

4 AUG 1959

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27th June, 1959.
4th March, 1959.

Received London

Port KOBE

No. FE-6496

Tamashima and Nagoya

No. of visits

In shops 23

5th July, 1958

3rd March, 1959.

Field at

On vessel 11

First date

3rd March, '59

Last date

25th June, 1959.

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

Name **m.v. "NIKKO MARU"** Gross tons **13,689.52**
 R.B. **Nissan Shipping Co., Ltd.** Managers **Nagoya S.B. Co., Ltd.** Port of Registry **Tokyo**
 built at **Nagoya** By **Nagoya S.B. Co., Ltd.** Yard No. **146** Year Month When **1959 July**
 Engines made at **Tamashima** By **Uraga Tamashima Diesel Kogyo K.K.** Eng. No. **323** When **1959-3**
 ing made at **Osaka** By **Hirano Iron Works Co., Ltd.** Blr. Nos. **H 752** When **1959 Feb.**
 eary boilers made at **Nagoya** By **Nagoya Shipbuilding Co., Ltd.** When **1959 July**

Particulars of restricted service of ship, if limited for classification **-**
 Particulars of vegetable or similar cargo oil notation, if required **-**
 Is ship intended to carry petroleum in bulk? **No**
 Is so, is it for cargo purposes? **No** Type of refrigerant **Freon direct expansion type**
 Refrigerating machinery fitted? **Yes** Is the refrigerated cargo installation intended to be classed? **No**
 Refrigerating machinery compartment isolated from the propelling machinery space? **Yes**

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.**

IN RECIPROCATING ENGINES. Licence Name and Type No. **Uraga Sulzer 6RSAD76**

No. of cylinders per engine **6** Dia. of cylinders **760mm** stroke(s) **1550mm** 2 or 4 stroke cycle **2** Single or double acting **Single**

Minimum approved BHP per engine **7,800** at **119** RPM of engine and **119** RPM of propeller. **1560**

Corresponding MIP **7.95 kgs/cm²** (For DA engines give MIP top & bottom) Maximum cylinder pressure **60 kgs/cm²** Machinery numeral **-**

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

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

Are exhaust discharge ports through ports in the cylinders or through valve(s) in the cylinder covers? **Ports** 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**

Is a stand-by or emergency pump or blower fitted, state how driven **None** No. of scavenge air coolers **2** Scavenge air pressure at full power **0.43 kgs/cm²** Are scavenge manifold explosion relief valves fitted? **Yes**

DO 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? **No**

VALVE & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel **1** Inlet **-** Exhaust **1** Starting **1** Safety **1**

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

Cooling medium for:—Cylinders **Fresh Water** Pistons **Lub. Oil** Fuel valves **Fresh Water** 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 **87.3 M³** No. and total area of explosion relief devices **6, 9,900 cm²**

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? **directly** How is the engine started? **By 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? **3 Hr.**

RANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system **9-4-59** State barred speed range(s), if imposed

Working propeller **48-60 r.p.m., See London letter of 9-4-59** For spare propeller **-** Is a governor fitted? **Yes** Is a torsional vibration damper or detuner fitted to the shafting? **No**

Where positioned? **-** Type **governor** No. of main bearings **7** Are main bearings of ball or roller type? **No**

Distance between inner edges of bearings in way of crank(s) **410mm** 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 **550mm** Diameter of crankpins **320mm** Centre **550mm** Breadth of webs at mid-throw **897mm** Axial thickness of webs **340mm**

If shrunk, radial thickness around eyeholes **252.5mm** Are dowel pins fitted? **No** Crankshaft material Journals **Forged Steel** Minimum **53 kg/mm²**

Webbs **Forged Steel** Approved **53** Tensile strength **53**

Diameter of flywheel **2, 364.3mm** Weight **1,552.8 kgs** Are balance weights fitted? **No** Total weight **1,552.8 kgs** Radius of gyration **907**

Diameter of flywheel shaft **550mm** Material **Forged Steel** Minimum approved tensile strength **53 kg/mm²**

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

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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
 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 stroke
 minute at full power Gas delivery pressure Gas delivery temperature Have the turbines and attached equipment been tested
 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
 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 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 550mm Material Forged Steel Minimum approved tensile strength 53 kg/cm²
 Shaft separate or integral with crank or wheel shaft? Integral with wheelshaft Diameter of intermediate shaft 402 mm Material Forged Steel
 Minimum approved tensile strength 42 Kg/cm² Diameter of screwshaft cone at large end 464 mm 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 bearings 25 mm Thickness between bearings 19 mm Material of screwshaft Forged Steel Minimum approved tensile strength
 Is an approved oil gland fitted? No If so, state type Length of bearing next to and supporting propeller 1960 mm
 Material of bearing Lignum vitae 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 5,700 mm Pitch 3,720mm Built up or solid Built up Total developed surface 11.170 M²
 No. of blades 4 Blade thickness at top of root fillet 245 mm at 25% radius Blade material Mn. Br. Moment of inertia of dry propeller 206000 Kg
 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) 2-200 M³/H x 30kg/cm² steam reciprocating engine, inboard & outboard in E.R. port platform deck (2nd deck), Kobe No.M-55271 & M-55240
 No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main: 2 x 7.5 M³ inboard & outboard in E.R. port platform deck (2nd deck), Kobe No.AR-55179, Aux: 1-200 l. port in E.R. working platform, Kobe No.AR-55179
 How are receivers first charged? by air 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 2 No. of main engine lubricating oil coolers 2
 OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure 1-F.O. settling tank & 1-F.O. service tank on platform deck (2nd deck) port, 2-F.O. settling tanks (DB) on boiler platform deck port
 MAIN ENGINE DRIVEN PUMPS (No. and Purpose) Chain driven combined L.O., Fresh water & Sea water cooling pumps for pistons, bearings, journals, jackets, air coolers, L.O. coolers and Fresh water coolers.

INDEPENDENT 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
ling fresh water P.(S.S.) steam				X						X				
l. piston cooling L.O.P. (s.s.) steam							X						X	X
l. valve cool. fresh W.P. (s.s.) steam				X						X				
M. booster P. (p.s. in platform deck) (motor)				X										
re & Bilge P.(s.s.), steam 20/210 M ³ /H x 60/20 M	X	X	X			X							X	
S. pump (s.s.), steam 20/319 M ³ /H x 60/20 M	X	X	X			X				X			X	
l. last pump (s.s.), steam						X				X				
l. ge P.(p.s.), steam 30 M ³ /H x 35 M	X					X								
ed pump (s.s.)							X			X				

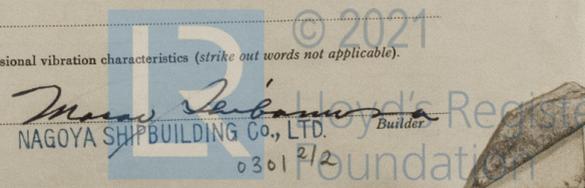
8 SUCTIONS. No. and size in each hold, ~~2-90mm dia. in each hold (No.1 hold to No.8 hold),~~ 3-90mm dia. in pipe passage, 3 x 50mm dia. in cofferdams (Fr.43-44, Fr.28-29 & Fr.18-19)
 Size connected to main bilge line in main engine room 4 x 90 mm In tunnel
 Size and position of direct bilge suction in machinery spaces 1 x 100mm (s.s.)
 Size and position of emergency bilge suction in machinery spaces 300 mm (s.s.)
 Do the piping arrangements comply with the Rules ~~Yes~~ No
 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 ~~Yes~~ Yes
 (strike out words not applicable)

GENERATORS & OIL ENGINE AUXILIARIES				
Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
port inboard	4 cycle, S.A. Solid inj.	Yanmar Diesel Eng. Co., Ltd.	Kobe, O-58406	Electric generator, 130 KVA
port outboard	4 cycle, S.A. Solid inj.	Yanmar Diesel Eng. Co., Ltd.	Kobe O-58406	Electric generator, 130 KVA

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 1-130 KVA
 Is an electric generator driven by Main Engine? No
 W.P. 10 Kg/cm² Type Dry combustion multilublar
 No. of donkey boilers burning oil fuel 1
 Aft centre on Boiler platform
 No. of ~~boilers~~ heated by exhaust gas only? One W.P. 10 Kg/cm² (Max. WP 13Kg/cm²)
 Are these boilers also heated by exhaust gas? No
 No. of ~~boilers~~ heated by exhaust gas only? One
 Can the exhaust ~~boilers~~ deliver steam directly to gas economizer
 Operated only as economizer in conjunction with oil fired boiler
 steam range or do they operate only as economisers in conjunction with oil fired boilers? Yes Are any steam pipes over 3 ins. bore? Yes If so, what is their material? Solid drawn steel For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes No. of oil burning pressure vessels? 1 No. of Evaporators None
 Forced cir. coil heating Position in funnel
 1-25 H.P. A.C. semi enclosed self ventilated electric motor with Heleshaw pump, 1-5 H.P. A.C. semi enclosed self ventilated electric motor with Heleshaw pump.

Are the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 4-70mm hydrant, steam smothering arrangement, 2-45 litre 6-9 litre portable foam type and 1-sand box.
 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 22-6-59 3 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)

Signature: *S. Kameko*
 Builder: *Yanmar Diesel Eng. Co., Ltd.*
 NAGOYA SHIPBUILDING Co., LTD.
 0301212



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 and workmanship and give recommendations, for classification, including any special notation to be assigned. Where existing machinery is submitted for classification 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 Rules, approved plans and Secretary's letters.

The material and workmanship are sound and good.

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

In our opinion, the machinery of this vessel is eligible to have a record of +LMC 7,59.

Exhaust gas economizer :- The exhaust gas economizer has been constructed and installed under Special Survey in accordance with the Rules, approved plans and Secretary's letters, safety valves adjusted to 13 Kg/cm². The material and workmanship are sound and good.

A notice board has been fitted at the control platform stating that the engine is not to be operated continuously between 48 and 60 r.p.m. and the engine tachometer was marked accordingly.

H. Sakuchi, Onblayton & S. S. S. S.

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.)

Piston rods: Y.11863A-F ST LR 4-12-57, Y11572-A RS LR 14-1-58 (Spare)
RODS Connecting rods: Y11143A-C, RT LR 13-9-57, Y11143E-G HT LR 26-9-57

CRANKSHAFT OR ROTORSHAFT KT-CK 378 EI LR 30-9-58

FLYWHEEL SHAFT -

THRUSTSHAFT KT-F1221 EI LR 30-9-58

GEARING

INTERMEDIATE SHAFTS HC-F 840 & HC-F 842 FM 23-12-58

SCREW AND OTHER SHAFTS Y-13075 ST 27-12-58

PROPELLER Blades 2017, 2020, 2023 SH 5-2-59 & 102 SH 11-5-59 Spare: 137 SH 4-6-59

OTHER IMPORTANT ITEMS Cylinder covers: Nos. 6815-1-4, 6, 7 & 8 KOI LR 5-7-58 (Spare)

Pistons:- Nos. SF2845-A-F KT LR 1-12-58 SF 2730 KT LR 25-4-58 (Spare)

Crosshead Pins:- Nos. Y12240-A-F, ST LR 4-4-58

Is the installation a duplicate of a previous case? No If so, state name of vessel

Date of approval of plans for crankshaft 1-11-1957 Straight shafting 1-11-57 Gearing Clutch

Separate oil fuel tanks 28-11-58 Pumping arrangements 18-10-58 Oil fuel arrangements 5-1-59

Cargo oil pumping arrangements - Air receivers 6-12-58 Donkey boilers 17-6-59

Dates of examination of principal parts:-

Fitting of stern tube 20-3-59 Fitting of propeller 23-3-59 Completion of sea connections 23-3-59 Alignment of crankshaft in main bearings 8-5-59

Engine checks & bolts 8-5-59 Alignment of gearing - Alignment of straight shafting 8-5-59 Testing of pumping arrangements 1-6

Oil fuel lines 18-5-59 Donkey boiler supports 8-5-59 Steering machinery 22-6-59 Windlass 22-6-59

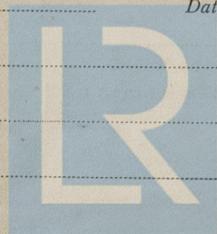
Date of Committee FRIDAY 11 SEP 1959

Decision See Rpt. 1.

Special Survey Fee CONSTRUCTION: 7532.000
INSTALLATION: 280.275

Expenses

Date when A/c rendered MAY 23 1959



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