

Rpt. 4b

5. NOV. 1961

Date of writing report 1st Oct., 1961 Received London Nagasaki Port Nagasaki No. FE-1130
 Survey held at Nagasaki, Japan No. of visits 153 In shops 2.5.1960 First date 20.5.1961 Last date 12.8.1961
 On vessel 12

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name m.v. "MANHATTAN MARU" Gross tons 9556.16

Owners Daido Kaiun Kaisha Managers Port of Registry Kobe

Hull built at Nagasaki, Japan By Mitsubishi Zosen K.K. Yard No. 1561 Year 1961 Month 8

Main Engines made at Nagasaki, Japan By Mitsubishi Zosen K.K. Eng. No. 326(39621) When 1961-3

Gearing made at By Gear No. When

Aux./donkey boilers made at Osaka, Japan By Hirano Iron Works Co., Ltd. Blr. Nos. 1555 When 1961-4

Machinery installed at Nagasaki, Japan By Mitsubishi Zosen K.K. When 1961-6

Particulars of restricted service of ship, if limited for classification Ocean Going

Particulars of vegetable or similar cargo oil notation, if required Carrying oil with flash point (under 150°F. or vegetable oil in deep tank aft.

If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3 No Is ship an oil tanker? No

Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? Yes Type of refrigerant Dichlordiflourometane

Is the refrigerating machinery compartment isolated from the propelling machinery space? No Is the refrigerated cargo installation intended to be classed? Yes

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line should be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but all other relevant particulars must be given and the port and report number should be stated.

No. of main engines 1 No. of propellers 1 Brief description of propulsion system Main engine direct coupled propulsion.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Mitsubishi Nagasaki 9 UEC 75/150 Type Engine

No. of cylinders per engine 9 Dia. of cylinders 750mm stroke(s) 1,500mm 2 or 4 stroke cycle 2 Single or double acting Single

Maximum BHP per engine approved for this installation 13,000 at 124 RPM of engine and 124 RPM of propeller.

Corresponding MIP 8.79 kg/cm2 (For DA engines give MIP top & bottom) Maximum cylinder pressure 58 kg/cm2 Machinery numeral 2,600

Are the cylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine

TWO STROKE ENGINES. Is the engine of opposed piston type? No If so, how are upper pistons connected to crankshaft?

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? Valves No. and type of mechanically driven scavenge pumps or blowers per engine and how driven

No. of exhaust gas driven scavenge blowers per engine 3 Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? Yes

If a stand-by or emergency pump or blower is fitted, state how driven Electric Motor Driven No. of scavenge air coolers 3 Scavenge air pressure at full power 0.45 kg/cm2 Are scavenge manifold explosion relief valves fitted? Yes

TWO AND FOUR STROKE ENGINES. Is the engine supercharged? Are the undersides of the pistons arranged as supercharge pumps? No. of exhaust gas driven blowers per engine

No. of supercharge air coolers per engine Supercharge air pressure Can engine operate without supercharger?

No. of valves per cylinder: Fuel 1 Inlet None Exhaust 3 Starting 1 Safety 1

Material of cylinder covers Special Cast Iron Material of piston crowns Cr.Mo.Steel Forging Is the engine equipped to operate on heavy fuel oil? Yes

Cooling medium for: Cylinders F.W. Pistons F.W. Fuel valves F.W. Overall diameter of piston rod for double acting engines

Is the rod fitted with a sleeve? Is welded construction employed for: Bedplate? Yes Frames? Yes Entablature? No Is the crankcase separated from the underside of pistons? Yes

Is the engine of crosshead or trunk piston type? Crosshead Total internal volume of crankcase 127.98m³ No. and total area of explosion relief devices 9 x 1653.9cm²

Are flame guards or traps fitted to relief devices? No Is the crankcase readily accessible? Yes If not, must the engine be removed for overhaul of bearings, etc?

Is the engine secured directly to the tank top or to a built-up seating? Tank top How is the engine started? Compressed Air

Can the engine be reversed? Yes If not, how is reversing obtained?

Has the engine been tested working in the shop? Yes How long at full power? 2 hours at official shop trial

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 8-3-1961 State barred speed range(s), if imposed 501 H

for working propeller For spare propeller Is a governor fitted? Yes Is a torsional vibration damper or detuner fitted to the shafting? No

Where positioned? Type No. of main bearings 11 Are main bearings of ball or roller type? No

Distance between inner edges of bearings in way of crank(s) 1,020mm Distance between centre lines of side cranks or eccentrics of opposed piston engines

Crankshaft type: Built, semi-built, solid. (State which) Semi-built up

Diameter of journals 560mm Diameter of crankpins 280mm dia. center hole for Nos. 1, 2, 4, 5 & 6 crank pins

If shrunk, radial thickness around eyeholes 242.5mm Are dowel pins fitted? No Crankshaft material: Journals Forged Steel Webs

Diameter of flywheel 2679.27mm Weight 2300 kg Are balance weights fitted? Yes Total weight 2300 kg Radius of gyration

Diameter of flywheel shaft 560mm Material Forged steel Minimum approved tensile strength 28 Ton/cm²

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with thrust shaft

MAIN GAS TURBINES. Name and Type No.

No. of sets of turbines Open or closed cycle BHP per set at RPM of output shaft
How is drive transmitted to propeller shaft?
ARRANGEMENT OF TURBINES. HP drives at RPM HP gas inlet temperature pressure
IP drives at RPM IP gas inlet temperature pressure
LP drives at RPM LP gas inlet temperature pressure
No. of air compressors per set Centrifugal or axial flow type? Material of turbine blades Material of compressor blades
No. of air coolers per set No. of heat exchangers per set How are turbines started?
How is reversing effected? Are the turbines operated in conjunction with free piston gas generators?
Total No. of free piston gas generators Diameter of working pistons Diameter of compressor pistons No. of double strokes per minute at full power
Gas delivery pressure Gas delivery temperature Have the turbines and attached equipment been tested working in the shop? How long at full power?

ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d. State Port and report No.)
No. of generators KW per generator at RPM AC or DC? Position
No. of propulsion motors SHP per motor at RPM Position
How is power obtained for excitation of generators? Motors?

REDUCTION GEARING (Reciprocating engines or gas turbines. Full particulars to be reported on Form 4e.) Port Report No.

CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief description and, for clutches, state how operated.

Can the main engine be used for purposes other than propulsion when declutched? If so, what?

STRAIGHT SHAFTING. Diameter of thrust shaft at aft coupling 560mm reduced to 460mm Forged Steel Minimum approved tensile strength 28 Ton/cm²
Shaft separate or integral with crank or wheel shaft? Diameter of intermediate shaft 460mm Material Forged Steel
Minimum approved tensile strength 28 Ton/cm² Diameter of screw shaft cone at large end 530mm Is screw shaft fitted with a continuous liner? Yes
Diameter of tube shaft. (If these are separate shafts) Is tube shaft fitted with a continuous liner in way of stern tube? Thickness of screw shaft liner at bearings 26mm Thickness between bearings 25mm How is the after end of the liner made watertight in the propeller boss? Rubber Ring
Material of screw shaft Forged Steel Minimum approved tensile strength 28 Ton/cm² Is an approved oil gland fitted? No If so, state type
Length of bearing next to and supporting propeller 2,100mm Material of bearing Lignumvitae In multiple screw vessels is the liner between stern tube and "A" bracket continuous? If not, is the exposed length of shafting between liners readily visible in dry dock?

PROPELLER. If of special design, state type Is it of reversible pitch type? No
If so, is it of approved design? State method of control.

Table with columns: Propeller, Diameter, Pitch, Built or solid, Total developed surface, No. of blades, Blade thickness at top of root fillet, Blade material, Tensile strength, Design moment of inertia of propeller (dry), Blade thickness at 25% radius, Blade thickness at tip, Length of blade section at 25% radius, Rake of blade. Includes data for Working and Spare propellers.

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine Can they be declutched?
No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate)
driven by Diesel generator engine of Daihatsu 6PST-22 (P) Side on main floor. Cert.No.Kob M-71
1 set emergency air compressor 4.5m³/H x 30 kg/cm² driven by Kerosene engine Cert.No. Kob M-71
No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate)
on (S) side 3rd deck Cert.No.Nag. AR-9344, 1 aux. air reserrior, 300 lit x 30 kg/cm² on (P) side main floor Cert. Kob AR-69906
How are receivers first charged? By 2.5 HP Kerosene Engine Compressor Maximum working pressure of starting air system 30 kg/cm² Are the safety devices in accordance with the Rules? Yes Has the starting of the main engines been tested and found satisfactory? Yes

COOLERS. No. of main engine fresh water coolers 3 No. of main engine lubricating oil coolers 1
1 for jacket, 2 for piston
OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure
1 x 9m³ F.O. service tank on 3rd deck fwd center, 1 x 5m³ F.O. settling tank (A) on 3rd deck, starboard, 1 x 5m³ F.O. service tank on 3rd deck fwd center, 2 x 1m³ F.O. settling tanks for donkey boiler on starboard fwd. middle pl.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 1 Set of F.O. High Pressure Pump

Table with columns: INDEPENDENT PUMPS, SUCTION, DELIVERY. Includes handwritten entries for Jacket cooling fresh water pumps, Piston cooling fresh water pumps, Cooling Sea water pumps, etc.

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room In Hold. No.1 No.2 No.3 Coffin Coffin No.4 C/S No.4 Coffin No.5 No.6
(P) 1x80 1x90 1x90 1x50 1x50 1x80 1x80 1x50 2x90 1x80
(S) 1x80 1x90 1x90 1x50 1x50 1x80 1x80 1x50 2x90 1x80
No. and size connected to main bilge line in main engine room (P) 2 x 90 (fwd & aft) (S) 2 x 90
In aux. engine room (S) 1 x 90 (Fire & G.S.) Size and position of emergency bilge suction in machinery spaces (S) 2x300 (S.W. Cooling Pumps)
Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? No Do the piping arrangements comply with the Rules including special requirements for oil tankers, ships carrying cargo oil or classed for navigation in ice Class 1, 2 or 3? (Strike out words not applicable.) Yes

Table with columns: Position of each, Type, Made by, Port and No. of Rpt. or Cert., Driven Machinery (For electric generators, state output). Includes entries for Engine Daihatsu, Engine Platform, Engine Platform, Engine Platform, Engine platform.

Is electric current used for essential services at sea? Yes If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea 2 sets, 306 KW
Is an electric generator driven by Main Engine? No

STEAM INSTALLATION. No. of aux/donkey boilers burning oil fuel 1 W.P. 7 kg/cm² Cochran boiler fitted with exh. gas economizer
Position Machinery space starboard forward on inner plating of double bottom tank.

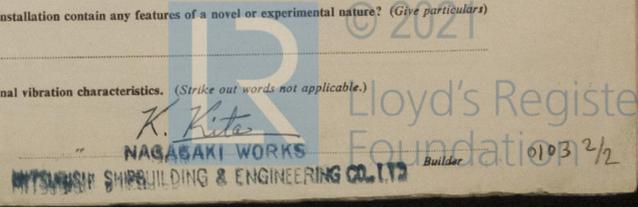
Is a superheater fitted? No Are these boilers also heated by exhaust gas? No No. of economizer boilers heated by exhaust gas only? 1 W.P. 7 kg/cm²
Type Forced circulation type Position Upper center of dummy funnel Can the exhaust heated boilers deliver steam directly to the steam range or do they operate only as economizers in conjunction with oil fired boilers? as an economizer Port and No. of report on aux./donkey boilers No.1-62414 Kob Rpt.FE-8937 Economizer Nag.Cert.M-9372

Are any steam pipes over 3 ins. bore? Yes If so, what is their material? Steel For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes No. of oil burning pressure units 1 No. of steam condensers 1 No. of Evaporators None
2 sets

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering)
22 KW motors & Janney rotary pump driven (S-70) type steering gear with 2 sets oil cylinders and rams. Yes Engine room, hydrant 4x70mm & 2x40mm
Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements with 3 hose reels & 3 nozzles (2 sprays), froth portable 13x9 lit. (3x9 lit in way of donkey boiler), and boxes: 2x145 lit in way of Donkey boiler, "Kiddle" CO2 total flooding system.

Has the spare gear required by the Rules been supplied? Yes Has all the machinery been tried under full working conditions and found satisfactory? Yes Date and duration of full power sea trials of main engines 4.3.1961 Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) No

The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)



GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and give recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The machinery of this vessel has been constructed and installed under Special Survey in accordance with the requirement of Rules, approved plans and Secretary's letters. The material and the workmanship are good. The main engine was tested under full power working condition in the shop and subsequently during sea trial and found satisfactory.

The explosion relief devices have been fitted to the crank case of main and auxiliary heavy oil engines.

An exhaust gas heated economizer has been fitted to the donkey boiler.

It is submitted that the machinery of this vessel is efficient and eligible to have the class notation + LMC in the Register Book with notation of db 100 lbs and the records of machinery surveys: Engine N 8/61 Boiler and nd 8/61 and Tail Shaft CL 8/61.

A. Swainson
Engineer Surveyor to Lloyd's Register of Shipping.

PARTICULARS OF IDENTIFICATION MARKS (Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

RODS Connecting rods: LLOYD'S NAG. NO.S-F3325-1,2,3,4,5,6,7,8 & 9
Piston rods: LLOYD'S NAG. NO.S-F3328-1,2,3,4,5,6,7,8 & 9
CRANKSHAFT ~~OF MOTOR CYCLE~~ LLOYD'S NAG. NO. CK4546-F & A
FLYWHEEL SHAFT LLOYD'S NAG. NO. 3210
THRUSTSHAFT
GEARING LLOYD'S NAG. NO. 4642, 4643, 4644, 4645, 4646 & 4647
INTERMEDIATE SHAFTS LLOYD'S NAG. NO. 4648
SCREW ~~AND~~ SHAFTS LLOYD'S NAG. NO. MN-BC 655
PROPELLERS Eccentric Shaft: LLOYD'S NAG NO.S-F3319
OTHER IMPORTANT ITEMS
Crossheads: LLOYD'S NAG. NO.S-F3329-1,2,3,4,5,6,7,8 & 9
Piston Crowns: LLOYD'S NAG. NO. 3244-D & E, 3245, 3246
LLOYD'S YKA. NO. Y15749-1,2,3,4 & 8

Is the installation a duplicate of a previous case? Yes If so, state name of vessel "BROOKLYN MARU" (Nag. Ship No. 1532)
Date of approval of plans for crankshaft 14-12-1960 Straight shafting 27-1-1961 Gearing - Clutch -
Separate oil fuel tanks 14-6-1961, 23-6-1961 Pumping arrangements 28-6-1961 Oil fuel arrangements 14-3-1961
Cargo oil pumping arrangements - Air receivers 20-2-1961 Exhaust gas economizer 20.2.8-2-1961
Dates of examination of principal parts:-
Fitting of stern tube 10-6-1961 Fitting of propeller 12-6-1961 Completion of sea connections 13-6-1961 Alignment of crankshaft in main bearings 27-7-1961
Engine checks & bolts 27-7-1961 Alignment of gearing - Alignment of straight shafting 27-7-1961 Testing of pumping arrangements 18-8-1961
Oil fuel lines 27-7-1961 Donkey boiler supports 31-7-1961 Steering machinery 18-8-1961 Windlass 18-8-1961

Date of Committee FRIDAY -5 JAN 1962
Decision + LMC ES
ABS }
TS (CL) } 8.61
SPS }

Special Survey Fee Construction & installation 928,150.-
Expenses 15,000 (Smk) 14,600 (Kob)

Date when A/c rendered NOV 7 1961
Lloyd's Register Foundation