

Rpt. 4b

Date of writing report 13th Oct., 1959 Received London Port YOKOHAMA No. 3040A
Survey held at Yokohama, Japan In shops Yokohama 106 + 47 7-1-1959 31-8-1959
No. of visits On vessel 15 First date 11-6-59 Last date 1-10-59

RECEIVED DEC 1959

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.V. "KOWA MARU" Gross tons 21973.68
Owners Taiheiyō Kaiun Kaisha Managers Tsurumi Shipyard, Port of Registry Tokyo
Hull built at Yokohama By Nippon Kokan K.K. Yard No. S - 760 Year Month 1959 9
Main Engines made at Yokohama By Yokohama Shipyard & Engine Works, D 37822 When 1959-6
Gearing made at By Mitsubishi Nippon Heavy Ind. Ltd. Eng. No. When 1959-6
Donkey boilers made at Yokohama, Japan By Nippon Kokan K.K., Blr. Nos. B 321 B 322 When 1959 - 9
Machinery installed at Yokohama, Japan By Tsurumi Shipyard When 1959 - 9

Particulars of restricted service of ship, if limited for classification None
Particulars of vegetable or similar cargo oil notation, if required None
Is ship to be classed for navigation in ice? No Is ship intended to carry petroleum in bulk? Yes
Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? No Type of refrigerant Dichlorodifluoromethane Direct Expansion
Is the refrigerating machinery compartment isolated from the propelling machinery space? Yes Is the refrigerated cargo installation intended to be classed? No

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 cyl. 780x1400 direct coupled
MAIN RECIPROCATING ENGINES. Licence Name and Type No. Yokohama M.A.N. K9Z 78/140C Supercharged
No. of cylinders per engine 9 Dia. of cylinders 780 mm. stroke(s) 1400 mm. 2 or 4 stroke cycle 2 Single or double acting Single
Maximum approved BHP per engine 12,000 at 118 RPM of engine and 118 RPM of propeller.
Corresponding MIP 8.68 Kg/cm² (For DA engines give MIP top & bottom) Maximum cylinder pressure 60 Kg/cm² Machinery numeral 2,400

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 scavenge & 3-exhaust gas turbo superchargers. (Type YTV 665A)

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? yes
If a stand-by or emergency pump or blower is fitted, state how driven not fitted No. of scavenge air coolers 5 Scavenge air pressure at full power 0.57 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 & FOUR STROKE ENGINES—GENERAL. No. of valves per cylinder: Fuel one Inlet no Exhaust no 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? no Entablature? no Is the crankcase separated from the underside of pistons? yes
Is the engine of crosshead or trunk piston type? yes Total internal volume of crankcase 174 m³ No. and total area of explosion relief devices 9 & 22050 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? Tank Top 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? 2 Hrs. 26-3-1959-Kobe 438 F
CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 10-3-1959-London 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) 1050mm. Distance between centre lines of side cranks or eccentrics of opposed piston engines -
Crankshaft type: Built, semi-built, solid. (State which) Semi built For cylinder Nos. 1, 2, 3, 4 & 9 and with 212mm dia. central hole for cylinder
Diameter of journals 570 mm Diameter of crankpins Centre 570 mm Nos. 5, 6, 7 & 8 900 mm Axial thickness of webs 320 mm
Side - Breadth of webs at mid-throw - Minimum 53 Kg/mm²
If shrunk, radial thickness around eyeholes 257.5 mm. Are dowel pins fitted? no Crankshaft material Journals ditto. Approved ditto.
Webs ditto. Tensile strength ditto.

Diameter of flywheel 2300 mm. Weight 3320 Kg. Are balance weights fitted? No Total weight - Radius of gyration 1,665 mm.
Diameter of flywheel shaft - Material - Minimum approved tensile strength -
Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Fly wheel bolted to thrustshaft

46
25/1/60

Lloyd's Register Foundation
612585-612590

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/mm²
 Shaft separate or integral with crank ~~or wheel~~ shaft? integral with crank shaft Diameter of intermediate shaft 458 mm Material O.H. Steel
 Minimum approved tensile strength 45 kg/mm² Diameter of screwshaft cone at large end 535 mm Dia. Is screwshaft fitted with a continuous liner? Yes
Reduced to 485mm Dia. at coupling
 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 bearings 27mm Thickness between bearings 20mm Material of screw/tube shaft O.H. Steel Minimum approved tensile strength 45
 Is an approved oil gland fitted? If so, state type 1 Length of bearing next to and supporting propeller 2350mm
 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 6,100mm Pitch 4,080mm Built up or solid Solid Total developed surface 14.613m²
 No. of blades 4 Blade thickness at top of root fillet 284.3mm Blade material Manganese Bronze Moment of inertia of dry propeller 34.45 x 10⁶
 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 Can they be declutched?

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) Main..Two(2)-270M³/H x 30kg/cm²
Port, Inboard and Outboard, Low Flat, -YKA M-5626. Emer...One(1)-10.5M³/H x 30kg/cm²-Diesel Engine-Port, Fore,

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main..Two(2)12M³/x 30kg/cm²-Starboard
After Boiler Flat-YKA YAR-134-A,B; Aux...One(1) 300L. x 30kg/cm²-Port, Fore, Low Flat - YKA YAR-136
by Hand Starting Diesel Engine
 How are receivers first charged? Driven Air Compressors 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 1

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure One(1) Diesel Oil Settling Tank, Two(2) Oil Service Tank - Boiler Flat, Starboard Fwd. One (1) Fuel Oil Drain Tank - Low Flat, Starboard, Fwd.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose)



Port Low Flat Motor Driven

x

x

x

Feed & Brine Pump for Evap.
Starboard, Low Flat, Motor Driven

x

x

Fuel Oil Service Pump, Port
Boiler Flat, Motor Driven

x

Fuel Oil Booster Pump, Port
Boiler Flat, Motor Driven

x

x

aux. engine room

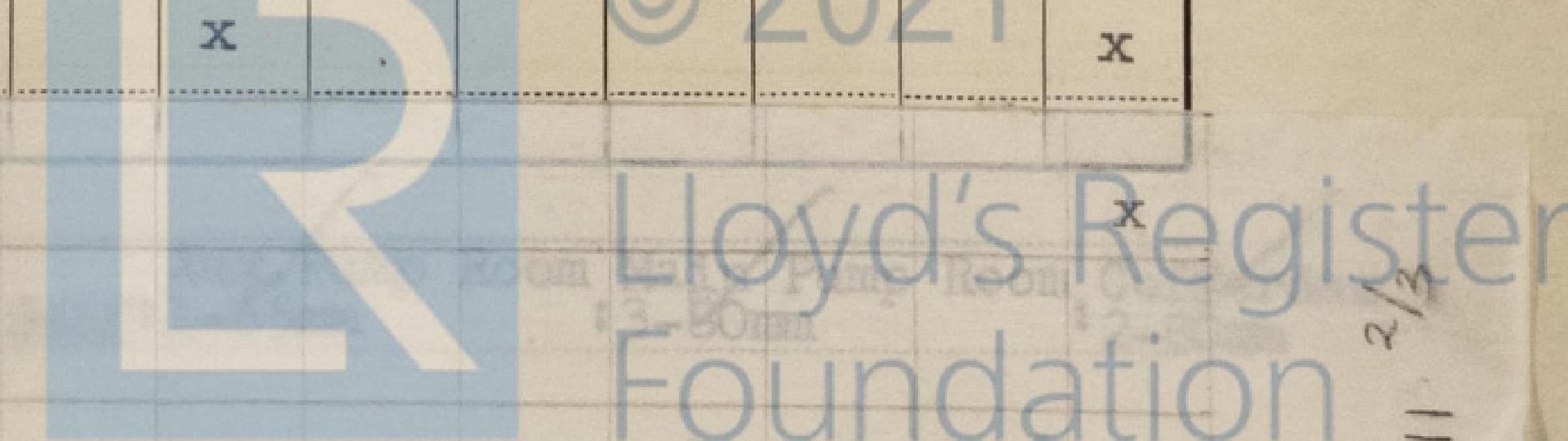
Size and position of direct bilge suction in machinery spaces.

100mm - Starboard Fwd

Size and position of emergency bilge suction

260mm

Starboard Fwd



2/3

0111

100mm - PORT A/C

19 DEC 1959

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	Boiler Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lib. Oil	Piston Cooling	Over Board
Bilge Pump, Starboard Low Flat Motor Driven, 30m ³ /Hr x 20m	X					X										X
General Service Pump, Stbd. Low Flat (Bilge/Ballast/Fire) Steam (Worthington) Driven 85 m ³ /Hr x 70 m x 180 x 120		X	X			X			X			X				X
Butterworth Pump, Stbd. Low Flat, Steam (Worthington) Driven 150 m ³ /Hr x 120 m x 180 x 120		X	X			X			X			X				X
Sea Water Cooling Pump, Stbd. Low Flat Motor Driven, 480m ³ /Hr x 20m (Emerg.)		X				X			X							X
Diesel Oil Transfer Pump, Stbd. Low Flat, Steam (Worthington) Driven				X								X				
Fuel Oil Transfer Pump, Stbd. Low Flat, Steam (Worthington) Driven				X								X				
Aux. Circulating Pump Stbd. Low Flat, Steam (Recipro Eng.) Driven						X			X							X
Fresh Water Cooling Pump, Stbd. Low Flat, Motor Driven				X							X					X
Aux. Fresh & Sea Water Cooling Pump Starboard Low Flat, Motor Driven				X	X				X	X					X	X
Feed Water Pump, Starboard Low Flat, Steam (Weirs) Driven							X		X							
Lubricating Oil Pump Starboard								X							X	

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room
 Main Locker Void Space: Steering Gear Flat Emerg. Fire Pump Room Aux. Pump Room Main Pump Room Cofferdam
 50mm Water Ejector: 2-50mm 3-50mm Scupper with Self-Closing Valve 1-50mm Scupper with Self-Closing Valve 1-65mm 3-80mm 2-80mm
 No. and size connected to main bilge line in main engine room 3-100mm, 1-80mm, 7-50mm In tunnel
 In aux. engine room - Size and position of direct bilge suction in machinery spaces 160mm - Port Aft
 100mm - Starboard Fwd. Size and position of emergency bilge suction in machinery spaces 260mm - Starboard 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 petroleum in bulk, ~~as per the Rules~~ (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)
Port Inboard and Outboard Low Flat	4 SCSEA Diesel Engine	Mitsubishi Nippon Heavy Industries Ltd., Tokyo	Rpt. No. YKA Cert. No. M-5706	Main Generators (300 kw x 2) Main Air Compressors
Port, Aft, Low Flat	"	Yanmar Diesel Engine Co., Ltd. Amagasaki	Rpt. No. KOB Cert. No. C-58279	Aux. Generator (70 KW x 1)
Port, Fwd. Low Flat	"	"	Rpt. No. Cert. No. M-58028	Emerg. Air Compressor
Starboard Fwd. Low Flat	Steam Reciprocating Engine	Fukushima Seisakusho Ltd. Fukushima	YKA Cert. No. M-5909 KOB Cert. No. F-57911	Aux. Circulating Pump

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 One, 180 KW Is an electric generator driven by Main Engine? No
 STEAM INSTALLATION. No. of boilers burning oil fuel 2 W.P. 22 kg/cm² Type 2 Drum Type marine water tube boiler with water wall
 Position Port and Starboard, Aft, Boiler Flat in Machinery Space
 Economiser
 Is a superheater fitted? No Are these boilers also heated by exhaust gas? No No. of boilers heated by exhaust gas only? 1 W.P. 27.5 kg/cm²
 Type Multi Water Tube with Header Position Boat Deck Level, Aft, Stbd. in Machinery Space 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? As Economiser Port and No. of report on donkey
 Material Yokohama Rpt. No. 3040C 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? O.H. Steel For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes No. of oil burning pressure
 No. of steam condensers 1 No. of Evaporators 1

GEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) One (1) Set Janney's (DL-57) Type with two (2) 35 HP Electric Motors & Pumps

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements steam smothering; 1-45 litre portable froth type extinguisher in boiler room, 24-9 litre portable froth type fire extinguishers, 4 lengths of canvas hose with jet/spray nozzles, 2 x 0.08 cub. m. sand boxes with scoops; O.F. suction valves fitted with extension spindles to deck; O.F. unit, O.F. er pump & vent fans capable of being stopped from outside machinery space, E.R. sky lights capable of being closed from outside space; compression ignition oil engine driven emergency fire pump
 Has all the machinery been tried under full working conditions and found satisfactory? Yes Date and duration of full sea trials of main engines 23-9-59 8 hr. 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).

W. Asamura
 VICE DIRECTOR
 NKK TSURUMI SHIDYARD
 YOKOHAMA, JAPAN

M. Isagai
 YOKOHAMA SHIPYARD & ENGINE WORKS,
 MITSUBISHI NIPPON HEAVY-INDUSTRIES, LTD.

© 2021
 Lloyd's Register
 Foundation

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 material 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.

This engine has been constructed under the supervision of the Society's Surveyors in accordance with the Rules, approved plans and Secretary's letters.

The Quality of workmanship and materials have been found satisfactory.

The Engine was examined under full working condition in the shop and found satisfactory.

The machinery of this vessel has been satisfactorily installed in the vessel and tried under full working condition.

Crank case explosion devices fitted as per plan in accordance with Cir. No.2045.

It is submitted the machinery of this vessel is eligible to be classed with this Society with the notation of **+** LMC 9,59, ABS 9,59 and TSCL 9,59.

[Signature]
 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 rod: YKA-Y11947-A, B, C, D, Y11948-A, B, C, Y11950-C, Y13147-A, C. (Spare),
 Connecting rod: YKA-Y13083-A, B, C, D, E, F, G, H, J. RRH. 23-1-59
 Tie rod : KOB-KF2717-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22. EI 30-3-59

CRANKSHAFT ~~XXXXXXXXXX~~ YKA-Y13094. S.T. 18-2-59

FLYWHEEL SHAFT

THRUSTSHAFT Integral with crank shaft.

GEARING

INTERMEDIATE SHAFTS 2 YKA - No. Y-13118 S.T. 31-3-59 YKA - No. Y-13119 S.T. 31-3-59

SCREW AND TYPE SHAFTS KOB - No. KT-FL339 E.I. 14-5-59

PROPELLERS SMK No. 6856 KOI 18-5-59

OTHER IMPORTANT ITEMS

Crossheads:- M33YF 888, 889, 890, 891 M34YF 50, 52, 186 Y-14057-A, B.
 YKA J.W. 27-5-59 R.T. 8-4-59
 J.W. 27-5-59 YKA

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

Date of approval of plans for crankshaft 9-6-1959 Straight shafting 15-12-58 Gearing - Clutch -

Separate oil fuel tanks 21-10-59 Pumping arrangements 7-1-59, 20-4-59 Oil fuel arrangements 17-2-59, 20-1-59, 21-1-59

Cargo oil pumping arrangements 15-12-58 Air receivers 26-1-59 Aux. Donkey boilers 17-3-59

Dates of examination of principal parts:-

Fitting of stern tube - Fitting of propeller 11-6-59 Completion of sea connections 19-6-59 Alignment of crankshaft in main bearings 24-7-59

Engine checks & bolts 24-7-59 Alignment of gearing - Alignment of straight shafting 24-7-59 Testing of pumping arrangements 23-9-59

Oil fuel lines 8-8-59 Aux. Donkey boiler supports 4-9-59 Steering machinery 23-9-59 Windlass 22-9-59

Date of Committee FRIDAY 29 JAN 1960

Decision See Rpt. 1 Special Survey Fee ...

CONSTRUCTION ¥ 612,250- charges
 INSTALLATION ¥ 318,750- ✓
 Expenses ... 15,000-
 AIR RECEIVERS etc 64,000-

Date when A/c rendered DEC. 7, 1959

