

Rpt. 4b  
 Date of writing report 28/14  
 RECD. Survey held at 3/5  
 RECD. 326/4  
 DEP

6th Feb., 1961  
 Received London 74  
 In shops 47  
 On vessel 27  
 Port KOBE  
 26th July, 1960  
 16th May, 1960  
 First date 10th Nov., 1960  
 Last date 17th February, 1961  
 No. 8689  
 31st Jan., 1961 (INNOSHIMA)  
 12th Dec., 1960

# FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. \_\_\_\_\_ Name m.v. "M.H. THAMRIN" Gross tons \_\_\_\_\_  
 Owners Diakarta Lloyd N.V. (Indonesia) Managers \_\_\_\_\_ Port of Registry Djakarta  
 Hull built at Innoshima, Japan By Hitachi Shipbuilding & Eng. Co., Ltd. Yard No. 3902 ✓ Year 1961 Month 2  
 Main Engines made at Kobe, Japan By Kawasaki Dockyard Co., Ltd. Eng. No. 6079 ✓ When 1960 12  
 Gearing made at \_\_\_\_\_ By \_\_\_\_\_ Gear No. \_\_\_\_\_ When \_\_\_\_\_  
 Aux./donkey boilers made at Osaka, Japan By Hirano Iron Works Co., Ltd. Bir. Nos. H 1303 When 1960 10  
 Machinery installed at Innoshima, Japan By Hitachi S.B. & Eng. Co., Ltd., Innoshima Shipyard When 1961 1

Particulars of restricted service of ship, if limited for classification Oceangoing  
 Particulars of vegetable or similar cargo oil notation, if required None  
 If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3 No Is ship an oil tanker? No  
 Is refrigerating machinery fitted? Yes If so, is it for cargo purposes? No Type of refrigerant Freon 12 direct expansion  
 Is the refrigerating machinery compartment isolated from the propelling machinery space? No 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 should 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 all other relevant particulars must be given and the port and report number should be stated.

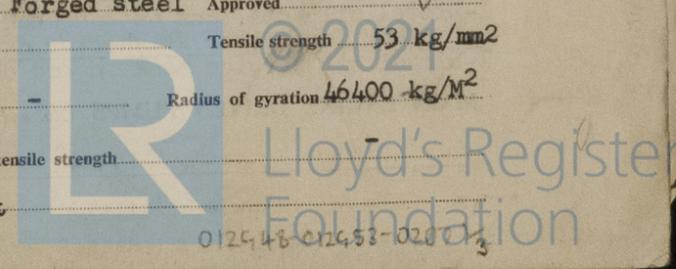
No. of main engines 1 No. of propellers 1 Brief description of propulsion system 1 set of oil engine coupled to one screw shaft  
**MAIN RECIPROCATING ENGINES.** Licence Name and Type No. Kawasaki MAN K7Z 78/140C diesel engine  
 No. of cylinders per engine 7 ✓ Dia. of cylinders 780 mm ✓ stroke(s) 1400 mm ✓ 2 or 4 stroke cycle 2 ✓ Single or double acting Single ✓  
 Maximum BHP per engine approved for this installation 8,950 ✓ at 118 ✓ RPM of engine and 118 ✓ RPM of propeller.  
 Corresponding MIP 8.38 kg/cm<sup>2</sup> (For DA engines give MIP top & bottom) Maximum cylinder pressure 60 kg/cm<sup>2</sup> Machinery numeral 1790 ✓

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? Through type ports and type of mechanically driven scavenge pumps or blowers per engine and how driven 7 - reciprocating integral with main piston  
 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 None fitted No. of scavenge air coolers 3 Scavenge air pressure at full power about 0.48 kg/cm<sup>2</sup> Are scavenge manifold explosion relief valves fitted? Yes

**TWO AND FOUR STROKE ENGINES.** Is the engine supercharged? Yes Are the undersides of the pistons arranged as supercharge pumps? Yes No. of exhaust gas driven blowers per engine 2 No. of supercharge air coolers per engine 3 Supercharge air pressure about 0.48 kg/cm<sup>2</sup> Can engine operate without supercharger? Yes  
 No. of valves per cylinder: Fuel 1 Inlet \_\_\_\_\_ Exhaust \_\_\_\_\_ Starting 1 Safety 1 ✓  
 Material of cylinder covers Mo-Cast Steel Material of piston crowns Mo-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? No 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 98 M<sup>3</sup> No. and total area of explosion relief devices 7 - 5810 cm<sup>2</sup> ✓ Are flame guards or traps fitted to relief devices? Yes 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 the tank top How is the engine started? Starting compressed air

Can the engine be reversed? Yes If not, how is reversing obtained? \_\_\_\_\_  
 Has the engine been tested working in the shop? Yes How long at full power? 2 1/2 hours  
**CRANK & FLYWHEEL SHAFTING.** Date of approval of torsional vibration characteristics of the propelling machinery system 22-11-60 ✓ 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 9 Are main bearings of ball or roller type? No Distance between inner edges of bearings in way of crank(s) 1420 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 530 mm ✓ Diameter of crankpins Side \_\_\_\_\_ Breadth of webs at mid-throw 975 mm ✓ Axial thickness of webs 315 mm ✓  
 If shrunk, radial thickness around eyeholes 285 mm ✓ Are dowel pins fitted? No Crankshaft material: Journals } Forged steel ✓ Approved }  
 Webs } Tensile strength 53 kg/mm<sup>2</sup> ✓  
 Diameter of flywheel 2498 mm ✓ Weight 11,950 kg ✓ Are balance weights fitted? No Total weight \_\_\_\_\_ Radius of gyration 46400 kg/M<sup>2</sup> ✓  
 Diameter of flywheel shaft \_\_\_\_\_ Material \_\_\_\_\_ Minimum approved tensile strength \_\_\_\_\_  
 Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) Integral with Crank Shaft

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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. State Port and report No.)

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. Full particulars to be reported on Form 4e.) Port .....

Report No. ....

**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 520 mm Material Forged Steel Minimum approved tensile strength 53 kg/mm<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? Integral with crankshaft Diameter of intermediate shaft 415 mm Material Forged Steel

Minimum approved tensile strength 44 kg/mm<sup>2</sup> Diameter of screwshaft cone at large end 475 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 25 mm Thickness between bearings 24 mm How is the after end of the liner made watertight in the propeller boss? Special endless rubber packing

Material of screw/tube shaft Forged Steel Minimum approved tensile strength 44 kg/mm<sup>2</sup> Is an approved oil gland fitted? No If so, state type .....

Length of bearing next to and supporting propeller 2,000 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.** If of special design, state type ..... No Is it of reversible pitch type? No

If so, is it of approved design? ..... State method of control .....

Propeller	Diameter MM	Pitch MM	Built or solid	Total developed surface SQ.M	No. of blades	Blade thickness at top of root fillet MM	Blade material	Tensile strength Ton/in <sup>2</sup>	Design moment of inertia of propeller (dry) kg-cm-sec <sup>2</sup>	For Class 1 or 2 ice strengthening only			
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius	Rake of blade
Working	5,300	4,980	Solid	10.40	4	226	Mn.Br.	31.6 31.4	149,150				
Spare	5,300	4,980	Solid	10.40	4	226	Mn.Br.	31.3 31.4	149,150				

**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) ..... M67268.

Two - Main - 300 M<sup>3</sup>/H x 30 kg/cm<sup>2</sup>, Motordriven, Port and Starboard, forward on lower floor in E.R.

One - Aux. - 400 M<sup>3</sup>/H x 30 kg/cm<sup>2</sup>, Emergency generator engine driven, in emerg. generator R. on Nav. Bridge Dk.

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) ..... M67443.

Two - Main - 12 M<sup>3</sup> x 30 kg/cm<sup>2</sup>, starboard inboard and outboard on 2nd deck in E.R. Kobe AR-56367

One - Aux. - 0.3 M<sup>3</sup> x 30 kg/cm<sup>2</sup>, port outboard on lower floor in E.R. Kobe AR-66773

Emergency generator engine driven

How are receivers first charged? air compressor Maximum working pressure of starting air system 30 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

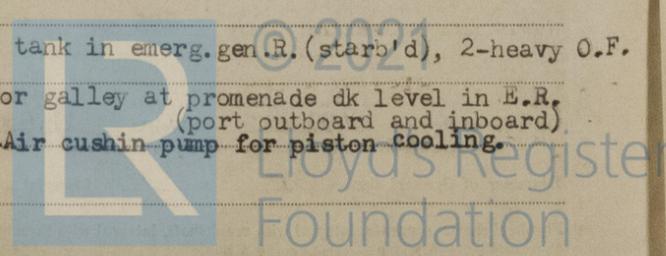
**COOLERS.** No. of main engine fresh water coolers ..... 1 No. of main engine lubricating oil coolers ..... 2

**OIL FUEL TANKS.** No. and position of oil fuel settling or service tanks not forming part of hull structure .....

1-Diesel oil sett. tank on 2nd deck in E.R. (starb'd) 1-Diesel oil service tank in emerg. gen. R. (starb'd), 2-heavy O.F. sett. tank for boiler at shelter dk. level in E.R. (starb'd for'd & aft).

1-Diesel oil service tank on 2nd dk in E.R. (port), 2-O.F. service tank for galley at promenade dk level in E.R. (port outboard and inboard)

**MAIN ENGINE DRIVEN PUMPS** (No. and Purpose) ..... 7-Oil fuel injection pumps, 1-Air cushion pump for piston cooling.



10 APR. '31

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	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil.	Piston Cooling	
Motor driven boiler W. forced air pump Port inb'd & outb'd on 2nd dk. in E.R.								Boiler x							Boiler x	
Motor driven diesel oil transfer pump Starb'd on lower floor in E.R.				x							x					
Motor driven, distilling pump Starb'd on lower floor in E.R.								Distiller x							Feed Tk. x	
Motor driven, brine pump Starb'd on lower floor in E.R.								Evaporator x							Outb'd x	
Motor driven, F.O. supply pumps Port fw'd & aft lower floor in E.R.				x							x					



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Motor driven, fire & G.S. pumps, Port Outb'd & inb'd on lower floor in E.R.	x	x				x							x		x
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Service for which each pump is connected to be marked thus X

INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	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	Over board			
Motor driven F.W. cooling pump Starb'd fw'd & aft on lower floor in E.R.					X						X				X				
Motor driven F.W. cooling pump Starb'd aft on lower floor in E.R.					X						X				X				
Motor driven S.W. cooling pump Starb'd on lower floor in E.R.						X				X						X			
Motor driven F.W. pumps for fuel valve cooling, Port fw'd & aft on lower floor in E.R.					X						X								
Motor driven aux. F.W. cooling pump Starb'd on lower floor in E.R.					X						X				X				
Motor driven, Aux. S.W. cooling pump Starb'd on lower floor in E.R.						X				X									
Motor driven, lub. oil pumps Port fw'd & aft on lower floor in E.R.								X						X					
Motor driven, heavy F.O. transfer pump Starb'd on lower floor in E.R.				X							X								
Motor driven, fire & G.S. pumps, Port Outb'd & inb'd on lower floor in E.R.	X	X	X			X						X				X			
Motor driven, ballast & stand-by cooling S.W. pump Starb'd on lower floor in E.R.		X	X			X				X						X			
Motor driven Emer. bilge & fire pump in shaft tunnel 80/120M <sup>3</sup> /h x 50/30M		X				X						X				X			
Motor driven, bilge pump, port on lower floor in E.R. 10M <sup>3</sup> /h x 5 kg/cm <sup>2</sup>		X											X			X			
Steam driven, feed water pumps Starb'd inboard & outb'd on 2nd dk. in E.R.								X		X									

80mm on PLAN

**BILGE SUCTIONS.** No. and size in each hold, deep tank or pump room 2-50mm dia. in each for Nos. 1, 2, 3, 4 & 5, 1-80mm dia. in each for fw'd deep tank (P.&S.), 1-80mm dia. in each for aft deep tank (P.&S.), 2-50mm dia. in each for Nos. 3 & 4 tween deck (main locker), 1-50mm dia. Bosun Store: 2-50mm dia. on main dk., 2-50mm dia. on shelter deck.

No. and size connected to main bilge line in main engine room 1-50mm dia., 1-50mm dia. In tunnel 2-80mm dia.

In aux. engine room Steering room: 2-50mm dia. Size and position of direct bilge suction in machinery spaces 1-140mm dia. port aft

Size and position of emergency bilge suction in machinery spaces 1-260mm dia. starb'd fw'd

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 oil tankers, ships carrying cargo or classed for navigation in ice Class 1, 2 or 3? 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 Fw'd, Outb'd on lower floor in E.R.	4S.C.S.A. Yokohama	Mitsubishi	Yokohama M-6823	400KVA A.C. Generator	
Port fw'd inb'd on lower floor in E.R.					Nippon Heavy Ind., Yokohama
Port aft on lower floor in E.R.					
Starb'd on nav. bridge deck in emergency generator room	4S.C.S.A. Yokohama	do.	Yokohama M-6831	100KVA A.C. Generator and 40M <sup>3</sup> /H x 30kg/cm <sup>2</sup> 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 One, 400 KVA

Is an electric generator driven by Main Engine? No

**STEAM INSTALLATION.** No. of aux. boilers burning oil fuel 1 W.P. 7 kg/cm<sup>2</sup> Type Vertical Cochran Boiler

Position Forward on 2nd deck in E.R.

Is a superheater fitted? None Are these boilers also heated by exhaust gas? No No. of aux. boilers heated by exhaust gas only 1 W.P. 9.5 kg/cm<sup>2</sup>

Type Forced circulating coil & header Position in funnel 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 economizer Port and No. of report on aux. boilers Kobe FE-8689

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? Steel 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 1 No. of Evaporators 1

**STEERING GEAR.** (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering) 2- Electric hydraulic jamey type (HD-24)

Have the Rule Requirements for fire extinguishing arrangements been complied with? Yes Brief description of arrangements 1-150L portable foam extinguisher 9-@ 9L soda acid extinguisher, 4 sets of 65mm dia. water coupling having Horsereel, 6@ 1.1L portable CO<sub>2</sub> 2-@ 150L sand box and "KDDE" fire extinguishing system (Drawing No. HP-906, date of approval 24-1-61) Extinguisher

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 10th February, 1961 6 hours Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)

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.

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

The above described machinery has been installed on board the m.v. "M.H. THAMRIN" at Innoshima in a proper manner and found satisfactory when tested at sea under full working condition on the 10th February, 1961 and is eligible in our opinion for classification with the records of +LMC 2,61, Aux. Boiler Survey 2,61, (1-Oil Fired, 1-Exhaust Gas Heated Economizer), Tailshaft Survey - Continuous Liner 2,61, Steam Pipe Survey 2,61 and \*Fitted for Oil Fuel\*.

NOTE: Main engine not to be run continuously below 33 r.p.m.

*H. Palumbo*  
*H. H. H. H. H.*  
 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	Connecting Rods	LLOYD'S YKA Y-14850 A - G(7)							
	Piston Rods	LLOYD'S YKA Y 14854 A - G (7)							
CRANKSHAFT OR ROTORSHAFT	Crank Shaft	LLOYD'S KOB KT -CK 431							
FLYWHEEL SHAFT									
THRUSTSHAFT									
GEARING									
INTERMEDIATE SHAFTS		LLOYD'S KOB HC-F1429	LLOYD'S KOB HC-F1428	LLOYD'S KOB HC-F1352	LLOYD'S KOB HC-F 1379	LLOYD'S KOB HC-F1419	LLOYD'S KOB HC-F1420		
SCREW AND <del>THRU</del> SHAFTS	Working:	LLOYD'S KOB HC-F1417		Spare:	LLOYD'S KOB HC-F1418				
PROPELLERS	Working:	LLOYD'S NAG NG-601		Spare:	LLOYD'S NAG NG 605				
OTHER IMPORTANT ITEMS	Crosshead Pins	LLOYD'S KOB KW-F3364-1,2	LLOYD'S KOB KW-F3365-1,2	LLOYD'S KOB KW-F3361-1,3	LLOYD'S KOB KW-F3369				
	Cam shafts	LLOYD'S KOB KW-F3374	LLOYD'S KOB KW-F3375	LLOYD'S KOB KW-F3379					
	Piston Crowns	LLOYD'S KOB M 56401		Coupling bolts & nuts for Intermediate Shaft & Tailshaft					
	Cylinder covers	LLOYD'S KOB M 56389	LLOYD'S KOB M 56411	Working:	LLOYD'S KOB HI-F 1003 & HI-F 1004	Spare:	LLOYD'S KOB HI-F1003 & 1004		
Is the installation a duplicate of a previous case?		No		If so, state name of vessel					
Date of approval of plans for crankshaft		8-8-1960	Straight shafting	8-8-60	Gearing	-	Clutch	-	
Separate oil fuel tanks		17-8-1960, 7-9-1960, 7-12-1960	Pumping arrangements	18-7-1960, 5-10-1960, 24-1-1961	Oil fuel arrangements	24-1-1961			
Cargo oil pumping arrangements		-	Air receivers	28-7-1960	Aux./donkey boilers	16-7-1960			
Dates of examination of principal parts:		1-Crankshaft 20-9-60	4-Connecting Rods 5-8-60	8-Piston Crowns 21-9-60	18-Tie Rods 22-7-60				
Fitting of stern tube		25-11-60	1-Piston rods 11-8-60	3-Connecting Rods 29-11-60	7-Crossheads 21-10-60	Alignment of crankshaft in main bearings	19-1-61		
Engine chocks & bolts		19-1-61	Alignment of gearing	-	Alignment of straight shafting	19-1-61	Testing of pumping arrangements	3-2-61	
Oil fuel lines		12-1-61	Donkey boiler supports	25-1-61	Steering machinery	24-1-61 & 10-2-61	Windlass	10-2-61	

THURSDAY - 1 JUN 1961

Special Survey Fee  
 Construction \$ 525.000 - FEB - 9  
 Installation 290.650.

+ LMC ES  
 TS (CL)  
 ABS  
 SPS } 2.61

Expenses

