

Rpt. 4b

5. NOV. 1961

Date of writing report 1st Oct., 1961 Received London 153 Port Nagasaki No. FE-1130  
Survey held at Nagasaki, Japan No. of visits In shops 2.5.1960 12.8.1961  
On vessel 12 First date 20.5.1961 Last date 21.8.1961

## 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. No  
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/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 58 kg/cm<sup>2</sup> 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  
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/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? Yes

TWO AND FOUR STROKE ENGINES. Is the engine supercharged? No 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? No 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 127.98m<sup>3</sup> No. and total area of explosion relief devices 9 x 1653.9cm<sup>2</sup> 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  
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 Pins ) Axial thickness of webs 350mm  
If shrunk, radial thickness around eyeholes 242.5mm Are dowel pins fitted? No Crankshaft material: Journals ) Forged Steel Minimum 34 Ton/□<sup>2</sup>  
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/□<sup>2</sup>  
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with thrust shaft

013596 - 013603 - 0103 1/2



## 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 .....  
 (A small diagram should be attached showing gas cycle.)  
 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 thrustshaft at aft coupling ..... Forged Steel ..... Minimum approved tensile strength 28 Ton/□"

Shaft separate or integral with crank or wheel shaft? ..... Diameter of intermediate shaft 460mm ..... Material Forged Steel

Minimum approved tensile strength 28 Ton/□" Diameter of screwshaft cone at large end 530mm ..... Is screwshaft 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 screwshaft 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 screwshaft Forged Steel ..... Minimum approved tensile strength 28 Ton/□" 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 .....

Propeller	Diameter mm	Pitch mm	Built or solid	Total developed surface	No. of blades	Blade thickness at top of root fillet mm	Blade material	Tensile strength	Design moment of inertia of propeller (dry) kg. cm <sup>2</sup>	For Class 1 or 2 ice strengthening only				Rake of blade
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius		
Working	5700	5300	Solid	12,495M <sup>2</sup>	4	240	Nickel Al.Br.	42T/□"	179.838					
Spare	None													

## AIR COMPRESSORS &amp; 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) 2 sets of 260m<sup>3</sup>/min x 30 kg/cm<sup>2</sup>  
 driven by Diesel generator engine of Daihatsu 6PST-22 (P) Side on main floor. Cert.No.Kob M-71  
 1 set emergency air compressor 4.5m<sup>3</sup>/H x 30 kg/cm<sup>2</sup> 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) 2 main air reservoirs 12m<sup>3</sup> x 30 kg/cm<sup>2</sup>  
 on (S) side 3rd deck Cert.No.Nag. AR-9344, 1 aux. air reservoir, 300 lit x 30 kg/cm<sup>2</sup> on (P) side  
 main floor Cert. Kob AR-69906

How are receivers first charged? By 2.5 HP Kerosene Engine ..... Maximum working pressure of starting air system 30 kg/cm<sup>2</sup> 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 9m<sup>3</sup> F.O. service tank on 3rd deckfwd center, 1 x 5m<sup>3</sup> F.O. settling tank (A) on 3rd deck, starboard, 1 x 5m<sup>3</sup> F.O. service tankon 3rd deck fwd center, 2 x 1m<sup>3</sup> 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

## INDEPENDENT PUMPS

Name below essential pumps, state position and how driven. Give capacity of bilge pumps.

Jacket cooling fresh water pumps (2)  
 (S) inboard & outboard, electric  
 Piston cooling fresh water pumps (2)  
 (S) inboard & outboard, electric  
 Cooling Sea water pumps (2)  
 (S) inboard & outboard, electric  
 H.O. Pumps for Main engine &  
 Turbochargers. (S) inboard, outboard, electric  
 H.O. Shifting pump (1)  
 (P) aft electric  
 F.O. Service pump (1)  
 (S) middle electric  
 F.O. Transfer pump (1)  
 (S) middle electric  
 Bilge pumps (1) 30 M<sup>3</sup>/hr  
 (P) aft electric  
 Fire & GS pump (1) 95/150 M<sup>3</sup>/hr  
 (P) aft electric  
 Bilge & Ballast pump (1) 95/150 M<sup>3</sup>/hr  
 (P) aft electric  
 Forced Air water pumps (2) for  
 Economizer (S) inboard & outboard, elect  
 Feed water pumps (2) for boiler  
 (S) inboard & outboard, steam

Service for which each pump is connected to be marked thus X

	SUCTION										DELIVERY									
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Donkey Boiler	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling	Sea			
Jacket cooling fresh water pumps (2)					X						X									
(S) inboard & outboard, electric					X						X									
Piston cooling fresh water pumps (2)					X						X									
(S) inboard & outboard, electric					X						X									
Cooling Sea water pumps (2)	X					X					X									X
(S) inboard & outboard, electric																				
H.O. Pumps for Main engine & Turbochargers. (S) inboard, outboard, electric								X								X				
H.O. Shifting pump (1)								X								X				
(P) aft electric																				
F.O. Service pump (1)					X								X							
(S) middle electric					X								X							
F.O. Transfer pump (1)					X															
(S) middle electric					X															
Bilge pumps (1) 30 M <sup>3</sup> /hr	X					X														X
(P) aft electric																				
Fire & GS pump (1) 95/150 M <sup>3</sup> /hr	X	X	X			X					X				X					X
(P) aft electric																				
Bilge & Ballast pump (1) 95/150 M <sup>3</sup> /hr	X	X	X			X					X				X					X
(P) aft electric																				
Forced Air water pumps (2) for Economizer (S) inboard & outboard, elect											X	X								
Feed water pumps (2) for boiler (S) inboard & outboard, steam											X	X								

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 1x80 1x50 2x90 1x80  
 (S) 1x80 1x90 1x90 1x50 1x50 1x80 1x80 1x80 1x50 2x90 1x80

No. and size connected to main bilge line in main engine room (P) 2 x 90 (fwd &amp; aft) (S) 2 x 90

In aux. engine room (S) 1 x 90 (Fire &amp; G.S.) Size and position of direct bilge suction in machinery spaces (P) 1x140 (Bilge &amp; In tunnel 2 x 90

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

## STEAM &amp; OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port fwd on Engine Platform	Daihatsu 6PST-22 Diesel	Daihatsu Kogyo K.K.	Kobe Cert. O-70579 Kob Rpt. FE-8937	1x300 KVA Generator
Port aft. inboard on Engine Platform	"	"	"	1x300 KVA Generator & Main Air Compressor
Port aft. outboard on Engine Platform	"	"	"	"
Port on Engine platform	Kerosene	Kubota Iron & Machy Wks Ltd.	Kob. Cert. M-71973	Emergency Air Compressor

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/cm<sup>2</sup> Cochran boiler fitted with exh. gas

Position Machinery space starboard forward on inner plating of double bottom tank. Type economizer

Is a superheater fitted? No Are these boilers also heated by exhaust gas? No No. of aux/donkey boilers heated by exhaust gas only? 1 W.P. 7 kg/cm<sup>2</sup>

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 No heavy oil 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

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering) 2 sets

22 KW motors &amp; Janney rotary pump driven (S-70) type steering gear with 2 sets oil cylinders and rams. Yes Engine room, hydrant 4x70mm &amp; 2x40mm

Have the Rule Requirements for fire extinguishing arrangements been complied with? Brief description of arrangements with 3 hose reels &amp; 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" 002 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.)

K. Kites NAGASAKI WORKS Builder 0103 2/2

MITSUBISHI SHIPBUILDING &amp; ENGINEERING CO. LTD.



# 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. J. Swain*  
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~~ 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)  
SPS } 8.61

Special Survey Fee  
Construction & Installation 1928.150.-

Expenses 15,000 (Smk)  
14,600 (Kob)

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