

to be forwarded and a LRpt. 4b

only tested under

ED:-

be No 57295

be No 57297

Attached List)

30mm dia with

Date of writing report 3rd March, 1959. Received London 3 JUL 1959 Port KOBE No. FE-6491  
Survey held at Osaka & Mukaishima, Japan No. of visits 26 In shops 26 First date 2nd Oct., 1958 Last date 16th Feb., 1959.  
On vessel 30

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Steel Single Screw Motor Fishing Boat "DNEPR" Gross tons 497.10  
Owners V.O. Sudoimport, Moscow, U.S.S.R. Managers Hitachi Shipbuilding & Eng., Co., Ltd. Mukaishima Shipyard Port of Registry Vladivostok  
Hull built at Mukaishima, Japan By Hitachi S.B. & Eng., Co., Ltd. Sakurajima Shipyard Yard No. 3872 When 1959-4  
Main Engines made at Osaka, Japan By Hitachi S.B. & Eng., Co., Ltd. Sakurajima Shipyard Eng. No. 2086 When 1959-Feb.  
Gearing made at Domestic Innoshima, Japan By Hitachi S.B. & E. Co., Ltd. Innoshima Shipyard Blr. Nos. 251 When 1959-1  
Machinery installed at Mukaishima, Japan By Hitachi Shipbuilding & Engineering Co., Ltd. Mukaishima Shipyard When 1959-4

Particulars of restricted service of ship, if limited for classification Fishing purpose  
Particulars of vegetable or similar cargo oil notation, if required -  
Is ship to be classed for navigation in ice? Yes 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 NH3 Direct expansion  
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 Direct connected Oil Engine

MAIN RECIPROCATING ENGINES. Licence Name and Type No. 1, B. & W. D.E-728-VBF-50

No. of cylinders per engine 7 Dia. of cylinders 280mm stroke(s) 500mm 2 or 4 stroke cycle 2 Single or double acting Single

Maximum approved BHP per engine 1210 at 360 RPM of engine and 360 RPM of propeller.

Corresponding MIP 8 kg/cm2 (For DA engines give MIP top & bottom) Maximum cylinder pressure 55 kg/cm2 Machinery numeral 242

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? Valves 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

If a stand-by or emergency pump or blower is fitted, state how driven - No. of scavenge air coolers 2 Scavenge air pressure at full power 0.42 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 2 Inlet - Exhaust 1 Starting 1 Safety 1

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

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

Is the rod fitted with a sleeve? - Is welded construction employed for: Bedplate? No Frames? No Entablature? No Is the crankcase separated from the underside of pistons? No Is the engine of crosshead or trunk piston type? Trunk Total internal volume of crankcase 4.3 M3 No. and total area of explosion relief devices 7. 714.2 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? to a built-up seating 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? 5 hours

CRANK & FLYWHEEL SHAFTING: Date of approval of torsional vibration characteristics of the propelling machinery system 23-1-59 State barred speed range(s), if imposed Calculated

for working propeller 130-157RPM For spare propeller 130-157RPM 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) 352mm 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 200mm Diameter of crankpins 200mm Breadth of webs at mid-throw 338mm Axial thickness of webs 120mm

If shrunk, radial thickness around eyeholes 90mm Are dowel pins fitted? No Crankshaft material Journals Cast Steel Minimum 44 kg/mm2 Approved 44 kg/mm2

Webs Cast Steel Tensile strength 44 kg/mm2

Diameter of flywheel 1086mm Weight 660 kgs Are balance weights fitted? Yes Total weight 340 kgs Radius of gyration 321mm

Diameter of flywheel shaft 200mm Material Forged Steel Minimum approved tensile strength 44 kg/mm2

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

653 F.W. 37-21

2,14,15,19

13,21,22,

of Visits 64



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 ..... 200mm Material Forged Steel Minimum approved tensile strength ..... 44 kg/mm<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? Integral with wheel shaft Diameter of intermediate shaft ..... 180 mm Material F.S.

Minimum approved tensile strength ..... 44kg/mm<sup>2</sup> Diameter of screwshaft cone at large end ..... 175 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 ..... 15 mm Thickness between bearings ..... 13.5 mm Material of screw/tube shaft F.S. Minimum approved tensile strength ..... 44kg/mm<sup>2</sup>

Is an approved oil gland fitted? No If so, state type ..... Length of bearing next to and supporting propeller ..... 822 mm

Material of bearing ..... Cast Iron Stern Tube Bronze Bush with Innomine Seal Rings 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 ..... 2,000 mm Pitch ..... 1,375 mm Built up or solid Solid Total developed surface ..... 1.7136 M<sup>2</sup>

No. of blades ..... 4 Blade thickness at top of root fillet ..... 80.2 mm Blade material Bronze Moment of inertia of dry propeller ..... 5.562x10<sup>6</sup> kg-cm<sup>2</sup>

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 Bronze Moment of inertia ..... 5.562x10<sup>6</sup> kg-cm<sup>2</sup>

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)

1-Main Compressor: 0.8M<sup>3</sup>/Min. Electric Motor Driven Port Side Inboard in Eng. Room Kob Cert.No.M-54503

1-Aux. Compressor: 0.173M<sup>3</sup>/Min. Diesel Eng. Driven Port Outboard in Eng. Room Kob Cert.No.M-54502

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

2-Main, @750L. Port & Starboard Fwd. in Eng. Room under Upp.Dk. 1-Aux. 150L. Starboard Outboard Fwd.in Eng.Rm.under Upp

How are receivers first charged? Diesel Eng. Driven Aux.Compressor Maximum working pressure of starting air system ..... 25 kg/cm<sup>2</sup> 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 One No. of main engine lubricating oil coolers One for F. Valve Cooling Oil.

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure All in Engine Room.

1-Kerosene Tank: Port Outboard Fwd. 2-D.O. Service Tanks: Port Fwd. & Aft on Upper Deck

1-D. Oil Tank for Boiler: Starboard Aft on Upper Deck 1-D.O. Settling Tank: Starboard Aft on Upper Deck

1-Drain Tank: Starboard Aft

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) 1-Bilge pump, 1-Sanitary pump, 1-L.O.pump, 1-F.O. primary pump.

INDEPENDENT PUMPS  Name below essential pumps, state position and how driven. Give capacity of bilge pumps.  All in engine room.	Service for which each pump is connected to be marked thus X															
	SUCTION									DELIVERY						
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cool- ing	Sea	Feed Tanks	Lub. Oil		Boiler Feed	Salt Water Cool- ing	Fresh Water Cool- ing	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cool- ing
F.W. Cooling Pump Std.Inboard E.Motor Driven					X							X				
F.W. Port Service Cooling Pump Std.Outboard E.Motor Driven					X							X				
S.W. Cooling Pump Std.Inboard E.Motor Driven						X					X					
Fire & Reserve Cooling Pump Std.Inboard Fwd. E.Motor Driven					X	X					X	X		X		
Sprinkling & Live Bait Tanks Circulating Pump			X		X	X					X	X		X		
Port Fwd. E.Motor Driven Do.			X	X		X					X			X		
Port Aft. 150M <sup>3</sup> /H x 13M																
F.O. Transfer Pump Pt.Inboard Aft E.Motor Driven				X									X			
Feed Pump Std. Aft Steam Driven							X			X						
G.S. & Sanitary Pump 60M <sup>3</sup> /Hx15M Port Inboard E.Motor Driven	X	X	X			X								X		
Reserve L.O. Pump Std.Inboard Aft E.Motor Driven								X							X	
L.O. Transfer Pump Port Aft E.Motor Driven								X							X	
									</							

BILGE SUCTIONS. No. and size in each hold, ~~lock~~ Chain Locker; 1-50mm Store; 2-50mm Aft.Fish Hold; 2-50mm Std.Fwd.Precooling Tank; 1-50mm Pt.Fwd.Precooling T.; 1-50mm Std.Aft P.C. T.; 2-50mm Live Bait T.; 1-50mm Fish Finder Room; 1-50mm

No. and size connected to main bilge line in main engine room 3- 50 mm In tunnel -

Ref.Machy. 2- 50 mm Size and position of direct bilge suction in machinery spaces 1- 40 mm

In ~~the~~ engine room Port inboard fwd. Size and position of emergency bilge suction in machinery spaces 1- 160mm Port side forward

Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? Yes Do the piping arrangements comply with the Rules including special requirements for ships carrying petroleum ~~in bulk~~ or classed for navigation in ice? (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)
Std. Fwd. in Eng. Room	4S.C.S.A. Hitachi B&W Diesel Engine	Hitachi S.B. & E. Co., Ltd. Innoshima Shipyard	Kobe Cert.No.0-30122	75K.W.D.C. Compound Generator
Pt. Fwd. in Eng. Room	do	do	Kobe Cert.No.0-30123	do
Pt.Outboard in Eng.Room	4S.C.S.A. Diesel Engine	Showa Seiki Kogyo K.K.	Kobe Cert.No.M-53773	Vertical Single Cylinder 2-Stage 0.173M <sup>3</sup> /Min. 25 kgs/cm <sup>2</sup> Aux. Air Compressor

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 off- 75K.W. Generator Is an electric generator driven by Main Engine? No

domestic W.P. 4 kgs/cm<sup>2</sup> Type Vertical Multitubular Fusion Welded

STEAM INSTALLATION. No. of ~~boilers~~ boilers burning oil fuel Position Engine Room Aft

Is a superheater fitted? No Are these boilers also heated by exhaust gas? No No. of donkey boilers heated by exhaust gas only? None W.P. -

Type - Position - Can the exhaust heated boilers deliver steam directly to domestic Port and No. of report on donkey

the steam range or do they operate only as economisers in conjunction with oil fired boilers? Cert.No.M-30043

boilers Kobe Rpt.5b No Is steam essential for operation of the ship at sea? No Are any steam pipes over 3 ins. bore? None If so, what is their material? For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes No. of oil burning pressure units None No. of steam condensers - No. of Evaporators One

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) One-Unit Electric Hydraulic Heleshaw Type

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 4-Water couplings each with 50mm dia. x 10M canvas hose 5- @ 9 Litre Foam 1-19 Litre Foam 2-@ 0.3M<sup>3</sup> Sand Bin, 40mm Dia.Perforated Steam Smothering 4-Steel Container of 10mm x 1.5M x 2M Felt. Extinguisher, Extinguisher, Extinguisher, Pipe under Boiler.

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 Each 4 Hours, 18 & 21, Apr. 1959 Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) -

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).

K. Sasaki  
Under-Director, Head of Yard  
Hitachi Shipbuilding & Engineering Co., Ltd.  
Innoshima Shipyard.

M. Okamura  
Director, Head of Yard  
Hitachi Shipbuilding & Engineering Co., Ltd.  
Sakurajima Shipyard

Builder'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 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 Special Survey in accordance with the Rules, approved plans and Secretary's letters.

The material and workmanship are sound and good.

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

The Engine is eligible in our opinion to have record of +LMC with date when satisfactorily installed in the vessel.

The above described machinery has been installed on the vessel at Mukaishima in a proper manner found satisfactory when tested at sea under full working conditions and eligible in our opinion for classification with the records of +LMC 4,59 Domestic Boiler Survey 4,59, TS(CL) 4,59, +Lloyd's RMC 4,59 and to have the notation "Strengthened for Navigation in Ice".

The torsional vibration characteristics of the main propulsion machinery were verified by torsion taken during sea trial and confirmed that rough running was observed between approx. 135 and 160 r.p.m.

It is recommended that the main engine not to be run continuously between 135 and 160 r.p.m.

*F.A. Macfarlane & J. Haseguchi*  
Engine Surveyor to Lloyd's Register of Shipping  
F.A. Macfarlane & M. Hayashi

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 KOB No.HC-F823 1, 2 & 4 FM LR 22-12-58  
LLOYD'S KOB No.HC-F827 2 & 6 FM LR 23-12-58

CRANKSHAFT ~~OR PROPELLER SHAFT~~ LLOYD'S KOB No.KT-CK 391 PM EI LR 25-11-58

~~PROPELLER SHAFT~~

THRUSTSHAFT LLOYD'S KOB No.HC-F822 EI LR 25-11-58

~~SEATING~~

INTERMEDIATE SHAFTS LLOYD'S KOB No.HCF-844 SH LR 16-3-59

Working; LLOYD'S KOB No.HCF-845 SH LR 23-1-59  
SCREW ~~AND TURN~~ SHAFTS Spare; LLOYD'S KOB No.HCF-846 SH LR 16-3-59

Working; LLOYD'S KOB No.N-BC-1346 KT LR 19-1-59  
PROPELLERS Spare; LLOYD'S KOB No.30154 SH LR 16-3-59

OTHER IMPORTANT ITEMS Gudgeon pin: LLOYD'S KOB No.K-F 2650-1, 7, 8 & 9 FM LR 22-12-58  
LLOYD'S KOB No.K-T-2651-1, 6, 7 & 9 FM LR 22-12-58

Piston head:- LLOYD'S KOB No.HC-C763-1, 3 & 8 768-4 & 6 WTP 83 KG, OTP 4 KG FM LR 18-12-58  
LLOYD'S KOB No.HC-C768-7 & 8 WTP 83 KG, OTP 4 KG FM LR 19-12-58

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

Date of approval of plans for crankshaft 22-9-58 Straight shafting 20-11-58 Gearing - Clutch -

Separate oil fuel tanks KOB 19-12-58 Pumping arrangements 20-11-58 Oil fuel arrangements 20-11-58

Cargo oil pumping arrangements - Air receivers KOB 27-9-58, 7-10-58 Room Heating KOB 7-10-58

Dates of examination of principal parts:-

Fitting of stern tube 20-1-59 Fitting of propeller 24-1-59 Completion of sea connections 22-1-59 Alignment of crankshaft in main bearings 9-3-59

Engine chocks & bolts 5-3-59 Alignment of gearing - Alignment of straight shafting 16-3-59 Testing of pumping arrangements 14-

Oil fuel lines 16-4-59 Domestic boiler supports 28-2-59 Steering machinery 2-4-59 Windlass 13-4-59

Date of Committee. FRIDAY 24 JUL 1959

Decision See Rpt. 1.

CONSTRUCTION: £161,600.- (CAL)

INSTALLATION: £88,200.- (CAL)

7,188.- (NEW)

£97,388.-

Expenses ... 12,330.-

Date when A/c rendered MAR 16 1959 (CON)

