post renewed shaft being drawn for examination of the "Bakelite" lining, when the vessel has been in service for a period of one year.

L. Larsen.

Engineer Surveyor to Lloyd's Register of Shipping.

Certificate (if required) to be sent to

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

The amount of Entry Fee ..	£ 134.40	When applied for, 13/10/1939
Special	£ 2588.32	
Starting air receiver ...	£ 94.08	
Donkey Boiler Fee ...	£ 52.70	When received, 7/12/1939
Final trip - War risk insurance	£ 294.00	
Travelling Expenses (if any) Date fee	£ 30.00	

FRI. 27 OCT 1939

Committee's Minute + Lm6. 10.39 Subject Oil Eng. CL

Assigned

Rpt. 9a.

Port of Copenhagen *Continuation of Report No.* 11027 *dated* 6th October 1939 *on the*

Steel Twin Screw Motor Vessel INDIAN REEFER of Esbjerg

Yard No 259 by A/S Helsingors Jernskibs- og Maskinbygger, Elsinore

AUXILIARY MACHINERY

1 centrifugal ballast pump, 150 Tons/hour

2 plunger bilge- & sanitary pumps 20 Tons/hour each

1 rotary fuel oil transfer pump.

2 centrifugal cooling seawater pumps for main engine, 200 Tons/hour each

1 " " freshwater " " " " " " "

1 " " seawater " " " auxiliary engine 40 " "

1 " " freshwater " " " " " 40 " "

3 "Imo screw" lubricating oil pumps 95 Tons/hour.

2 manoeuvring air compressors

2 fuel oil purifiers

1 lubricating oil purifier

3 Ammonia compressors Type E42

1 " " Type E22

1 " " for provision

3 cooling water pumps for refrigerating machinery 120 Tons/hour

L. Larsen.

10m.4.39. (MADE AND PRINTED IN ENGLAND)

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