

Rpt. 4b

Date of writing report 27 August 1960

Received London

Port Yokohama

No. 3311-A

Survey held at Yokohama

In shops 81
No. of visits 29
On vessel

30-6-1959

8-6-1960

First date 28-12-1959

Last date 28-6-1960

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. 44538 Name SUMIDA MARU Gross tons 9431
Owners Nippon Yusen Kaisha Managers Nippon Yusen Kaisha Port of Registry Tokyo
Hull built at Yokohama By Yokohama Shipyard & Engine Wks. Year Month
Mitsubishi Nippon Hvy. Ind. Ltd. Yard No. S 836 When 1960 2
Main Engines made at Yokohama By - " - Eng. No. D37823 When 1960 3
Gearing made at - By -
Auxiliary Donkey boilers made at Osaka By Hirano Iron Wks. Ltd. Blr. Nos. B1639 When 1960 2
Machinery installed at Yokohama By Yokohama Shipyard & Engine Wks. When 1960 6
Mitsubishi Nippon Hvy. Ind. Ltd.

Particulars of restricted service of ship, if limited for classification None

Particulars of vegetable or similar cargo oil notation, if required "AFTER DEEP TANKS - VEGETABLE OIL"

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 One No. of propellers One Brief description of propulsion system Oil Engine 2 SA. 9 Cy. 780 x 1400mm.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Yokohama - M.A.N. K9Z 78/140C

No. of cylinders per engine 9 Dia. of cylinders 780mm stroke 1400mm 2 or 4 stroke cycle 2 Single or double acting S

Maximum approved BHP per engine 12,000 at 112 118 RPM of engine and 112 118 RPM of propeller.

Corresponding MIP 8.68 kg/sq.cm (For DA engines give MIP top & bottom) Maximum cylinder pressure 60 kg/sq cm. Machinery numeral 2400

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? Ports No. and type of mechanically driven scavenge pumps or blowers per

engine and how driven 9 under piston scavenging pumps

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? -

If a stand-by or emergency pump or blower is fitted, state how driven - No. of scavenge air coolers 5 Scavenge air pressure at full power 0.525 kg/sq.cm 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 One Inlet None Exhaust None Starting One Safety One

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

Cooling medium for :-Cylinders Fresh Water Pistons Fresh Water Fuel valves Fresh Water Overall diameter of piston rod for double acting engines -

Is the rod fitted with a sleeve? - 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? X-Head Total internal volume of crankcase 171 cub m. No. and total area of explosion relief

devices 9; 2.2 sq m. 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? Five hours

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 16/3/60 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) 1040 mm 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 570mm. Centre 570mm. Breadth of webs at mid-throw 900mm. Axial thickness of webs 320mm.

If shrunk, radial thickness around eyeholes 257.5mm. Are dowel pins fitted? No Crankshaft material Journals O.H. Steel Minimum 53 kg/sq.mm.

Webs O.H. Steel Tensile strength 53 kg/sq.mm.

Diameter of flywheel 2300mm. Weight 2600 kg Are balance weights fitted? No Total weight - Radius of gyration -

Diameter of flywheel shaft 570-458 mm. Material O.H. Steel Minimum approved tensile strength 53 kg/sq.mm.

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

012193-012202-0279 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.)

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 530 mm.

Material O.H. Steel

Minimum approved tensile strength 53 kg/sq.mm.

Shaft separate or integral with crank or wheel shaft? Integral

Diameter of intermediate shaft 458 mm.

Material O.H. & Electric Furnace

Minimum approved tensile strength 44 kg/sq.mm.

Diameter of screwshaft cone at large end 527 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/tube shaft liner at

bearings 26 mm.

Thickness between bearings 20 mm.

Material of screw/tube shaft O.H. Steel

Minimum approved tensile strength 44 kg

Is an approved oil gland fitted?

If so, state type

Length of bearing next to and supporting propeller

2,100mm.

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 5900mm.

Pitch 5200mm.

Built up or solid Solid

Total developed surface 12 sq.m.

No. of blades 4

Blade thickness at top of root fillet 252.5mm.

Blade material manganese bronze

Moment of inertia of dry propeller 2700 x 10⁵ 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 Cast Iron

Moment of inertia 3560 x 10⁵ kg/s

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-each 265 cub.in./hour; Aux: Engines

ps frd inner and outer, Yka Rpt 10 No.M6067; 1-75 litre/minute, Petrol Engine, ps outb'd, Kob Rpt 10 No.M61750

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main-2, each 12,000 litre (Eng Room p & s)

Yka Cert AR No.146/7; Aux - 1-300 litre (Eng.Rm.p) Yka Cert AR No.148; Cold Start Air Receiver 150 litre (Eng

Yka Cert AR No.149

How are receivers first charged? Compressor via hand start petrol engine working pressure of starting air system 30 kg/sq cm

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 1

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure 5-Eng. Rm aft. port to starboard on

2nd & 3rd Decks (M.E. Settling and Service; Aux. Settling and Service; Boiler Settling resp.).

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) None

INDEPENDENT PUMPS

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

Bilge/Ballast (E.R.ss aft) Motor 150 cub m./hr.

Bilge/Ballast (E.R.ss aft, inboard) Motor 150 cub m./hr.

Bilge/Ballast (E.R.ss inboard) Motor 30 cub m./hr.

2-Aux: Blr Feed (Steam) E.R.ss frd inner and outer

2-M.E.Lub. oil Supply (Motor) E.R. ss inner and outer

2-Supercharger L.O. Supply (Motor) E.R. ss.

Lub. oil Trans. (Motor) E.R. ps.

O.F. Service & Supply (Motor) E.R. ps. outer

O.F. Supply (Motor) E.R. ps inner

2-O.F.Trans. (Motor) E.R. ps. frd & after

M.E. F.W. Circulating (Motor) E.R. ss.frd.

S.W.Cooling (Motor) 500 cub m./hr. E.R. ss. aft.

Stand-By F.W/S.W. Cooling (Motor) 500 cub m./hr. E.R. ss centre

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

SUCTION

Bilge Main

Bilge Direct

Ballast Main

Oil Fuel

Fresh Water Cooling

Sea

Feed Tanks

Lub. Oil

Boiler Feed

Salt Water Cooling

Fresh Water Cooling

DELIVERY

Oil Fuel Tanks

Fire Main

Lub. Oil

Piston Cooling

| | 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 |
|---|------------|--------------|--------------|----------|---------------------|-----|------------|----------|-------------|--------------------|---------------------|----------------|-----------|----------|----------------|
| Bilge/Ballast (E.R.ss aft) Motor 150 cub m./hr. | X | X | X | | | X | | | | | | | X | | |
| Bilge/Ballast (E.R.ss aft, inboard) Motor 150 cub m./hr. | X | X | X | | | X | | | | | | | X | | |
| Bilge/Ballast (E.R.ss inboard) Motor 30 cub m./hr. | X | | X | | | X | | | | | | | | | |
| 2-Aux: Blr Feed (Steam) E.R.ss frd inner and outer | | | | | | | X | | X | | | | | M.E. | |
| 2-M.E.Lub. oil Supply (Motor) E.R. ss inner and outer | | | | | | | | X | | | | | | X | |
| 2-Supercharger L.O. Supply (Motor) E.R. ss. | | | | | | | | X | | | | | | X | |
| Lub. oil Trans. (Motor) E.R. ps. | | | | | | | | | | | | | | | |
| O.F. Service & Supply (Motor) E.R. ps. outer | | | | | X | | | | | | | | | | |
| O.F. Supply (Motor) E.R. ps inner | | | | | X | | | | | | | | | | |
| 2-O.F.Trans. (Motor) E.R. ps. frd & after | | | | | X | | | | | | | | | | |
| M.E. F.W. Circulating (Motor) E.R. ss.frd. | | | | | | X | | | | | | | | | |
| S.W.Cooling (Motor) 500 cub m./hr. E.R. ss. aft. | | X | | | | X | | | | X | | | | | |
| Stand-By F.W/S.W. Cooling (Motor) 500 cub m./hr. E.R. ss centre | | X | | | X | X | | | | X | X | | | | |

BILGE SUCTIONS. No. and size in each hold,

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 has been constructed and efficiently installed in this vessel in accordance with the Rules, approved plans and Secretary's letters, tried under full power working conditions and found satisfactory. The materials and workmanship are satisfactory.

The machinery is eligible, in my opinion, to be Classed in the Register book with the notation **+** LMC 6/60 and to have records Oil Engine 2 SA. 9 Cy 780 x 1400mm. TS(CL) 6/60 1 Aux. B 100 lb/sq inch.

J. Winn.
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.)

TIE:- Lloyd's Kob No.K-2769-2 to -22 inclusive. E.I.11-9-59 Finish m/c J.W. 11-9-59 Yka.
CONNECTING:- Lloyd's Yka No.Y13171A,B,C,D,E,F,G. 20-6-59 S.T. Y13173A,D. 3-7-59 K.I.
PISTON:- Lloyd's Yka No.Y13117-B. 5-5-59 S.T.; Y13152 14-5-59 S.T.; Y13155B,C,E,F,G,H,J. 30-5-59 S.T.

CRANKSHAFT ~~OR ROTOR SHAFT~~ Lloyd's Kob No.KT-CK410 E.I. 31-10-59

FLYWHEEL SHAFT Lloyd's Yka No.Y14763 K.I. 19-12-59 I.S. 12-19-59

THRUST SHAFT

GEARING

INTERMEDIATE SHAFTS Lloyd's Yka No.14758 A,/B,/C,/D,/E. 14759 14760 K.I. 14-12-59

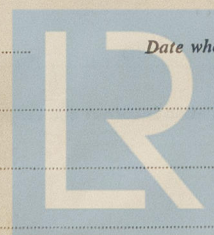
SCREW ~~AND TUBE~~ SHAFTS Lloyd's Kob No.KT-FL420 M.K. 7-1-60 Finish m/c J.W. 8-2-60 Yka.

PROPELLERS Lloyd's Nag No.MN-BC 3135 A.I. 14-1-60

OTHER IMPORTANT ITEMS Cast Iron Stern Tube LLOYD'S TEST 4 Kg/sq cm J.W. 2-2-1960 Yka.

Cylinder Covers Lloyd's Yka. M34YC 199 J.W.1-2-60; /887 J.W.1-2-60; /936 J.W.2-2-60; /1433 J.W.2-2-60; /1475 J.W.3-2-60; /1476 J.W.3-2-60; /1520 I.S.4-2-60; /1552 I.S.4-2-60; /1553 J.W.5-2-60.

Is the installation a duplicate of a previous case? Yes If so, state name of vessel SAITAMA MARU
Date of approval of plans for crankshaft 23-3-1960 Straight shafting 14-9-1959 Gearing - Clutch -
Separate oil fuel tanks 3-12-1959; 8-2-1960 Pumping arrangements 11-11-1959; 19-1-1960 Oil fuel arrangements 7-1-1960
Cargo oil pumping arrangements - Air receivers 22-1-1960 Donkey boilers 13-1-1960
Dates of examination of principal parts:-
Fitting of stern tube 6-2-1960 Fitting of propeller 8-2-1960 Completion of sea connections 5-2-1960 Alignment of crankshaft in main bearings 2-4-1960
Engine checks & bolts 2-4-1960 Alignment of gearing - Alignment of straight shafting 11-3-1960 Testing of pumping arrangements 28-5-
Oil fuel lines 10-6-1960 Donkey boiler supports 4-3-1960 Steering machinery 17-6-1960 Windlass 17-6-1960
Date of Committee FRIDAY 14 OCT 1960
Decision See Rpt. 1. Special Survey Fee Construction ¥581.25 Installation ¥318.75
Expenses



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