

Rpt. 4b

Date of writing report  
Survey held at  
Received London  
No. of visits  
In shops  
On vessel  
Port  
First date  
Last date  
Nagasaki (Shimonoseki) No. FE-1005  
28-8-57  
11-4-58  
13-6-58  
10-7-58

# FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.V. "KOTEI MARU" Gross tons 9096  
Owners Daido Kaiun K.K. Managers - Port of Registry Kobe  
Hull built at Nagasaki, Japan By Mitsubishi Zosen K.K. Yard No. 1499 Year Month When 1958-7  
Main Engines made at Nagasaki, Japan By Mitsubishi Zosen K.K. Eng. No. 301 When 1958-4  
Gearing made at - By -  
Donkey boilers made at Osaka, Japan By Hirano Iron Works Co., Ltd. Blr. Nos. H806 When 1958-1  
Machinery installed at Nagasaki, Japan By Mitsubishi Zosen K.K. When 1958-7  
Particulars of restricted service of ship, if limited for classification  
Particulars of vegetable or similar cargo oil notation, if required Carrying vegetable oil in D.T.s.

Is ship to be classed for navigation in ice? No Is ship intended to carry petroleum in bulk? No  
Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? Yes Type of refrigerant Dichlorodifluoromethane.  
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 may 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 the port and report number should be stated.

No. of main engines 1 No. of propellers 1 Brief description of propulsion system Direct coupled to straight shafting.  
MAIN RECIPROCATING ENGINES. Licence Name and Type No. - (Mitsubishi 6 UEC 75/150 Type) (Supercharge)  
No. of cylinders per engine 6 Dia. of cylinders 750mm. stroke(s) 1500mm. 2 or 4 stroke cycle 2 Single or double acting Single  
Maximum approved BHP per engine 8500 at 122 RPM of engine and 122 RPM of propeller.  
Corresponding MIP 8.76 kg/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 58 kg/cm<sup>2</sup> Machinery numeral 1700  
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 None  
No. of exhaust gas driven scavenge blowers per engine 2 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 No. of scavenge air coolers 2 Scavenge air pressure at full power 0.35 kg/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? Yes

FOUR STROKE ENGINES. Is the engine supercharged? No Are the undersides of the pistons arranged as supercharge pumps? No No. of exhaust gas driven blowers per engine -  
No. of supercharge air coolers per engine - Supercharge air pressure - Can engine operate without supercharger? Yes

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel 1 Inlet None Exhaust 3 Starting 1 Safety 1  
Material of cylinder covers 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? No Frames? No 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 85.32 m<sup>3</sup> No. and total area of explosion relief devices 6 & 9923.4cm<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? No 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 directly 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.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 23-11-57 398E State barred speed ranges, 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 8 Are main bearings of ball or roller type? No Distance between inner edges of bearings in way of crank(s) 1020mm. Distance between centre lines of side cranks or eccentrics of opposed piston engines -

Crankshaft type: Built, semi-built, solid. (State which) Semi-built.  
Diameter of journals 560mm. Diameter of crankpins Centre 560mm. Breadth of webs at mid-throw 890mm. Axial thickness of webs 350mm.  
If shrunk, radial thickness around eyeholes 242.5mm. Are dowel pins fitted? No Crankshaft material Journals Steel forgings Pins Minimum 28 T/□" Approved Tensile strength  
Diameter of flywheel 2595mm. Weight 8750 kg. Are balance weights fitted? No Total weight - Radius of gyration 1081mm. (fly wheel)  
Diameter of flywheel shaft 560mm. Material Steel forging. Minimum approved tensile strength 28 T/□".  
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 -  
(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.)

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. A small line sketch should be attached showing arrangement of gearing.)

Is gearing of single or double helical type? - If single, position of gear thrust bearing - Is gearing of epicyclic type? -

PCD of pinions: First reduction - Second reduction - PCD of wheels: First reduction - Main -

Material of pinions - Tensile strength - Material of wheel rims - Tensile strength -

Are gear teeth surface hardened? - How are teeth finished? - Diameter of pinion journals - Wheel shaft journals - Are the wheels of welded construction? - Is gearcase of welded construction? - Has the wheel/gearcase been heat treated on completion of welding? - Where is the propeller thrust bearing located? - Are gear bearings of ball or roller type? -

## 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 - 560mm. at coupling - Material Steel forging - Minimum approved tensile strength - 28 T/d" -

Shaft separate or integral with crank or wheel shaft? - Integral with wheel shaft - Diameter of intermediate shaft - 410mm. Material Steel forging -

Minimum approved tensile strength - 28 T/d" - Diameter of screwshaft cone at large end - 470mm - 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 screw shaft liner at bearings - aft 26 fwd 27mm. - Thickness between bearings - 20mm. Material of screw shaft Steel forging - Minimum approved tensile strength - 45 kg -

Is an approved oil gland fitted? - No - If so, state type - Length of bearing next to and supporting propeller - 1880mm. -

Material of bearing -ignumvitae. - 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. Diameter of propeller - 5200mm. Pitch - 4700mm. Built up or solid - Built up. Total developed surface - 8.906m<sup>2</sup> -

No. of blades - 4 - Blade thickness at top of root fillet - 223.5mm. Blade material - Mn. Bronze - Moment of inertia of dry propeller - 174625 kg-cm-sec<sup>2</sup> -

If propeller is of special design, state type - Is propeller of reversible pitch type? - No - If so, is it of approved design? -

State method of control - Material of spare propeller - Moment of inertia -

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine - None - Can they be declutched? -

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) - 2 at 200m<sup>3</sup>/H driven by generator eng inner & outer at port aft on eng. platform, Cert. Yokohama No. M-47928. 1 set 75 L/min by Keros (Economiser Kobe Cert. No. M-45158) at port middle on eng. platform, Cert. Kobe No. M-45158.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) - On lower platform, Cert. Nagasaki No. AR-4316. platform, Cert. Nagasaki No. AR-3853. Main 2 at 10m<sup>3</sup> fwd. & aft at port fwd Aux. 1 at 300 L. at port middle on eng.

How are receivers first charged? - by 75 L. compressor. 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 - Jacket 1 - No. of main engine lubricating oil coolers - 1 -

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure - On eng. platform 1 at S. aft end. On lower platform 2 inner & outer at S. aft. On upper platform 2 for D.B. fwd. & aft at S.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) - 1 O.F. high pressure pump.

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

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	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 Cool.	Bilge	FW Tk.		
Jacket Cooling F.W. Pumps (2) S. inner & outer Elect.					X							X								
Piston Cooling F.W. Pumps (2) S. inner & outer Elect.					X												X			
Cooling S.W. Pumps (2) S. fwd inner & outer Elect.		X				X					X									
L.O. Pumps (2) P. fwd & aft Elect.								X								X				
L.O. Shift Pumps S. aft Elect.								X								X				
O.F. Service Pump S. aft Elect.				X									X							
O.F. Trans. Pump S. middle Elect.				X									X							
Bilge Pump 30 T/H P. aft Elect.	X		X			X					X							X		
Bilge Ballast Pump 100/200 T/H P. aft Elect.	X	X	X			X					X			X						
Thru-G.S. Pump 95/150 T/H P. aft Elect.	X	X				X					X			X						
D. Boiler Forced Circulating Pumps (2) S. fwd inner & outer Elect.									X											
D.B. Feed Pumps (2) S. fwd inner & outer Steam							X			X										
280 for superheaters																				

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room - No. 1 hold / 1x80, No. 2 hold / 1x80, No. 3 hold / 1x80, Coff 93/94 / 1x50, Coff 87/88 / 1x50, bilge Tk. 1x50, No. 4 hold / 1x70, aft / 1x80, Deep Tk. / 1x80, No. 5 hold / 1x80, No. 6 hold / 1x80, In tunnel / 1x90mm, In aux. engine room / 1x90, (S. / 1x90, 1x90 & 1x50) Size and position of direct bilge suction in machinery spaces - 1 x 140mm. P. aft & 1 x 90mm. S. aft. Size and position of emergency bilge suction in machinery spaces - 2 x 240mm. S. fwd.

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 ships carrying ~~oil or other liquid cargo~~ (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 eng. platform	Diesel	Daihatsu Kogyo K.K.	Kobe Rpt FE-5548	250 KVA Generator
Port aft inner on eng. platform	Diesel	Daihatsu Kogyo K.K.	Kobe Rpt FE-5548	250 KVA Generator & Air Comp.
Stbd aft outer on eng. platform	Diesel	Daihatsu Kogyo K.K.	Kobe Rpt FE-5548	250 KVA Generator & Air Comp.
At port middle on eng. platform	Kerosene	Kubota Iron & Kobe Cert. M-45158		Aux. air comp.
		Mchy Wks. Ltd.		

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 - 1 generator 120KW

Is an electric generator driven by Main Engine? - No -

STEAM INSTALLATION. No. of donkey boilers burning oil fuel - 1 W.P. 7 kg/cm<sup>2</sup> Type Vertical Cochran Type.

Position - At fwd end of eng. room on lower platform.

Is a superheater fitted? - No - Are these boilers also heated by exhaust gas? - No - No. of economisers heated by exhaust gas only? - 1 W.P. 11 kg/cm<sup>2</sup> Relief valve adjusted to 10 kg/cm<sup>2</sup>

Type - Coils & headers Position - in funnel

Can the exhaust heated ~~steam~~ deliver steam directly to the steam range or do they operate only as economisers in conjunction with oil fired boilers? - only as an economiser

Port and No. of report on donkey boilers - Kobe Rpt. No. FE-5453

Is steam essential for operation of the ship at sea? - No - 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 - None

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) - Electric-hydraulic type with 4 rams, 2 A.C. 20 H.P. motors & 2 Janney pumps.

Have the Rule Requirements for fire extinguishing arrangements been complied with? - Yes - Brief description of arrangements - Water Service Deck fire main 27 hydrants, 7 28 hoses, 27 nozzles of 1 1/2"; Eng. room 6 hydrants, 3 hoses, 1 nozzle, 2 spray; Alternative arrangements - KIDDE CO<sub>2</sub> system 103 cylinders at 80 lbs. serving all cargo & mchy. spaces operated at control station: Eng. Room. Fire hydrants as above; 12 portable at 9 lb. & 1 at 15 lb.; Sand bins 2 at 145 L. in way of D.B.; Outside controlled apparatus "KIDDE" CO<sub>2</sub> system as above.

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 - 18-6-58, 2 hours

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).

NAGASAKI WORKS

MITSUBISHI SHIPBUILDING & 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 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 ship has been constructed and installed under special survey in accordance with the Rules, approved plans and Secretary's letters.

The materials and workmanship are good.

It is submitted that the Machinery of this ship is worthy to be assigned the class notation  $\star$  LMC with the notation db 100 lb in the Register Book.

*Alfred Percy K. Sabucki & S. Sashiguchi*  
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 Piston rods: LLOYD'S YKA NO Y10881G, Y10881E, Y10881H, Y10881C, NAG NO 2192B, 2192E MO  
Connecting rods: LLOYD'S NAG NO. 2534-1 to 6 SM 11-12-57

CRANKSHAFT ~~OR PROPELLER~~ LLOYD'S YKA NO Y11075 KI 5.8.57

FLYWHEEL SHAFT )  
THRUSTSHAFT ) LLOYD'S NAG NO 2005 MO 11-2-58

GEARING

INTERMEDIATE SHAFTS LLOYD'S NAG NO 2187, 2188A, 2188F MO 10-4-58; 2188D, 2188E, 2188B MO 2-4-58

SCREW ~~AND~~ SHAFTS LLOYD'S NAG NO 2189 MO 14-4-58

PROPELLERS LLOYD'S NAG NO 2481-A, B, C, D SM 19-12-58

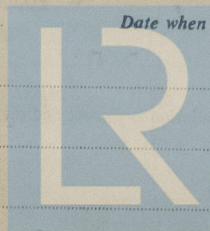
OTHER IMPORTANT ITEMS

Crossheads: LLOYD'S NAG NO 1749A, 2368C, YKA NO Y10897D MO 24-1-58; YKA NO Y10897E, Y10897G, Y10895J JN 25-1-58.

Piston crowns: LLOYD'S NAG NO 2016K, 2194B, 2194C, 2006B, 2006F, 2006H JN 25-1-58

Is the installation a duplicate of a previous case? Yes If so, state name of vessel "KOHOKU MARU & "KOBU MARU"  
Date of approval of plans for crankshaft 25-10-57 Straight shafting 21-11-56 Screw shaft & propeller 28-12-55 (Ship No. 1465)  
Separate oil fuel tanks 17-2-56 (Ship No. 1465) Pumping arrangements 17-6-57 & 1-7-57 (Ship No. 1497/8) Oil fuel arrangements 17-6-57 (Ship No. 1497/8)  
Cargo oil pumping arrangements - Air receivers 6-12-57 (Aux. 8-6-57 for Ship No. 1497/8) Donkey boilers 6-12-57  
Dates of examination of principal parts:— Use of previously approved plans has been approved on  
Fitting of stern tube 11-4-58 Fitting of propeller 16-4-58 Completion of sea connections 18-4-58 Alignment of crankshaft in main bearings 21-5-58  
Engine checks & bolts 21-5-58 Alignment of gearing - Alignment of straight shafting 4-6-58 Testing of pumping arrangements 16-6-58  
Oil fuel lines 27-5-58 Donkey boiler supports 5-6-58 Steering machinery 27-6-58 Windlass 27-6-58  
Date of Committee FRIDAY 5 SEP 1958  
Decision See Rpt. 1. Special Survey Fee ¥855,000 ✓  
Expenses ¥ 22,500

Date when A/c rendered 4/8/58 Locally.



Lloyd's Register Foundation