

REPORT ON OIL ENGINE MACHINERY

No. 3023

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pt. 4b.

Date of writing Report 19 When handed in at Local Office SEP. 27, 1955 19 Port of Harima & Nagoya
 Date, First Survey 1st January, 1953 Last Survey 28th July, 19 55.
 Number of Visits 103
 Survey held at Harima & Nagoya
 Book. Single on the M.V. "TEN-EI MARU" Tons {Gross 7628.61 Net 4408.30
 Built at Nagoya By whom built Nagoya Shipbuilding Co., Ltd. Yard No. 120 When built 1955 7 mo
 Engines made at Aioi, Japan By whom made Harima Shipbuilding & Engineering Co., Ltd. Engine No. 133 When made April, 55
 Donkey Boilers made at Kobe By whom made Kawasaki Dockyard Co., Ltd. Boiler No. B617 When made 1955 7 mo.
 Brake Horse Power 6800 Owners Kyoei Tanker Co., Ltd. Port belonging to Kobe
 I.N. Power as per Rule 1360 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
 Trade for which vessel is intended Ocean Going - Dry & perishable cargo

MAIN ENGINES, &c. — Type of Engines Harima-Sulzer Marine Diesel Engine Type 7RSD76 2 or 4 stroke cycle 2 Single or double acting Single
 Maximum pressure in cylinders 52.0 kg/cm² Diameter of cylinders 760 mm Length of stroke 1550 mm No. of cylinders 7 No. of cranks 7
 Mean Indicated Pressure 6.65 kg/cm² Ahead Firing Order in Cylinders 7-2-5-4-3-6-1 Span of bearings, adjacent to the crank, measured from inner edge to inner edge 1010 mm Is there a bearing between each crank Yes Revolutions per minute 114
 Flywheel dia 2396.3 mm Weight 1520 kgs Moment of inertia of flywheel (Kg. cm.²) 13,700,000 Means of ignition Compression Kind of fuel used Diesel oil
 Crank Shaft, {Semi built dia. of journals as per Rule As approved 550 mm Crank pin dia 550 mm Crank webs Mid. length breadth 898 mm Thickness parallel to axis 340 mm
 {Screw dia. of journals as fitted 550 mm Crank webs Mid. length thickness 340 mm shrunk Thickness around eye-hole 252.5 mm
 Flywheel Shaft, diameter as per Rule Intermediate Shaft, diameter as per Rule 377.2 mm Thrust Shaft, diameter at collars as fitted 550 mm
 as fitted 433.8 mm as per Rule 385 mm as per Rule As approved
 Tube Shaft, diameter as per Rule Screw Shaft, diameter as fitted 446 mm Is the {screw shaft fitted with a continuous liner {Yes
 as fitted 21.1 mm. Thickness between bushes as per Rule 20 mm. Is the after end of the liner made watertight in the
 Bronze Liners, thickness in way of bushes as fitted 24 mm. Kind of damper, if fitted -
 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 -
 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-
 erosive 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 tube shaft - If so, state type Length of bearing in Stern Bush next to and supporting propeller 18 50 mm.
 Propeller, dia. 5410 mm Pitch 4361 mm No. of blades 4 Material MnBronze whether moveable Yes Total developed surface 9.999 sq.m.
 Moment of inertia of propeller (Kg. cm.²) 1.97 x 10⁸
 Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when detached Yes Means of
 lubrication Forced Thickness of cylinder liners 45 mm Are the cylinders fitted with safety valves Yes Are the exhaust pipes and silencers water cooled
 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 - Cooling Water Pumps, No. Sea W. 2 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 x 30 M³/H x 35 M, 1 x 140/70 M³/H x 30/60 M. 21/11/55
 {How driven Steam Steam
 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 2 x 140/70 M³/H driven by screw pump (chain driven by
 Ballast Pumps, No. and size x 30/60 M. Power Driven Lubricating Oil Pumps, including spare pump, No. and size M.E.)
 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 2x50mm., 3x30mm., 2x50mm. (CD) 1x50mm. (Oil bilge collect) pump room -
 No. 1 H No. 2 No. 3 No. 4 No. 5 D.T. Pipe tunnel Shaft tunnel
 in holds, &c. 2x30mm., 2x30mm., 2x30mm., 2x50mm., 2x90mm., 2x30mm., 1x50mm. 1x80 mm.
 Independent Power Pump Direct Suctions to the engine room bilges, No. and size 1 x 130 mm., 1x80mm., 1x260mm. (Emerg. suc.)
 Are all the bilge suction pipes in holds and tunnel well fitted with strum-boxes Yes Are the bilge suction 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
 efficiently 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 Below
 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 Yes
 That pipes pass through the bunkers none How are they protected -
 That 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 Upper deck
 On 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 No. of stages 2 diameters 9" & 3" stroke 5" driven by Dynamo eng.
 Auxiliary Air Compressors, No. - No. of stages - diameters - stroke - driven by
 Emergency Main Auxiliary Air Compressors, No. 1 No. of stages 2 diameters 3 3/4" x 1 3/4" stroke 3 1/4" driven by Hand
 What provision is made for first charging the air receivers By emergency air compressor (hand)
 Scavenging Air Pumps, No. 7 diameter 670 mm stroke 1,550 mm driven by Main Engine
 Auxiliary Engines crank shafts, diameter as per Rule 108 mm. No. Starboard inboard & outboard in E.R.
 as fitted 120 mm. Position
 Have the auxiliary engines been constructed under special survey Yes Is a report sent herewith Yes

01898-012406-0212

AIR RECEIVERS:—Have they been made under survey Yes State No. of report or certificate AR - 613, 614

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. Cubic capacity of each Internal diameter thickness Seamless, welded or riveted longitudinal joint Material Range of tensile strength Working pressure by Rules Actual

Starting Air Receivers, No. 2 Total cubic capacity 2 x 10.5 M³ Internal diameter 1768 mm thickness Shell: 30mm, End: 25.9kg Seamless, welded or riveted longitudinal joint Welded Material O.H. Steel Range of tensile strength 44.1-44.2 Working pressure Actual 25 kg

IS A DONKEY BOILER FITTED Yes If so, is a report now forwarded Yes No:- windlass, winches and etc.

Is the donkey boiler intended to be used for domestic purposes only 15-12-54

PLANS. Are approved plans forwarded herewith for shafting 29-3-55 Receivers 3-2-55 Separate fuel tanks 24-3

Donkey boilers 4-2-55 General pumping arrangements 15-2-55 Pumping arrangements in machinery space 7-1-55

Oil fuel burning arrangements 16-2-55

Have Torsional Vibration characteristics been approved Yes Date of approval 5-4-55

SPARE GEAR.

Has the spare gear required by the Rules been supplied Yes

State the principal additional spare gear supplied 2 - Piston Head

The foregoing is a correct description

THE HARIMA SHIPBUILDING AND ENGINEERING COMPANY LTD. Manufacturer.

Dates of Survey while building During progress of work in shops-- 1953:- Feb 1, March 28, 30, April 1, 10, 11, 15, 16, 17, 20, 21, 22, 30, May 13, 15, 18, 29, June 1, 28 Oct 21, Nov 18, 1954:- Feb 1, 8, 23, 24, March 1, 3, 5, 8, 9, 10, 26, May 15, 18, June 1, July 5, 9, 15, 19, 23, Aug 2, Sept 1, 6, 8, 16, 22, 24, Oct 2, 6, 19, 22, 27, 30, Nov 4, 10, 19, 27, 29, Dec 2, 6, 8, 10, 11, 13, 20, 23, 25, 28, 1955:- Jan 10, 17, 20, 22, 25, 26, 31, Feb 9, 10, 14, 22, March 23, April 2, 11, 16, 30, May 6, 9, 27, June 14, 17, 30, July 1, 7, 18, 21, 23, 25, 28

Dates of examination of principal parts—Cylinders 26-1-55 Covers 14-2-55 pistons 10-2-55 Rods 26-3-54 Connecting rods 13-12-54

Crank shaft 10-1-55 Flywheel shaft Thrust shaft 10-1-55 Intermediate shafts 14-3-55 Tube shaft 5-4-55

Screw shaft 1-3-55 Propeller 6-5-55 Stern tube 30-4-55 Engine seatings 17-6-55 Engine holding down bolts 23-7-55

Completion of fitting sea connections 9-5-55 Completion of pumping arrangements 21-7-55 Engines tried under working conditions 20-1-55

Crank shaft, material O.H. Steel Identification mark K-CK 423 Flywheel shaft, material Identification mark Y6172, 6175-7

Thrust shaft, material O.H. Steel Identification mark KF - 1725 Intermediate shafts, material O.H. Steel Identification marks Y6173

Tube shaft, material Identification mark Screw shaft, material O.H. Steel Identification mark Y6173

Identification marks on air receivers AR 613 KOB LLOYD'S TEST W.T.P. 41kg/cm² W.P. 25kg/cm² KT LR 25-3-55 AR 614 KOB LLOYD'S TEST W.T.P. 41kg/cm² W.P. 25kg/cm² KT LR 25-3-55

Welded receivers, state Makers' Name Harima Shipbuilding & Engineering Co., Ltd.,

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 2 x Water service nozzles, 4 sand boxes.

Description of fire extinguishing apparatus fitted 2xCO₂ hose reel, 2xSteam smothering pipe lines, 28 CO₂ Nozzles, 6x2 gal., 2x 10 gal, exting

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo Yes If so, have the requirements of the Rules been complied with Yes

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with

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 of this vessel has been constructed under

Special Survey in accordance with the Rules, Approved Plans and Secretary's letters.

The materials and workmanship are sound, good and free from defect.

The Machinery has been examined under working condition during shop and comprehensive sea trials and found satisfactory

In our opinion the Machinery of this vessel is eligible to have a record of LMC 7, 55, D.B.S. 7, 55 and T.S. (CL) 7, 55

Brankcase Exp. Rel. Duran fitted (KOB etc 5/12/55)

The amount of Entry Fee ... 492,000 * 276,000 Special ... £ : : Donkey Boiler Fee ... £ : : Travelling Expenses (if any) See Rpt. 1 : * 16,380.00

When applied for AUG 31 1955 19 When received 19

FRIDAY 16 DEC 1955

Committee's Minute Assigned TLMC 8 55 DB 142 d. CL

X. Sakushiy Engineer Surveyor to Lloyd's Register of Shipping.

L. C. Johnson

Lloyd's Register Foundation