

Rpt. 4b

27 APR 1964

Date of writing report 10.4.1964 Received London Hamburg Port Hamburg No. 13516
Survey held at Hamburg No. of visits In shops 10 First date 18.9.63 Last date 23.3.64
On vessel

FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name Double ended twin screw car ferry "SAPELE" Gross tons
Owners Inland Waterway Dept. Nigeria Managers - Port of Registry Lagos/Nigeria
Hull built at Hamburg-Altenwerder By Messrs. R. Meier & Sohn Yard No. 65 Year 1964
Main Engines made at Paticroft By Messrs. Gardner & Sons Eng. No. 140519/140521 When 1963
Gearing made at Paticroft By Messrs. Gardner & Sons Gear No. 15260/1-15264/5 When 1963
Aux./donkey boilers made at none By Blr. Nos. When
Machinery installed at Hamburg-Altenwerder By Messrs. R. Meier & Sohn When 1963

Particulars of restricted service of ship, if limited for classification four screw car ferry on River Niger
Particulars of vegetable or similar cargo oil notation, if required -
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? no If so, is it for cargo purposes? - Type of refrigerant -
Is the refrigerating machinery compartment isolated from the propelling machinery space? - Is the refrigerated cargo installation intended to be classed? -

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.

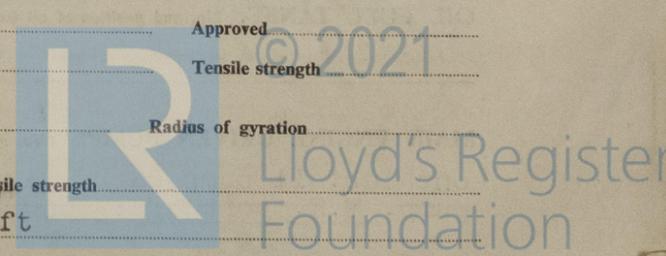
No. of main engines four No. of propellers four Brief description of propulsion system 4 oil engines, each geared to screw shaft
MAIN RECIPROCATING ENGINES. Licence Name and Type No. "Gardner" 6 LW vertical solid injection
No. of cylinders per engine 6 Dia. of cylinders 4 1/4" stroke(s) 6" 2 or 4 stroke cycle 4 SCSA Single or double acting S.A.
Maximum BHP per engine approved for this installation 78.2 at 1300 RPM of engine and 665 RPM of propeller
Corresponding MIP 120 psi (For DA engines give MIP top & bottom) Maximum cylinder pressure 900 psi Machinery numeral 15.62.4

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 No. of scavenge air coolers Scavenge air pressure at full power
Are scavenge manifold explosion relief valves fitted?

TWO AND 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?
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 F.W. 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? El. motor + by hand
Can the engine be reversed? If not, how is reversing obtained?
Has the engine been tested working in the shop? How long at full power? 28/11/63

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system not required State barred speed range(s), if imposed for working propeller
For spare propeller 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 Centre Breadth of webs at mid-throw Axial thickness of webs
Side Pins Minimum
If shrunk, radial thickness around eyeholes Are dowel pins fitted? Crankshaft material: Journals Approved
Webs 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) integral with crankshaft

Handwritten notes: F.E. Rpt No. 467, see crankshaft



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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 Manchester

Report No. 867

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.

Ahead and astern friction clutches hand lever operated

Can the main engine be used for purposes other than propulsion when declutched? yes If so, what? for electric current

STRAIGHT SHAFTING. Diameter of thrustshaft see Mch. FE. Rpt. Material _____ Minimum approved tensile strength _____

Shaft separate or integral with crank or wheel shaft? integral Diameter of intermediate shaft none Material _____

Minimum approved tensile strength _____ Diameter of screwshaft cone at large end 70 mm Is screwshaft fitted with a continuous liner? no

Diameter of tube shaft. (If these are separate shafts) none Is tube shaft fitted with a continuous liner in way of stern tube _____ Thickness of screw/tube shaft liner at bearings _____

Thickness between bearings _____ How is the after end of the liner made watertight in the propeller boss? rubber ring

Material of screw/tube shaft SM-steel Minimum approved tensile strength 44 kg/mm² Is an approved oil gland fitted? yes If so, state type Leco, Lübeck

Length of bearing next to and supporting propeller 300 mm Material of bearing white metal 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 _____ Is it of reversible pitch type? _____

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

Propeller	Diameter	Pitch	Built or solid	Total developed surface m ²	No. of blades	Blade thickness at top of root fillet mm	Blade material	Tensile strength kg/mm ²	Design moment of inertia of propeller (dry)	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	830	510	solid	0.535	3	27	bronze	48.4	8.1				
	830	510	solid	0.535	3	27	bronze	52.3	8.1				
Spare	830	510	solid	0.535	3	27	bronze	48.4	8.1				
	830	510	solid	0.535	3	27	bronze	59.0	8.1				

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) none

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) none

How are receivers first charged? _____ Maximum working pressure of starting air system _____ Are the safety devices in accordance with the Rules? _____ Has the starting of the main engines been tested and found satisfactory? _____

COOLERS. No. of main engine fresh water coolers 4 No. of main engine lubricating oil coolers 4

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

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) All four M.E.'s:- One ME driven SW cooling pump each, one lub.oil pump each, six OF injection pumps each. M.E. port fwd:- One bilge, deckwash + ft pump. M.E. port aft:- One bilge pump.

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

Pump	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
(This table is crossed out with a diagonal line in the original document)															

BILGE SUCTIONS. No. and size in each hold, deep tank or pump room in hold Nos. 1,2,3,4,5 and 6, one 1 3/4" each

No. and size connected to main bilge line in main engine room one 1 3/4" In tunnel none

In aux. engine room none Size and position of direct bilge suction in machinery spaces 1 port 1 3/4"

Size and position of emergency bilge suction in machinery spaces 1 stbd. 1 1/4"

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 M.E.s, S.W.P.s, etc. (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)
E.R. centre	17 E 2467	Farryman Mannheim		one D.C. generator
		Diesel, Farny und Heidemann, Lampertheim	Rpt. No. 63/418	1600 W.

Is electric current used for essential services at sea? yes, to start M.E. If so, state the minimum No. and capacity of generators required in order that the ship may operate at sea to stbd. M.E. one (capacity 100 Amp./h)

Is an electric generator driven by Main Engine? yes, belt driven, one on each M.E.

STEAM INSTALLATION. No. of aux/donkey boilers burning oil fuel _____ W.P. _____ Type _____

Position _____

Is a superheater fitted? _____ Are these boilers also heated by exhaust gas? _____ No. of aux./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 aux./donkey boilers _____

Is steam essential for operation of the ship at sea? _____ Are any steam pipes over 3 ins. bore? _____ 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 _____ No. of Evaporators _____

STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering) _____

2 hand operated steering gears

Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements one 1 3/4" hydrant with hose, jet and spray nozzle, two 10 ltrs. foam extinguishers

For ferry duty only

Has the spare gear required by the Rules been supplied? _____ Has all the machinery been tried under full working conditions and found satisfactory? _____ Date and duration of full-power sea trials of main engines 7.2.64 6 hours

Does this machinery installation contain any features of a novel or experimental nature? (Give particulars) none

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.)



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 under Special Survey in conformity with the Society's Rules and Regulations, the approved plans and the Secretary's letters.

The material and workmanship are good.

The machinery has been examined during construction, properly installed in the above ship, found satisfactory under working conditions and is eligible, in my opinion, for classification with the notation

See Survey
at 2.64 *LMC 2.64 4 oil engines, each 6 cyl.
TS(OG) subject to satisfactory examination at the port of destination.

For identification purposes the ship's side, where one fire- and bilge pump and one bilge pump are fitted, is called "port side".

Note:- No gear hammer was found whilst the ship was on sea trials.

B. J. Jones
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 ROTORSHAFT

FLYWHEEL SHAFT

See Manchester F.E. Report No. 867

THRUSTSHAFT

GEARING

INTERMEDIATE SHAFTS

SCREW AND ~~TUBE~~ SHAFTS LLOYD'S HAM 3111 A/B/C/D 15.11.63 EA ✓

PROPELLERS LLOYD'S HAM 3112 ✓ 3113 ✓ 3114 ✓ 3115 15.11.63 EA ✓ Spare: None

OTHER IMPORTANT ITEMS stern tubes LLOYD'S TEST HAM 2592/1-2-3-4- 25-10.63 EA ✓

Is the installation a duplicate of a previous case? no If so, state name of vessel _____
Date of approval of plans for cranksaft see Manchester F.E. Rpt. Straight shafting 22.10.63 Gearing See Manchester F.E. Rpt. Clutch _____
Separate oil fuel tanks 12.9.63 Pumping arrangements 12.9.63 Oil fuel arrangements 12.9.63
Cargo oil pumping arrangements _____ Air receivers _____ Aux./donkey boilers _____
Dates of examination of principal parts:—
Fitting of stern tube 5.11.63 Fitting of propeller 18.11.63 Completion of sea connections 20.11.63 Alignment of cranksaft in main bearings 20.11.63
Engine chocks & bolts 2.12.63 Alignment of gearing 2-12.63 Alignment of straight shafting 2.12.63 Testing of pumping arrangements 20.12.63
Oil fuel lines 15.12.63 Donkey boiler supports _____ Steering machinery 7.2.64 Windlass 7.2.64
Date of Committee TUESDAY 2 JUN 1964 Special Survey Fee DM 272.--
Decision Deferred for 2 wks. Expenses DM 80.--

