

## Rpt. 4b

Date of writing report 18th July, 1958

Received London

Port KOBE

No. FE-5921

Survey held at Tamano, Japan

In shops 96  
No. of visits 14  
On vessel

22nd Aug. 1957

27th June 1958

First date 13th Mar. 1958 Last date 15th July 1958

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.S. "MEGUROSAN MARU" Gross tons 9,565.69  
Owners Mitsui Steamship Co., Ltd. Managers Port of Registry Tokyo  
Hull built at Tamano, Japan By Mitsui S.B. & Eng. Co., Ltd. Yard No. 630 When 1958-7  
Main Engines made at Tamano, Japan By - do - Eng. No. 720 When 1958-5  
Gearing made at - By -  
Donkey boilers made at Tamano, Japan By Mitsui S.B. & Eng. Co., Ltd. Blr. Nos. 442 (Oil burn) 443 (Exh. gas) When 1958-4  
Machinery installed at - do - By - do - When 1958-7  
Particulars of restricted service of ship, if limited for classification -  
Particulars of vegetable or similar cargo oil notation, if required No  
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 Freon direct expansion type  
Is the refrigerating machinery compartment isolated from the propelling machinery space? Yes 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 Reciprocating engine directly coupled to line shaft

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Mitsui B & W D.E. 974 VTBF 160 type 1 set (supercharged)

No. of cylinders per engine 9 Dia. of cylinders 740mm stroke(s) 1600mm 2 or 4 stroke cycle 2 Single or double acting Single

Maximum approved BHP per engine 11,250 at 115 RPM of engine and 115 RPM of propeller.

Corresponding MIP 8.0 kg/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 55 kg/cm<sup>2</sup> Machinery numeral 2,250

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? through valve in the cyl. cover 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 sets 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 - No. of scavenge air coolers 3 Scavenge air pressure at full power 0.4 kg/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? Yes

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? -

TWO & FOUR STROKE ENGINES-GENERAL. No. of valves per cylinder: Fuel 2 Inlet - Exhaust 1 Starting 1 Safety 1

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

Cooling medium for: Cylinders Fresh water Pistons Lub. oil Fuel valves Diesel oil 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? Yes 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 6000 cub.ft. No. and total area of explosion relief

devices 18 total 1530 in<sup>2</sup> fitted clear of platform 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 directly reversed? Yes If not, how is reversing obtained? -

Has the engine been tested working in the shop? Yes How long at full power? 6 hrs.

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 30th Aug. 57 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) 984.6mm Distance between centre lines of side cranks or eccentrics of opposed piston engines -

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

Diameter of journals 590mm Diameter of crankpins Centre 590mm Breadth of webs at mid-throw 124.5mm Axial thickness of webs 340mm

If shrunk, radial thickness around eyeholes 265mm Are dowel pins fitted? No Crankshaft material Journals Forged steel Pins Forged steel Minimum 44 kg/mm<sup>2</sup>

Wheels Cast steel Approved 44 kg/mm<sup>2</sup> Tensile strength 44 kg/mm<sup>2</sup>

Diameter of flywheel 1903mm Weight 2180kg Are balance weights fitted? Yes Total weight 11870kg Radius of gyration 1018mm

Diameter of flywheel shaft 520mm Material Forged Steel Minimum approved tensile strength 44 kg/mm<sup>2</sup>

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

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013900-013906-0258 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

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 thrustshaft

520mm

Material Forged Steel

Minimum approved tensile strength 44 kg/mm<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? Separate with crank shaft

Integral with wheel shaft

Diameter of intermediate shaft

450mm

Material Forged Steel

Minimum approved tensile strength 44 kg/mm<sup>2</sup>

Diameter of screwshaft cone at large end

515mm

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 27mm

Thickness between bearings

24.5mm

Material of screwshaft Forged Steel

Minimum approved tensile strength 44 kg/mm<sup>2</sup>

Is an approved oil gland fitted? No

If so, state type

Length of bearing next to and supporting propeller

2200mm

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. Diameter of propeller

5900mm

Pitch

5015mm

Built up or solid

Built up

Total developed surface

12.498M<sup>2</sup>

No. of blades

4

Blade thickness at top of root fillet

260mm

Blade material Aluminium bronze

Moment of inertia of dry propeller

111,000 kgM<sup>2</sup>

If propeller is of special design, state type

Is propeller of reversible pitch type?

If so, is it of approved design?

blade of Aluminum bronze

State method of control

Material of spare propeller

1-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)

inboard and outboard on engine room floor

Kobe M47929, Fg.-47888, Fg.-47889

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate)

2-Main 13M<sup>3</sup>, starb'd side on 3rd deck

inboard & outboard in eng. room AR-50927 Kobe, 1-Aux. 0.1M<sup>3</sup> port side in eng. room AR-50928 Kobe

Main 25kg/cm<sup>2</sup>

Aux. 25kg/cm<sup>2</sup>

How are receivers first charged? by hand driven air compressor

Maximum working pressure of starting air system

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

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

1-Diesel oil settling tank, port side

on 3rd deck in eng. room, 1-Diesel oil service tank, port side aft on partial deck in eng. room

1-Boiler oil service tank, starboard forward on 3rd deck in eng. room

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) None

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	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	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil
Main F.W. Starb. in Eng. Rm					X						X			
Cool. Pump Motor driven														
Main S.W. Cool. Pump do.		X				X				X				
Spare Cool. Water Pump do.		X			X	X				X	X			
Aux. F.W. Port in Eng. Rm					X						X			
Cool. Pump Motor driven														
Aux. S.W. Cool. Pump do.						X				X				
Lub. Oil Pump Starb. in Eng. Rm								X						X
Lub. Oil Pump Motor driven								X						X
P.O. Trans. Pump Aft in E.R.					X							X		
P.O. Daily Supply P. Motor driven					X							X		
Fuel Valve Port in Engine Rm					X							X		
Cool. Pump Motor driven														
Ballast Pump Aft in Engine Rm	X	X	X			X				X			X	
180 M <sup>3</sup> /Hr. Motor driven														
G.S. Pump do.	X	X	X			X				X			X	
180 M <sup>3</sup> /Hr. do.														
Bilge Pump Port in Eng. Rm	X													
20 M <sup>3</sup> /Hr. Motor driven														
Feed Water Pump Starb. in E.R.								X		X				
Feed Water Pump Steam driven								X		X				
Burning Oil Pump Starb. in E.R.					X									
Burning Oil Pump Motor driven					X									
Lub. Oil Pump for turbocharger								X						X

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room

In deep tank 6-2", 4-3", No.1 Hold 2-3 1/2", No.2 hold 2-3 1/2", No.3 Hold 2-3 1/2", No.4 Hold 2-2", No.5 Hold 2-3 1/2", 2-2", No.6 Hold 2-3 1/2", 2-2"

No. and size connected to main bilge line in main engine room

5-3 1/2", 3-3"

In aux. engine room

Size and position of direct bilge suction in machinery spaces

1-6", 1-3 1/2"

Size and position of emergency bilge suction in machinery spaces

1-9" Starb'd aft.

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 cargo oil

Yes

## STEAM & 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. inboard in Engine Room	Oil Engine Mitsui B&W525	Mitsui S.B. & Eng. Co., Ltd.	0-50332, Kobe	250KW D.C. Generator No.1
Port Fwd. outboard in Engine Room	do.	do.	" "	do. No.2
Port aft inboard in Engine Room	do.	do.	" "	do. No.3

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 set 230 KW.

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 Cochran's oil burning boiler

Position Starboard side forward, on the engine room floor

Is a superheater fitted? No

Are these boilers also heated by exhaust gas? No

No. of donkey boilers heated by exhaust gas only? 1 W.P.

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

Port and No. of report on donkey

boilers

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? Hot drawn steel pipes

For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes

No. of oil burning pressure

units 2 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)

1 set, Electro hydraulic type, 2 ram 4 cylinder

type with 2 Janney Oil Pumps, each driven by 25 HP electric motor, capacity 25.3 Ton-Meter.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes

Brief description of arrangements

CO<sub>2</sub> Fire Extinguish System 3) Steam Smothering 2-45 Lit. foam extinguishers 1) & 1-Alternative Pump in Steering Engine Room.

For Hold & Machinery Space. 4) 9-9 Lit. portable exting- 5) 9-9 Lit. Portable & 2- 3/8 Gal. Tetrach- 5) rolidie extinguishers in living quarter.

guishers in Machinery Space. Date and duration of full-

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

power sea trials of main engines July 8th, 1958 all day

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

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

The materials and workmanship are sound and good.

The machinery has been examined under full working conditions during shop and sea trials and found satisfactory.

In our opinion this vessel's machinery is worthy of the notations LMC 7,58, DBS 7,58, TS-CL 7,58 and s.p.s. 7,58.

*R.D. Sutherland*

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.)

Connecting rod: LLOYD'S SMK  
RODS KOB No. KT-F 964-967 KO LR 6,11,21-11-57  
LLOYD'S SMK KOB No. KT-F 988,989,990,1007 KO LR 11,16,30-11-57  
CRANKSHAFT ~~OK ROTOR~~ LLOYD'S KOB No. KT-CK 361 EI LR 8-2-58  
FLYWHEEL SHAFT } LLOYD'S KOB No. KT-F1130 EI LR 8-2-58  
THRUSTSHAFT }  
GEARING LLOYD'S YKA No. Y-11124, A, B, C, D, E RT LR 11, 6-9-57  
INTERMEDIATE SHAFTS LLOYD'S YKA No. Y-11125 HT LR 19-9-58  
SCREW ~~NO. 6043~~ LLOYD'S SMK No. K-F 2559 EI LR 18-11-57  
PROPELLERS ~~NO. 6043~~ LLOYD'S SMK No. 6043 KO LR 10-2-58  
OTHER IMPORTANT ITEMS  
Crosshead LLOYD'S YKA No. 11169 A-H & J IS LR 7-10-57  
Cyl. liner LLOYD'S TEST KOB FINISH 27-2-58 W.T.P. 7 kg RS LR 3-3-58  
Cyl. cover LLOYD'S TEST No. M-C 508-1-8 W.T.P. 82.5 kgs 11,13,14,17-3-58 W.T.P. 4 kgs RS LR 17,18,25-3-58  
Piston rod: LLOYD'S KOB YKANO.1118 A-H & K FINISH RS LR 31-3-58 A.T.P. 6kg RS LR 8-4-58  
Spare prop. blade: LLOYD'S SMK No. 6043 KO LR 24-3-58  
LLOYD'S TEST No. 6418 W.T.P. 82.5 kg 11,13-3-58 W.T.P. 4kgs RS LR 17-3-58

Is the installation a duplicate of a previous case? Yes If so, state name of vessel "MAYASAN MARU"  
Date of approval of plans for crankshaft 17-6-57 Straight shafting 20-4-57 Gearing - Clutch -  
Separate oil fuel tanks 9-9-57 Pumping arrangements 21-10-57 Main Oct. 16-1957 Oil fuel arrangements 4-2-55 Cochran's 9-9-57  
Cargo oil pumping arrangements - Air receivers Aux. Dec. 28-1954 Donkey boilers Exh. gas 9-9-57  
Dates of examination of principal parts:-  
Fitting of stern tube 10-3-58 Fitting of propeller 13-3-58 Completion of sea connections 14-3-58 Alignment of crankshaft in main bearings 14-4-58  
Engine chocks & bolts 16-6-58 Alignment of gearing - Alignment of straight shafting 16-6-58 Testing of pumping arrangements 30-6-58  
Oil fuel lines 24-6-58 Donkey boiler supports 20-6-58 Steering machinery 8-7-58 Windlass 8-7-58  
Date of Committee TUESDAY 21 OCT 1958  
Decision LMC 2 DB (1006) 7.58  
Special Survey Fee £939,000.-  
Expenses See Rpt. 1

*Oil Eng  
CL*

Date when A/c rendered



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