

# REPORT ON OIL ENGINE MACHINERY.

No. 5984

TUE JUL 26 1921

pt. 4b.

Received at London Office

Port of Copenhagen

Date, First Survey 5<sup>th</sup> April 1918 Last Survey 10<sup>th</sup> May 1920

Number of Visits 53

When handed in at Local Office 4<sup>th</sup> Novbr. 1920

Survey held at Copenhagen

on the Single Screw vessels William Penn

By whom built Pusey & Jones Co. Yard No. 17 When built 1917

By whom made Akt. Burmeister & Wain Engine No. 696 When made 1918

Boiler No. 697 When made 1918

Owners 857 Port belonging to 857

Is Refrigerating Machinery fitted for cargo purposes ✓ Is Electric Light fitted ✓

**ENGINES, &c.**—Type of Engines 2 off Vertical Diesel Oil Engines 2 or 4 stroke cycle 4 Single or double acting Single

Maximum pressure in cylinders 35 Kg. per Cm<sup>2</sup> No. of cylinders 2 x 6 No. of cranks 2 x 6 Diameter of cylinders 740 mm = 29 1/8"

Length of stroke 1150 mm 45 1/4 Revolutions per minute 115 Means of ignition air compression Kind of fuel used Crude oil / Flash point above 150°F

Is there a bearing between each crank yes Span of bearings (Page 92, Section 2, par. 7 of Rules) 980 mm

Distance between centres of main bearings 1500 mm Is a flywheel fitted yes Diameter of crank shaft journals 442 mm as per Rule 442 mm as fitted 456 mm

Diameter of crank pins 456 mm Breadth of crank webs 586 mm as per Rule 586 mm as fitted 990 mm Thickness of ditto 247 mm as per Rule 300 mm as fitted 300 mm

Diameter of flywheel shaft 441 mm as per Rule 456 mm as fitted 456 mm Diameter of tunnel shaft 14.2" as per Rule 14.5" as fitted 14.5"

Diameter of screw shaft ✓ Is the screw shaft fitted with a continuous liner the whole length of the stern tube ✓

Is the liner made watertight in the propeller boss ✓ If the liner is in more than one length are the joints burned ✓

Does the liner do not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive ✓

Are liners are fitted, is the shaft lapped or protected between the liners ✓ If without liners, is the shaft arranged to run in oil ✓

Is an outer gland fitted to stern tube ✓ Length of stern bush ✓ Diameter of propeller ✓

No. of blades ✓ state whether moveable ✓ Total surface ✓ square feet ✓

Kind of reversing Direct reversible Is a governor or other arrangement fitted to prevent racing of the engine Aspinoll's governing when declutched fitted Thickness of cylinder liners 60 mm

Are the cylinders fitted with safety valves yes Means of lubrication forced lubrication Are the exhaust pipes and silencers water cooled or lagged with conducting material the pipes are water cooled and the silencers are lagged If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine The exhaust will be led up along the mast

No. of cooling water pumps 3 for sea water Is the sea suction provided with an efficient strainer which can be cleared yes

No. of bilge pumps fitted to the main engines none Diameter of ditto ✓ Stroke ✓

Can be overhauled while the other is at work ✓ No. of auxiliary pumps connected to the main bilge lines 2 duplex How driven Electromotors

No. and sizes of suction connected to both main bilge pumps and auxiliary bilge pumps:—In engine room plungers 8" Stroke 11" Rotary wing pump 150 tons capacity

No. of ballast pumps 1 off How driven by Electric motor Sizes of pumps 150 tons capacity

Is a separate auxiliary pump suction fitted in ✓

Are all the bilge suction pipes fitted with roses ✓ Are the roses in Engine Room always accessible ✓

Are all connections with the sea direct on the skin of the ship ✓

Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates ✓

Are they each fitted with a discharge valve always accessible on the plating of the vessel ✓

Are the bilge suction pipes, cocks and valves arranged so as to prevent any communication between the sea and the bilges ✓ Is the screw shaft tunnel watertight ✓ Is it fitted with a watertight door ✓

If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork ✓

No. of stages 2 off No. of stages 3 Diameters 450 mm Stroke 350 mm Driven by the main engines

No. of stages 1 off No. of stages 2 Diameters 460 mm Stroke 280 mm Driven by an electromotor

No. of stages 1 off No. of stages 2 Diameters 106 mm Stroke 80 mm Driven by a direct coupled steam engine

Diameter 166 mm Stroke ✓ Driven by ✓

Are the air compressors and their coolers made so as to be easy of access yes

**RECEIVERS:—**No. of high pressure air receivers 2 off Internal diameter 450 mm Cubic capacity of each 500 Litres

Internal diameter 404 mm Cubic capacity of each 250 "

Internal diameter 182 mm Cubic capacity of each 35 "

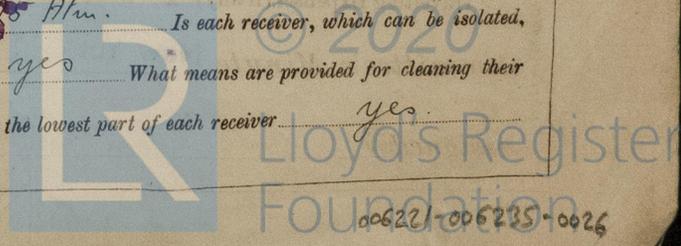
Material Siemens Martin Steel Seamless, lap welded or riveted longitudinal joint Lap welded Range of tensile strength 35-45 kg. per cm<sup>2</sup>

working pressure by Rules 65.4 Atm. W.P. = 65 Atm. No. of starting air receivers 2 off Internal diameter 6' 1 1/8"

Material S. M. Steel Seamless, lap welded or riveted longitudinal joint Riveted

working pressure by Rules 65.4 Atm. Is each receiver, which can be isolated, yes What means are provided for cleaning their surfaces yes

Is there a drain arrangement fitted at the lowest part of each receiver yes



IS A DONKEY BOILER FITTED?  
HYDRAULIC TESTS:--

If so, is a report now forwarded?

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS	14/9, 14/10, 8/11, 1918.	15 lbs. per sq. in.	30 lbs. per sq. in.	R	
COVERS Water Passage	5/4 x 15/4 1919.	15 "	30 "	"	
JACKETS	22/4 x 23/4 "	15 "	30 "	"	
PISTON WATER PASSAGES					
MAIN COMPRESSORS—1st STAGE	15/10 x 4/12 1918	15 "	30 "	"	
2nd " water jackets	10/2 1919.	15 "	30 "	"	
3rd " air space	4/2 - - -	60 Atm.	90 Atm.	"	
AIR RECEIVERS—STARTING	2/6 x 10/6 1919.	25 Atm.	39 Atm.	"	HT - 39 Atm. & HT - 25 Atm. WP - 25 " & 2-6-19 C.K. Lloyd's TEST 130 Atm. Working Pressure 65 " No. 11674, 1673, 1676, 1677, 1678, 1679, 1681 Skm. 13-7-18
INJECTION	13/9. 18	65 Atm.	130 Atm.	"	
AIR PIPES	10/2 1919	60 "	90 "	"	
FUEL PIPES from pumps to fuel valves	8/11 1918	75 "	150 "	R	
FUEL PUMPS	9/10 1918 Suction space delivery "	1 Atm.	10 Atm.	"	
SILENCER	5/7 1918	15 lbs. per sq. in.	30 lbs. per sq. in.	"	
WATER JACKET	10/6 x 23/6. 19	"	10 lbs. per sq. in.	"	
SEPARATE FUEL TANKS					

PLANS. Are approved plans forwarded herewith for shafting *The approved plans for Burmeister - Wain's yard No. 314 "Afrika" Receivers Separate Tanks*  
(If not, state date of approval) Date of approval 24 January 1919 and 30th May 1918.

SPARE GEAR as per accompanying list.

The foregoing is a correct description.

Manufacturer.

Dates of Survey while building	During progress of work in shops - 5, 10, 16, 24 April, 7, 13, 21 May, 4, 7, 14 June, 5, 29 July, 7, 12 Aug., 2, 4, 13, 14 Sep., 5, 9, 9, 14 Oct., 8 Nov., 4, 14 Dec. 1918. 4, 8, 30 Jan., 1, 10, 19 Feb., 5, 26, 31 March.
During erection on board vessel - - -	5, 12 May, 2, 10, 13 June, 2, 9, 11 July, 6, 20 Aug., 12 Sep., 1 Nov., 3, 22 Dec. 1918. 31 Jan., 20 Feb., 10 May 1919.
Total No. of visits	55.
Dates of Examination of principal parts - Cylinders	7/6, 12/8, 14/7, 8/11. 18
Covers	5/4, 15/4, 22/6, 19/4
Pistons	25/4, 25/4, 25/4, 17/4
Rods	12/9, 8/10, 18, 8/11, 22/4, 25/4, 11/7, 20/8, 17/4
Connecting rods	7/6, 14/6, 8/11, 19
Crank shaft	8/11, 5/3, 19
Thrust shaft	7/8, 2/9, 9/10, 18
Tunnel shafts	✓
Screw shaft	✓
Propeller	✓
Stern tube	✓
Engine seatings	✓
Engines holding down bolts	✓
Completion of fitting sea connections	✓
Material of crank shaft	SMI Steel. Identification Mark on Do. No. 5561-62 1-19 ARQ
Material of thrust shafts	SMI Steel. Identification Mark on Do. No. 5581-82 2-19 CK
Material of tunnel shafts	✓ Identification Marks on Do.
Material of screw shafts	✓ Identification Marks on Do.
Is the flash point of the oil to be used over 150° F.	yes.
Is this machinery duplicate of a previous case	yes. If so, state name of vessel m/s "Afrika".

General Remarks (State quality of workmanship, opinions as to class, &c.) In accordance with the Rules for Special Survey we have examined material and workmanship from the commencement of construction until the trial of the main & auxiliary engines, main & auxiliary compressors under full power working condition on the testing bench and found it good in every respect. The material used in the construction of the engines and the air receivers have been tested as required by the Rules and certificates produced. The dimensions are as specified and in accordance with the Rules, and plans approved for Burmeister & Wain's Yard No. 314, Afrika, please see London letters E dated the 19th and 30th May 1918. -

Recommend the vessel's machinery to have notation of **SLMC** - when the machinery has been fitted aboard.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	10.20	0	12.5 19.20
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£	:	:	19.

*W. J. Jones*  
Engineer Surveyor to Lloyd's Register of Shipping

Committee's Minute New York JUL 12 1921

Assigned See Phil. 4190

