

pt. 4a.

# REPORT ON STEAM TURBINE MACHINERY. No. 1480.

Received at London on 26 MAR 1936

Date of writing Report 23. 3. 1936 When handed in at Local Office 10 Port of BREMEN & RUGSBURG

No. in Survey held at HEIDENHEIM & BREMEN Date, First Survey 25. 9. 35 Last Survey 7. 3. 1936  
Reg. Book. 7974 on the STEEL S.S. ETHIOPIAN (Number of Visits 14)

Built at WESERMÜNDE By whom built DEUTSCHE SCHIFF- & MASCHINENBAU AG. Yard No. 896 When built 1936  
Engines made at HEIDENHEIM & BREMEN By whom made J.M. VOITH & DESCHMAG-AG WESER Engine No. DT 432 When made 1936

Boilers made at WESERMÜNDE By whom made DESCHMAG. WERK: SEEBECK Boiler No. 1673/74 When made 1936

Shaft Horse Power of Full Power 468 Owners UNITED AFRICA COMPANY LTD. Port belonging to LIVERPOOL

Nom. Horse Power as per Rule - Is Refrigerating Machinery fitted for cargo purposes - Is Electric Light fitted -

Trade for which Vessel is intended OPEN SEA SERVICE

## STEAM TURBINE ENGINES, &c. — Description of Engines EXHAUST STEAM TURBINE DOUBLE REDUCTION GEARED

No. of Turbines Ahead 1 Direct coupled, single reduction geared } to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 1  
Astern - double reduction geared }

direct coupled to { Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;  
for supplying power for driving Propelling Motors, Type

rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE BLADING.	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1ST EXPANSION							54 Z	608 Z	1			
2ND							67 "	634 "	1			
3RD							80 "	660 "	1			
4TH							93 "	686 "	1			
5TH							106 "	712 "	1			
6TH							121 "	742 "	1			
7TH							137 "	794 "	1			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at each turbine { H.P. - } 1st reduction wheel 475  
L.P. 468 } I.P. - } main shaft 63  
L.P. 5210 }

Rotor Shaft diameter at journals { H.P. - } 1st pinion 119.67 Z 1st reduction wheel 1311.798 } Width of Face { 1st reduction wheel 240 Z  
L.P. 100 Z 100 Z } 2nd pinion 255.455 main wheel 1843.42 Z } main wheel 500 Z

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion aft 198 Z from 260 } 1st reduction wheel aft 273 from 325 Z  
2nd pinion 390 Z 380 Z main wheel 445 Z

Flexible Pinion Shafts, diameter { 1st - } Pinion Shafts, diameter at bearings External 1st 100 Z 2nd 230 Z diameter at bottom of pinion teeth { 1st 108.67 Z  
2nd - } Internal - } 2nd 238.95 Z

Wheel Shafts, diameter at bearings { 1st 230 Z } diameter at wheel shroud, { 1st 1240 Z Generator Shaft, diameter at bearings -  
main 420 Z } main 17.65 Z Propelling Motor Shaft, diameter at bearings -

Intermediate Shafts, diameter as per rule 304 Z as appx. Thrust Shaft, diameter at collars as per rule 320 Z as appx.  
as fitted 310 Z as fitted 320 Z

Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube screw shaft fitted with a continuous liner {

Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule as fitted Is the after end of the liner made watertight in the propeller boss. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner

If the liner does 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  
If two liners are fitted, is the shaft lapped or protected between the liners Is an approved Oil Gland or other appliance fitted at the after end of the tube  
shaft If so, state type Length of Bearing in Stern Bush next to and supporting propeller

Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet.  
If Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Can the H.P. or I.P. Turbine exhaust direct to the

Condenser No. of Turbines fitted with astern wheels Feed Pumps { No. and size How driven

Pumps connected to the Main Bilge Line { No. and size How driven  
Ballast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size  
Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room In Pump Room

In Holds, &c. Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room  
Bilges, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

Are the Bilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges  
Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Are the Overboard Discharges above or below the deep water line  
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel Are the Blow Off Cocks fitted with a spigot and brass covering plate  
What pipes pass through the bunkers How are they protected

What pipes pass through the deep tanks Have they been tested as per rule  
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

Is the arrangement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one compartment to another Is the Shaft Tunnel watertight Is it fitted with a watertight door worked from

**BOILERS, &c.**—(Letter for record ) Total Heating Surface of Boilers \_\_\_\_\_

Is Forced Draft fitted  No. and Description of Boilers \_\_\_\_\_ Working Pressure \_\_\_\_\_

Is a Report on Main Boilers now forwarded?

Is  a Donkey  an Auxiliary Boiler fitted?  If so, is a report now forwarded?

Is the donkey boiler intended to be used for domestic purposes only

Plans. Are approved plans forwarded herewith for <sup>EXHAUST STEAM TURBINE</sup> Shafting 2.4.35, 25.4.35 Main Boilers \_\_\_\_\_ Auxiliary Boilers \_\_\_\_\_ Donkey Boilers \_\_\_\_\_  
(If not state date of approval)

Superheaters  General Pumping Arrangements \_\_\_\_\_ Oil Fuel Burning Arrangements \_\_\_\_\_

**SPARE GEAR.**

Has the spare gear required by the Rules been supplied

State the principal additional spare gear supplied for Exhaust Turbine & Gear \_\_\_\_\_

10 thrust pads & bolts for turbine thrust bearing; 2 1/2 bearing brams for turbine bearing frame  
2 1/2 bearing brams for turbine bearing off; 2 springs for quick closing device  
1 spring for safety governor; 1 coupling bolt for thrust shaft; 1 coupling bolt for turbine pinion  
10 thrust pads & bolts for propeller thrust bearing; 10 thrust pads & bolts for main pinion thrust bearing; a number of special tools etc.

Bremen, den 23. März 1936

DEUTSCHE SCHIFF- u. MASCHINENBAU  
AKTIENGESELLSCHAFT

*J. W. W. W.*

Manufacturer.

The foregoing is a correct description,

Dates of Survey while building	During progress of work in shops - - -	1935 Bremen	Augustburg
		25.9, 2.10, 17.10,	15.10, 23.10, 30.10, 21.11, 20.12.35, 7.1.36
		During erection on board vessel - - -	17.1.36, 21.1.36 28.1.36 14.2.36, 7.3.36.
	Total No. of visits	14	

Dates of Examination of principal parts—Casings 20.12.35 Rotors 17.10.35 Blading 17.10.35 Gearing 23.10.35

Wheel shaft 23.10.35 Thrust shaft 21.11 Intermediate shafts \_\_\_\_\_ Tube shaft \_\_\_\_\_ Screw shaft \_\_\_\_\_

Propeller  Stern tube  Engine and boiler seatings \_\_\_\_\_ Engine holding down bolts 28.1.36

Completion of fitting sea connections \_\_\_\_\_ Completion of pumping arrangements \_\_\_\_\_ Boilers fired \_\_\_\_\_ Engines tried under steam 7.3.36

Main boiler safety valves adjusted \_\_\_\_\_ Thickness of adjusting washers \_\_\_\_\_

Rotor shaft, Material and tensile strength P.M. forged steel 53.5 kg/cm<sup>2</sup> Identification Mark LLOYD'S KH. 15934 25.7.35

Pinion shaft, Material and tensile strength P.M. forged steel 74.5 Identification Mark B.C. 17.10.35

Pinion shaft, Material and tensile strength P.M. forged steel 74.5 Identification Mark LLOYD'S KH. 15923. 1.7.35

1st Reduction Wheel Shaft, Material and tensile strength \_\_\_\_\_ Identification Mark LLOYD'S KH. 15920. 17.35

Wheel shaft, Material P.M. steel Identification Mark LLOYD'S J.L. 9759 1.6.35 Thrust shaft, Material P.M. steel Identification Mark LLOYD'S EA 43 19.6.35

CONICAL COUPLING Intermediate shafts, Material P.M. steel Identification Marks LLOYD'S J.L. 9723 27.5.35 Tube shaft, Material \_\_\_\_\_ Identification Marks \_\_\_\_\_

Screw shaft, Material  Identification Marks \_\_\_\_\_ Steam Pipes, Material  Test pressure

Date of test  Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F.  Have the requirements of the Rules for the use of oil as fuel been complied with

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo  If so, have the requirements of the Rules been complied with

If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with

Is this machinery a duplicate of a previous case yes If so, state name of vessel NIGERIAN

General Remarks (State quality of workmanship, opinions as to class, &c.) This L.P. turbine & gear with

hydraulic coupling are built: the complete turbine rotor & rotor blading at Messrs. Deutsche Schiff- & Maschinenbau A.G. Werk A.G. Wuppertal, Bremen and all the other parts of Messrs. F.M. Voith of Heidenheim

It has been built under special survey in accordance with the appor. plans, the Secretary

letters & otherwise in conformity with the requirements of the Rules. Materials

and workmanship are of good quality. During the recent trial trip all

parts have been tried under full working and maneuvering condition

and found satisfactory in all respects.

Certificate (if required) to be sent to \_\_\_\_\_  
(The Surveymen are requested not to write on or below the space for Committee's Minute.)

The amount of Entry Fee ... £	:	:	When applied for,
Special <u>donkey</u> T 132 ... RM	234.-		11.2.1936
Donkey Boiler Fee ... £	78		
Travelling Expenses (if any) RM	110.-		30.3.1936
	7.-		30/3

Committee's Minute

FRI. 27 MAR 1936

Assigned See Bremen J.E. Rpt. 1780

*A. Cantanus*  
Engineer Surveyor to Lloyd's Register of Shipping.

