

Rpt. 4b

Date of writing report 20-9-1960 Received London 15 Port Shimonoseki No. FE-1645
 Survey held at Hiroshima, Japan No. of visits 29 First date 10-1-60 Last date 31-8-60

-9. DEC. 1960

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name M.V. "AUNG TEZA" Gross tons 999.37 T.
 Owners Union of Burma Shipping Board Managers Ujina Shipbuilding Co., Ltd. Port of Registry Rangoon
 Hull built at Hiroshima, Japan By Hitachi Shipbuilding & Engineering Co., Ltd. Yard No. 351 Year 1960 Month 8
 Main Engines made at Osaka, Japan By Hitachi Shipbuilding & Engineering Co., Ltd. Eng. No. 2130 When 1960-3
 Gearing made at --- By --- Blr. Nos. --- When ---
 Donkey boilers made at --- By --- Blr. Nos. --- When ---
 Machinery installed at Hiroshima, Japan By Ujina Shipbuilding Co., Ltd. When 1960-8

Particulars of restricted service of ship, if limited for classification

Particulars of vegetable or similar cargo oil notation, if 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? No Type of refrigerant Hitachi FVV4. CW Type
 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 1 No. of propellers 1 Brief description of propulsion system Hitachi B & W Alpha, Single-Acting Two Stroke Cycle.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. Burmeister & Wain Alpha 497R

No. of cylinders per engine 7 Dia. of cylinders 290 mm stroke(s) 490 mm 2 or 4 stroke cycle 2 Single or double acting Single

Maximum approved BHP per engine 840 at 310 RPM of engine and 310 RPM of propeller.

Corresponding MIP --- (For DA engines give MIP top & bottom) Maximum cylinder pressure --- Machinery numeral 168

Are the cylinders arranged in Vee or other special formation? --- If so, number of crankshafts per engine ---

TWO STROKE ENGINES. Is the engine of opposed piston type? --- 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? --- No. and type of mechanically driven scavenge pumps or blowers per engine and how driven ---

No. of exhaust gas driven scavenge blowers per engine --- 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 None No. of scavenge air coolers --- Scavenge air pressure at full power --- Are scavenge manifold explosion relief valves fitted? ---

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 --- Inlet --- Exhaust --- Starting --- Safety ---

Material of cylinder covers --- Material of piston crowns --- Is the engine equipped to operate on heavy fuel oil? ---

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

Is the rod fitted with a sleeve? --- Is welded construction employed for: Bedplate? --- Frames? --- Entablature? --- Is the crankcase separated from the underside of pistons? --- Is the engine of crosshead or trunk piston type? --- Total internal volume of crankcase --- No. and total area of explosion relief devices ---

Are flame guards or traps fitted to relief devices? --- Is the crankcase readily accessible? --- 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? Built-up seating How is the engine started? ---

Can the engine be directly reversed? --- 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 1-3-60 London State barred speed range(s), if imposed 10-3-60 Kobe

for working propeller 235-265 r.p.m. For spare propeller None Is a governor fitted? --- Is a torsional vibration damper or detuner fitted to the shafting? ---

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

Distance between inner edges of bearings in way of crank(s) --- Distance between centre lines of side cranks or eccentrics of opposed piston engines ---

Crankshaft type: Built, semi-built, solid. (State which) ---

Diameter of journals --- Diameter of crankpins --- Breadth of webs at mid-throw --- Axial thickness of webs ---

If shrunk, radial thickness around eyeholes --- Are dowel pins fitted? --- Crankshaft material Journals --- Pins --- Minimum ---

Webbs --- Tensile strength ---

Diameter of flywheel --- Weight --- Are balance weights fitted? --- Total weight --- Radius of gyration ---

Diameter of flywheel shaft --- Material --- Minimum approved tensile strength ---

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

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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 --- 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 190mm Material Steel Forging Minimum approved tensile strength 34.1 T/in²

Shaft separate or integral with crank or wheel shaft? Seperate Diameter of intermediate shaft 137mm Material Steel Forging

Minimum approved tensile strength 28 T/in² Diameter of screwshaft cone at large end 166mm 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 screwshaft liner at bearings 15mm Thickness between bearings 12mm Material of screwshaft Steel Forging Minimum approved tensile strength 28 T/in²

Is an approved oil gland fitted? No If so, state type --- Length of bearing next to and supporting propeller 775mm

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 2,000mm Pitch 1,360mm Built up or solid Solid Total developed surface 1.4872 M²

No. of blades 4 Blade thickness at top of root fillet 93.2mm Blade material Manganese Brass Moment of inertia of dry propeller 1,200.46 kg

If propeller is of special design, state type --- No Is propeller of reversible pitch type? No If so, is it of approved design? ---

State method of control --- Material of spare propeller None 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 sets, 37 M³/H Driven by Diesel

Dynamo Eng. Port & Stabd forward on Eng. Room floor plate KOBE, Cert. NO. M63180

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) Main, 2 sets 700 each Port Aft of Eng & 1 in steering room

Room Cert. NO. KOBE AR62655 Aux. 3 sets 45 each Port & Stabd Fwd of E.R. / Cert. NO. KOBE AR62655

How are receivers first charged? Small Hand Comp. Maximum working pressure of starting air system 25 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 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 at main deck level in E.R.

Fwd Center Port & Stabd 800 each.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One- sea water pump, One-bilge pump, One-Lub. Oil pump, One-fuel oil service pump, and One-scavenging air pump. Belt driven F.O. transfer 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	F.W. Tanks	Lub. Oil Tank	Boiler Feed	Salt Water Cooling
F.W. Sanitary (1) Port, Fwd Elect.							X			
F.O. Transfer P. (1) Port, Fwd, Elect.				X						X
Lub. O. Transfer P. (1) Port, Fwd, Elect.							X			X
Fire G.S. P. (1) Stbd. Aft 35M ³ /H Elect.	X				X				X	X
Bilge P. (1) Stbd. Aft 35M ³ /H Elect.	X	X	X		X				X	X
Eng. Cooling FW P. (1) Stbd. Mid. Elect.					X		X		Aux. X	
S.W. Sanitary P. (1) Stbd. Mid. Elect.					X					
Emergency Fire P. Driven by Diesel Eng. Steering Eng. Room Stbd.					X					X
Port & Stbd. Fwd (Main Deck) (Steering Eng. R.)										
Stbd. Fwd (Main Deck) (Steering Eng. R.)										

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room No. 1 Hold 4x2 1/2", No. 2 Hold 3x2 1/2", Freezing Chamber 2x2 1/2"

No. and size connected to main bilge line in main engine room Engine Room 6x2 1/2" In tunnel 2x2 1/2"

In aux. engine room --- Size and position of direct bilge suction in machinery spaces 1x2 1/2" E.R. P.

Size and position of emergency bilge suction in machinery spaces 1x2 1/2" Stbd. Aft of E.R. (Fire & G.S. P.)

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, cargo oil or classed for navigation in ice? (strike out words not applicable) No

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 & Stbd. (Engine Room)	Diesel	Yanmar Diesel Co. Ltd.	KOBE NO. 0-63949	20KW Generator & 37M ³ /H Air Comp.
Port Fwd (Main Deck) (Steering Eng. R.)	Diesel	Yanmar Diesel Co. Ltd.	KOBE NO. 0-63950	9KW
Stbd. Fwd (Main Deck) (Steering Eng. R.)	Diesel	Yanmar Diesel Co. Ltd.	KOBE NO. 0-63948	Aux. Generator
			Mfg. NO. 002038	0.25M ³ /H Emergency Fire 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. 1 Generator 15 KW Is an electric generator driven by Main Engine? No

STEAM INSTALLATION. No. of donkey boilers burning oil fuel None W.P. --- Type ---

Position ---

Is a superheater fitted? --- Are these boilers also heated by exhaust gas? --- No. of donkey boilers heated by exhaust gas only? --- W.P. ---

Type --- Position --- 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? --- Port and No. of report on donkey boilers ---

Is steam essential for operation of the ship at sea? --- 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? --- No. of oil burning pressure units --- No. of steam condensers None No. of Evaporators None

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars) Manual Hydraulic Type (1) with emergency hand operated pump.

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Hydrant 2x2 1/2" with 2 horses 2 spray nozzles

Nomi Type CO2 Fire Extinguisher capable being carry nozzle all round E.R.

Has the spare gear required by the Rules been supplied? Yes 3 hours 4-8-60

power sea trials of main engines 4 hours 5-8-60 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).

Director, Ujina Shipbuilding Co., Ltd.

Lloyd's Register Foundation

9 DEC 1960

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 above described machinery has been installed on the vessel at Ujina, Hiroshima in a proper manner and found satisfactory when tested at sea under full working conditions and eligible in our opinion for classification with the records of LMC 8,60, TS(CL) 8,60.

The torsional vibration characteristics of the main propulsion machinery were verified by torsigraph taken during seatrial and confirmed that rough running was observed between approx. 235 and 265 r.p.m.

It is recommended that the main engine not to be run continuously between 235 and 265 r.p.m.

H. Okada 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

CRANKSHAFT OR ROTOR SHAFT

FLYWHEEL SHAFT

THRUST SHAFT

GEARING

INTERMEDIATE SHAFTS

SCREW AND SHAFTS

PROPELLERS

OTHER IMPORTANT ITEMS

LLOYD'S SMK YKA NO. Y-15497-E -Koi 2-6-60
" " " " Y-15497-B
" " " " Y-15497-C
" " " " Y-15497-D
LLOYD'S KOB NO. 01-F1028 022-66A
C-33 LLOYD'S KOB 30-1-60

Is the installation a duplicate of a previous case? No If so, state name of vessel
Date of approval of plans for crankshaft Dec. -12-1959 Straight shafting Jun. -2-1960 Gearing - Clutch -
Separate oil fuel tanks Jun. -27-1960 Pumping arrangements May-7-1960 Oil fuel arrangements May-7-1960
See Kobe Rpt. Main - Feb. 11-1960
Cargo oil pumping arrangements Air receivers Aux. - Mar. 28-1960 Donkey boilers -
Dates of examination of principal parts:-
Fitting of stern tube May-10-1960 Fitting of propeller May-12-1960 Completion of sea connections Apr. -14-1960 Alignment of crankshaft in main bearings -
Engine checks & bolts Jun-20-1960 Alignment of gearing - Alignment of straight shafting July-1-1960 Testing of pumping arrangements Aug-4-1960
Oil fuel lines July-27-1960 Donkey boiler supports - Steering machinery Aug-5-1960 Windlass Aug-5-1960
Date of Committee FRIDAY 10 FEB 1961
Decision See Rpt. 1. Special Survey Fee Installation of Machinery ¥67,500
Expenses 89,600



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