

REPORT ON OIL ENGINE MACHINERY

No. 663

MAY 1952

Received at London Office

Date of writing Report 28th Jan 1952 When handed in at Local Office 19 Port of Kobe
No. in Survey held at Aioi Japan Date, First Survey 12th Sept. 1949 Last Survey 20th December 1951
Reg. Book. Number of Visits 140
Single on the Twin Triple Quadruple Screw vessel M/V "NISSYO MARU" Tons {Gross 11865.69
Net 8932.01
Built at Aioi Japan By whom built Narima Shipbuilding & Engineering Co., Ltd Yard No. 466 When built Dec. 1951
Engines made at Aioi Japan By whom made Narima Shipbuilding & Engineering Co., Ltd Engine No. 101 When made Nov. 1950
Donkey Boilers made at Aioi Japan By whom made Narima Shipbuilding & Engineering Co., Ltd Boiler No. 13737 When made Sept 1951
Boiler No. 13738
Brake Horse Power 7000 6000 119 rpm Owners Idemitsu Kasei K.K. Port belonging to Tokyo
M.N. Power as per Rule 13977 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes
Trade for which vessel is intended Ocean going

OIL ENGINES, &c. — Type of Engines Solid injection Diesel 2 or 4 stroke cycle 2 Single or double acting Single
Maximum pressure in cylinders 56.5 kg/cm² Diameter of cylinders 720 mm Length of stroke 1250 mm No. of cylinders 10 No. of cranks 10
Mean Indicated Pressure 5.94 kg/cm² Ahead Firing Order in Cylinders 1-8-7-4-3-10-5-2-9-6 Span of bearings, adjacent to the crank, measured from inner edge to inner edge 930 mm Is there a bearing between each crank yes Revolutions per minute 125
Flywheel dia 2424 mm Weight 1340 Kgs Moment of inertia of flywheel (lb-in² or Kg. cm.²) 50000000 Means of ignition Compression Kind of fuel used Diesel oil
Crank Shaft, {Solid forged dia. of journals as per Rule 480.1 mm Crank pin dia 490 mm Crank webs Mid. length breadth 845.8 mm Thickness parallel to axis 305 mm
Semi built as fitted 490 mm Mid. length thickness 305 mm shrunk Thickness around eyehole 243 mm
All built
Flywheel Shaft, diameter as per Rule — Intermediate Shaft, diameter as per Rule 389.76 mm Thrust Shaft, diameter at collars as fitted 490 mm
as fitted — as fitted 450 mm as per Rule 409.25 mm
Tube Shaft, diameter as per Rule — Screw Shaft, diameter as per Rule 427.26 mm Is the {tube} shaft fitted with a continuous liner {
as fitted — as fitted 490 mm {screw} yes
Bronze Liners, thickness in way of bushes as per Rule 20.6 mm Thickness between bushes as per Rule 15.45 mm 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 —
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 tube shaft — If so, state type — Length of bearing in Stern Bush next to and supporting propeller 2200 mm
Propeller, dia. 5400 mm Pitch 3753.6 mm No. of blades 4 Material MnBC whether moveable moveable Total developed surface 101 sq. feet
Moment of inertia of propeller (lb-in² or Kg. cm.²) 791840000 Kind of damper, if fitted —
Method of reversing Engines Direct Is a governor or other arrangement fitted to prevent racing of the engine when de-clutched 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 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 — Cooling Water Pumps, No. 3 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. 1 Diameter 125 mm Stroke 150 mm Can one be overhauled while the other is at work Driven by clutch
Pumps connected to the Main Bilge Line {No. and size 1-bilge & Sanitary pump (15") 1-Butter worth pump (80") 1-Ballast pump (180") 1-G.S. pump (60")
How driven main engine Steam Steam motor
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 1-230 x 280 x 280 = 180% (Engine room) 1-125 x 150 x 180 = 30% (Fire pump room) Power Driven Lubricating Oil Pumps, including spare pump, No. and size 2-270" gear type 110" motor driven
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 1-4" (P-Fore) 1-4" (S-Fore) 1-4" (P-Aft) 1-4" (S-Aft) In pump room Fore PR 1-2" Bilge-Ballast P (Aft)
1-1/2" (Echo sounder Receiver) 1-10" Emergency (Sea water cooling pump) 1-70 (Coffdam F52-54) 1-50 (Rope store) 2-50 (steering cog. room)
In holds, &c. 1-50 (Chain locker) 1-50 (Store above fore peak tank) 2-70 (Cargo hold) 1-80 (Coffdam F190-192)
Independent Power Pump Direct Suctions to the engine room bilges, No. and size 1-4" (G.S. pump) 1-6" (Ballast pump)
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 Both 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
What pipes pass through the bunkers — How are they protected —
What pipes pass through the deep tanks — 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 no Is it fitted with a watertight door — worked from —
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. — No. of stages — diameters — stroke — driven by —
Auxiliary Air Compressors, No. 2 No. of stages 2 diameters 190, (190-170) stroke 150 mm driven by D.C. Motor
Small Auxiliary Air Compressors, No. 1 No. of stages 2 diameters 80, (80-70) stroke 70 mm driven by Diesel engine
What provision is made for first charging the air receivers Emergency air compressor manual driven
Scavenging Air Pumps, No. 10 diameter 950 mm stroke 520 mm driven by main engine
Auxiliary Engines crank shafts, diameter as per Rule 159.894 mm No. 2 Position Fore port side 1 in engine room
as fitted 200 mm Is a report sent herewith yes

AIR RECEIVERS:—Have they been made under survey ☒ yes State No. of report or certificate M5066

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 —

Starting Air Receivers, No. 2 Total cubic capacity 10.5 M³ x 2 Internal diameter 1850 mm thickness 38 mm

Seamless, welded or riveted longitudinal joint Riveted Material O.H. Steel Range of tensile strength 29.3-32.1 Working pressure 437.544 Actual 426.693

IS A DONKEY BOILER FITTED ☒ yes If so, is a report now forwarded ☒ yes

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

PLANS. Are approved plans forwarded herewith for shafting 6-1-50, 15-10-51 Receivers 10-4-51 Separate fuel tanks 1-8-51

Donkey boilers 10-8-51 General pumping arrangements 16-10-51 Pumping arrangements in machinery space 16-10-51

Oil fuel burning arrangements 16-10-51

Horse Torsional Vibration characteristics been approved ☒ yes Date of approval 19-10-51

SPARE GEAR.

Has the spare gear required by the Rules been supplied ☒ yes

State the principal additional spare gear supplied 6-Piston Rings (No. 1, No. 2), 12-piston Rings (No. 3, No. 4), 8 set Fuel valves (complete), 1 set starting valves, 9 set Indicator valves (complete), 9-Fuel delivery pipes with unions & nipples, 9-plungers with barrels for fuel pump, 18-suction delivery valves with seat for fuel pump, 9-push rods with bushes for fuel pump, 2 bolts with nuts for crank pin bearing, 2 bolts with nuts for crosshead bearings, 8 set-Valve plates of suction & delivery valve for scavenging air pump, 9-outside spring for plunger for fuel pump, 9-Inside spring for fuel pump, 9-spring for delivery valves for fuel pump, 9-spring for push rod for fuel pump, 9-spring for push rod for fuel pump.

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 -- 1949 Sept 12, 13, 19, 26, 28, Oct 3, 12, 14, 19, 23, 26, Nov 1, 5, 7, 9, 16, 23, 28, 30, Dec 5, 10, 12, 16, 21, 22, 27, 28, 1950 Jan 24, 25, Feb 1, 3, 7, 13, 17, 22, March 1, 7, 10, 15, 17, 23, 24, 27, April 3, 4, 5, 10, 11, May 2, 6, 24, 26, June 7, 10, 12, 14, 19, 23, 28, 30, July 12, 17, 24, 26, 31, Aug 5, 9, 16, 19, 24, 28, Sept 5, 8, 11, 16, 18, 23, 29, Oct 3, 5, 10, 13, 19, 30, Nov 10, 27, 1951 June 8, 18, 27, 29, July 7, 10, 14, 17, 19, 24, 31, Aug 2, 4, 7, 10, 14, 18, 21, 23, 26, Sept 1, 4, 6, 8, 11, 13, 20, Oct 1, 4, 9, 23, 25, Nov 1, 6, 13, 15, 20, 22, 27, 29, Dec 1, 1951 Nov 6, 17, 20, 27, Dec 18, 11, 14, 17, 20

Total No. of visits 140

Dates of examination of principal parts—Cylinders 11-9-50 Covers 24-8-50 pistons 31-7-50 Rods — Connecting rods 17-10-51

Crank shaft 19-8-50 Flywheel shaft — Thrust shaft 19-8-50 Intermediate shafts 13-9-51 Tube shaft —

Screw shaft 28-8-51 Propeller 4-9-51 Stern tube 18-8-51 Engine seatings 6-11-51 Engine holding down bolts 6-11-51

Completion of fitting sea connections 27-11-51 Completion of pumping arrangements 1-12-51 Engines tried under working conditions 20-12-51

Crank shaft, material O.H. Steel Identification mark K-CK 143 Flywheel shaft, material, — Identification mark —

Thrust shaft, material O.H. Steel Identification mark K-F 535 Intermediate shafts, material O.H. Steel Identification marks K-F 860 (No 1) K-F 871 (No 2)

Tube shaft, material — Identification mark — Screw shaft, material O.H. Steel Identification mark K-F 919

Identification marks on air receivers NO. AR209 LLOYD'S TEST W.T.P-45 kg/cm² W.P-30 kg/cm² MH B 13-9-51

NO. AR210 LLOYD'S TEST W.T.P-45 kg/cm² W.P-30 kg/cm² MH B 13-9-51

Welded receivers, state Makers' Name —

Is the flash point of the oil to be used over 150°F —

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

Description of fire extinguishing apparatus fitted Engine room; 1-steam smoother, 8-portable foam extinguisher (9 liter) 1-150 liter Foam extinguisher, sea water services 6-70P Boiler room; 1-steam smoother, 2-portable foam extinguisher (9 liter) 2-70P

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 workmanship and materials are sound and good. The machinery has been examined under full working condition under deck and comprehensive sea trials and found satisfactory. In our opinion the machinery of this vessel is eligible to hold a record of L.M.C. 12-51, T.S. (C.L.) 12-51, B.B. w.p. 12 kgs/cm² 12-51.

The amount of Entry Fee ... £ 793.646
Air Receivers ... £ 50.000
Special ...
Donkey Boiler Fee ... £ 153.566
Travelling Expenses (if any) £ 180

When applied for 19
When received 19

Committee's Minute TUES. 10 JUN 1952

Assigned + LMC 12.51 Oil Eng.
C.L. 200 171/16.

Lloyd's Register Foundation