

Rpt. 4b

29 NOV 1960

Date of writing report 27th September, 1960. Received London Port KOBE No. FE-8236
Survey held at Tamano, Japan No. of visits In shops 85 21st Jan., 1960 12th Aug., 1960.
On vessel 14 First date 26th May, 1960. Last date 22nd Aug., 1960.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.V. "NAGAOSAN MARU" Gross tons 6554.8
Owners Mitsui Steamship Co., Ltd. Managers Port of Registry Tokyo
Hull built at Tamano, Japan By Mitsui Shipbuilding & Eng. Co., Ltd. Yard No. 641 Year Month 1960-8
Main Engines made at - do - By - do - Eng. No. 817 When 1960-8
Gearing made at - By -
Donkey boilers made at Tamano, Japan By Mitsui Shipbuilding & Eng. Co., Ltd. Blr. Nos. 467 When 1960-8
Machinery installed at - do - By - do - When 1960-8
Particulars of restricted service of ship, if limited for classification None
Particulars of vegetable or similar cargo oil notation, if required Not required.
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 shafting
MAIN RECIPROCATING ENGINES. Licence Name and Type No. Mitsui B&W D.E. 662VT2BF140 Type 1 set
No. of cylinders per engine 6 Dia. of cylinders 620 mm. stroke(s) 1400 mm. 2 or 4 stroke cycle 2 Single or double acting single
Maximum approved BHP per engine 6500 at 135 RPM of engine and 135 RPM of propeller.
Corresponding MIP 9.5 kg/cm2 (For DA engines give MIP top & bottom) Maximum cylinder pressure 65 kg/cm2 Machinery numeral 1300
Are the cylinders arranged in Vee or other special formation? No If so, number of crankshafts per engine -

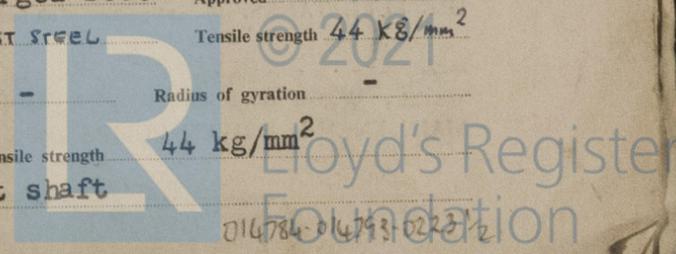
TWO STROKE ENGINES. Is the engine of opposed piston type? No If so, how are upper pistons connected to crankshaft? through valve in the cyl. cover
Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? No. and type of mechanically driven scavenge pumps or blowers per engine and how driven None
No. of exhaust gas driven scavenge blowers per engine 2 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 None No. of scavenge air coolers 2 Scavenge air pressure at full power 1.75 kg/cm2 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 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? Cross head Total internal volume of crankcase 66.5M3 No. and total area of explosion relief devices 7-total 3717cm2 Are flame guards or traps fitted to relief devices? No Is the crankcase readily accessible? Yes (Clear of Platform) 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 28-3-60 State barred speed range(s), if imposed for working propeller None For spare propeller None 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) 814.6mm. 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 520mm. Diameter of crankpins Centre 520mm. Breadth of webs at mid-throw 1120mm. Axial thickness of webs 267mm.
Side 115mm. Pins Forged Steel Minimum 44 kg/mm2
If shrunk, radial thickness around eyeholes 255.1mm. Are dowel pins fitted? No Crankshaft material Journals Forged Steel Approved 44 kg/mm2
Webs CAST STEEL Tensile strength 44 kg/mm2
Diameter of flywheel 2136mm. Weight 2150 kg. Are balance weights fitted? No Total weight - Radius of gyration -
Diameter of flywheel shaft 500mm. Material Forged Steel Minimum approved tensile strength 44 kg/mm2
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)
 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.

STRAIGHT SHAFTING. Diameter of thrust shaft 500 mm. Material Forged Steel Minimum approved tensile strength 44 kg/mm²
 Shaft separate or integral with crank or wheel shaft? separate with crank shaft integral with wheel shaft Diameter of intermediate shaft 365 mm. Material Forged Steel
 Minimum approved tensile strength 44 kg/mm² Diameter of screw shaft cone at large end 425 mm 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 25 mm. Thickness between bearings 23.5 mm. Material of screw shaft Forged Steel Minimum approved tensile strength 44 kg/mm²
 Is an approved oil gland fitted? No If so, state type Length of bearing next to and supporting propeller 1900 mm.
 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 4800 mm. Pitch 3898 mm at 0.7r. Built up or solid Solid Total developed surface 8.686 M²
 No. of blades 4 Blade thickness at top of root fillet 179.4 mm. Blade material Al-bronze Moment of inertia of dry propeller GI=31800 kg-M
 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 Cast iron Moment of inertia GI=38700 kg-M

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) 2-240M³/hr. Diesel generator engine, port side engine room floor Kobe, M-65626
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 2-Main 5.5M³, portside aft on partial deck in engine room, Kobe AR-65016. 1-Aux. 0.1M³, port side engine room floor, Kobe AR-65017.
 How are receivers first charged? by hand driven air compressor Maximum working pressure of starting air system Main, Aux. 25kg/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 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 2-F.O. settling tanks (Port & Starboard) and 2-F.O. service tanks (Port & Starboard) on partial deck fwd in E.R., 1-Boiler oil service tank, port aft on upper deck in engine room.
 MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 1-Bilge pump, 1-Sanitary pump.

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	Piston Cooling
Main F.W. Cooling pump E.R. Starboard Motor driven					X						X				
Main S.W. Cooling pump - " - Cap. 200M ³ /H	X					X				X					
Spare cooling water pumps (2) E.R. Starboard	X				X	X				X	X				
Aux. F.W. Cooling pump E.R. Port Motor driven					X						X				
Aux. S.W. Cooling pump - " -						X				X					
L.O. Pumps (2) Motor driven								X						X	X
F.O. Transfer P. E.R. Starboard					X							X			
F.O. daily supply P. Motor driven					X							X			
F.O. Circulating P. Fwd in E.R.					X							X			
Fuel valve cool. P. Motor driven					X							X			
Ballast pump E.R. Starboard 150M ³ /hr. Motor driven	X	X	X	X		X				X		X	X		
G.S. Pump 150M ³ /hr. - do -	X	X	X			X				X			X		
Bilge pump E.R. Port 20M ³ /hr. Motor driven	X		X												
Feed water pumps E.R. Aft (up & (2) low), Steam driv.							X		X						
Burning oil pumps E.R. aft. (2) Motor driven					X										

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. Deep tanks 4-80mm, 2-50mm, No.1 hold 2-80mm, No.2 hold 2-80mm, No.3 hold 2-80mm, No.4 hold 2-80mm, 2-50mm, No.5 hold 2-80mm, 2-50mm, Pipe recess. 1-50mm, 1-80mm.
 No. and size connected to main bilge line in main engine room 8-80mm, 1-50mm, 1-125mm, 1-200mm, 1-80mm in cofferdam, 1-50mm, in tunnel 1-50mm, in cofferdam 1-50mm in void space. in cofferdam 80mm. Port aft
 In aux. engine room Size and position of direct bilge suction in machinery spaces 200 mm, port 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 oil cargo (strike out words not applicable). 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)
Forward Inboard in E.R. Port. (No.1)	Oil engine	Mitsui S.B. & Mitsui B&W DE525MTBHK40 Eng. Co. Ltd.	Kobe, O-65301	220KW A.C. generator and Main air compressor
Forward Outboard in E.R. Port. (No.2)	- do -	- do -	Kobe, O-65302	- do -
After in E.R. Port. (No.3)	Oil engine	Mitsui B&W DE525MTBHK40 - do -	Kobe, O-65303	220KW A.C. generator

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 220KW Is an electric generator driven by Main Engine? No
 STEAM INSTALLATION. No. of Aux boilers burning oil fuel 1 W.P. 7 kg/cm² Type Cochran's oil burning boiler
 Position Aft on partial deck in engine room
 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. 7 kg/cm²
 Type Bent tube type Position in funnel 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? operate only as economizer in conjunction with oil fired boiler Port and No. of report on donkey boiler Aux. Boiler: - Kobe I-65238
 Is steam essential for operation of the ship at sea? Yes Are any steam pipes over 3 ins. bore? Yes If so, what is their material? Hot drawn steel pipe 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-Electric hydraulic type, 1 ram 2 cyls. with 2-Janey oil pumps each driven by 11KW electric motor, capacity 15.0 Ton-M.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements (1) Water service comprising 2 power pumps CO2 fire extinguish system (2) 2-45kg. CO2 hose reel, 7-9litres form (4) 2-hydrants with hoses and spray nozzles (3) 2-45kg. CO2 hose reel, 7-9litres form (4) 2-hydrants with hoses and spray nozzles (5) 4-80 litres and boxes in engine room (TOTAL FLOODING SYSTEM) extinguishers, 2-9kg. dry chemical extinguishers in machinery space.
 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 20th August, 1960 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. Mitsui B&W Engineering Co. Ltd., Yamano Works.
 Lloyd's Register Foundation
 Managing Director.

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 Main engine of this vessel has been constructed and installed 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 and tested under full load conditions during shop and sea trials and found satisfactory.

In our opinion the machinery of this ship is worthy of the records of +LMC 8,60, Auxiliary Boiler Survey 7 kg/cm² 8,60, Tail Shaft Survey - Continuous Liner - 8,60, Steam Pipe Survey 8,60.

G.M. Kersey & Y. Kojima
 Engineer Surveyor to Lloyd's Register of Shipping.
 G.M. Kersey & Y. Kojima.

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

RODS	Connecting rod LLOYD'S SMK KCB NO. KT-F1432-1, to 4, KCI LR 25-3-60	LLOYD'S SMK KCB NO. KT-F1433-1,2 KCI LR 25-3-60	Piston rod LLOYD'S YKA Y-14812-A to G K.I. LR 7-5-60 A.T.P. 6KG YK LR 30-5-60	
CRANKSHAFT	LLOYD'S KCB NO. KT-CK420 EI LR 30-4-60			
FLYWHEEL SHAFT				
THRUSTSHAFT	LLOYD'S KCB NO. KT-F1481 EI LR 30-4-60			
GEARING				
INTERMEDIATE SHAFTS	LLOYD'S YKA Y-14793, Y-14790-A, B, C, D KI LR 31-3-60			
SCREW SHAFTS	LLOYD'S KCB NO. KT-F1453 EI LR 31-3-60			Spare screw shaft LLOYD'S KCB NO. KT-F1442 EI LR 19-3-60
PROPELLERS	LLOYD'S SMK NO. 7651 KCI LR 15-4-60			
OTHER IMPORTANT ITEMS				
	Cross head LLOYD'S YKA NO. Y-14802-A to F L.I. LR 30-7-59	Cylinder liner LLOYD'S TEST KCB YK FINISH 12-5-60, 16-5-60 WIP 7KG YK LR 16-5-60, 18-5-60	Cylinder cover LLOYD'S TEST KCB SMK No. 7653 WIP 97.5KG YK AJ 4-6-60, 3-5-60, 3-6-60 WIP 4KG YK, AJ LR 6-6-60, 31-5-60, 3-6-60	LLOYD'S TEST KCB SMK NO. 7675 WIP 97.5KG YK 8-8-60, 9-8-60 WIP 4KG YK LR 9-8-60, 11-8-60
				Spare propeller LLOYD'S SMK NO. 7652 KCI LR 16-4-60

Is the installation a duplicate of a previous case? No

Date of approval of plans for crankshaft 19-2-60 Straight shafting 5-12-59 Gearing Clutch

Separate oil fuel tanks 22-3-60 Pumping arrangements 27-1-60 Oil fuel arrangements 28-4-60
Main 16-2-60
Aux. 17-2-59

Cargo oil pumping arrangements Air receivers Donkey boilers 27-4-60

Dates of examination of principal parts:-

Fitting of stern tube 26-5-60 Fitting of propeller 2-6-60 Completion of sea connections 7-6-60 Alignment of crankshaft in main bearings 28-7-60

Engine chocks & bolts 15-7-60 Alignment of gearing Alignment of straight shafting 28-7-60
8-7-60 Testing of pumping arrangements 18-8-60

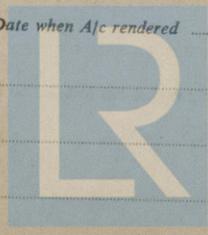
Oil fuel lines 8-8-60 Donkey boiler supports 15-7-60 Steering machinery 20-8-60 Windlass 20-8-60

Date of Committee FRIDAY 10 FEB 1967

Decision See Rpt. 1

Special Survey Fee
 Construction & Installation ¥703,150.-

Expenses /

Date when A/c rendered
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