

REPORT ON STEAM TURBINE MACHINERY. No. 97058

Received at London Office JAN 14 1939

17/11/38 Port of **NEWCASTLE-ON-TYNE**

Date of writing Report 10 When handed in at Local Office

No. in Survey held at **Newcastle**

Date, First Survey **24 May**

Last Survey **21 Oct 1938**

Reg. Book.

(Number of Visits **14**)

Tons } Gross **6935**
Net **4228**

on the **S.S. TURKISTAN**

Built at **S. Shields**

By whom built **J. Readhead & Co**

Yard No. **514**

When built

Engines made at **S. Shields**

By whom made **ditto**

Engine No. **514**

When made

L.P. Turbine Boilers made at **Newcastle**

By whom made **Susan Hunter & Wigham**

L.P. Turbine No. **1588**

When made **1938**

Shaft Horse Power at Full Power **1071**

Owners

Port belonging to

Nom. Horse Power as per Rule **179**

Is Refrigerating Machinery fitted for cargo purposes

Is Electric Light fitted

Trade for which Vessel is intended **Open sea**

STEAM TURBINE ENGINES, &c. — Description of Engines **L.P. Turbine (Bauer-Wash) with D/R Gearing & hydr coupling in combination with Recip Engine**

No. of Turbines Ahead **One** Direct coupled, single reduction geared to **One** propelling shaft. No. of primary pinions to each set of reduction gearing **One**

direct coupled to Alternating Current Generator phase periods per second Direct Current Generator 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							70. m/m	890. m/m	1.			
2ND							89.	928.	1.			
3RD							108.	966.	1.			
4TH							127.	1004.	1.			
5TH							147.	1044.	1.			
6TH							174.	1098.	1.			
7TH							200.	1150.	1.			
8TH												
9TH												
10TH												
11TH												
12TH												

Shaft Horse Power at the turbine { H.P. ———— } Revolutions per minute, at full power, of the Turbine Shaft { H.P. ———— } 1st reduction wheel **437**.
 { L.P. **1071**. } { L.P. **3360**. } main shaft **81.5**.

Rotor Shaft diameter at journals { H.P. ———— } Pitch Circle Diameter { 1st pinion **211.7919** m/m } 1st reduction wheel **1629.1687** m/m } Width of Face { 1st reduction wheel **280** m/m }
 { L.P. **170** m/m } { 2nd pinion **404.7328** } main wheel **2088.9437** } { main wheel **580** m/m }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion **295** ; **255** m/m } 1st reduction wheel **1655** ; **370** m/m }
 { 2nd pinion **440** m/m } main wheel **550** m/m }

Flexible Pinion Shafts, diameter { 1st **115** m/m } Pinion Shafts, diameter at bearings { External 1st **150** m/m } 2nd **350** m/m } diameter at bottom of pinion teeth { 1st **197.1465** m/m }
 { 2nd ———— } { Internal 1st ———— } 2nd **285** } { 2nd **383.1886** }

Wheel Shafts, diameter at bearings { 1st **260** m/m ; **250** m/m } Generator Shaft, diameter at bearings
 { main **EXT 500** m/m } diameter at wheel shroud, { main **1990** m/m } Propelling Motor Shaft, diameter at bearings
 { INT **400** } as per rule **13.99** "with Recip Eng only" Thrust Shaft, diameter at collars as per rule **14.7**"
 as fitted **(13.88 with Combined Set)** as fitted **15.35 (390 m/m)**

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

Bronze Liners, thickness in way of bushes as per rule Thickness between bushes as per rule 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 **Two. 9" x 8" x 18" Stroke**

Are two independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Astern 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-bones
 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 ^{Thrust Shaft 23/6/37} Main Boilers ✓

Auxiliary Boilers ✓

Donkey Boilers ✓

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.

*Yes. One bearing of each size fitted
one set of thrust pads for each thrust bearing
one spring & one set of washers for emergency governor,
etc.*

The foregoing is a correct description,

G. J. Ducey

Manufacturer.

Dates of Survey while building
 During progress of work in shops -- ¹⁹³⁸ May 24, June 29, 14, July 7, Aug 3, Sep 26.
 During erection on board vessel --- Oct 4, 12, 13, 14, 18, 19, 21.
 Total No. of visits *14*. Inclusion in Rht 4.

Dates of Examination of principal parts—Casings *26/9/38* Rotors *14/6/38* Blading *14/10/38* Gearing *19/10/38*

Wheel shaft *19/10/38* Thrust shaft *19/10/38* Intermediate shafts ✓ Tube shaft ✓ Screw shaft ✓

Propeller ✓ Stern tube ✓ Engine and boiler seatings ✓ Engine holding down bolts ✓
LP Turbine on test bed. 13/10/38
 Completion of fitting sea connections ✓ Completion of pumping arrangements ✓ Boilers fired ✓
 Main boiler safety valves adjusted ✓ Thickness of adjusting washers ✓

Rotor shaft, Material and tensile strength *Forged Steel 36.8 tons/□* Identification Mark *7605 HAI. 959.*

1st Redn Flexible Pinion Shaft, Material and tensile strength *F. Nickel Steel 41.2 " "* Identification Mark *7605 HAI. L.7.*

2nd Redn Pinion shaft, Material and tensile strength *" " " 46.2 " "* Identification Mark *7723 HAI. 5458*

1st Reduction Wheel Shaft, Material and tensile strength *F. Steel 32. " "* Identification Mark *7605 HAI 704*

Wheel shaft, Material *F. Steel* Identification Mark *7604 HAI. 787.* Thrust shaft, Material *F. Steel* Identification Mark *7604 HAI. 864*

Intermediate shafts, Material ✓ Identification Marks ✓ 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

General Remarks (State quality of workmanship, opinions as to class, &c.)
The Machinery has been constructed under special survey in accordance with the Society Rules and approved plan, and the materials & workmanship are good. The LP Turbine & D/R Gearing have been sent to S. Shields to be fitted on board Yard No 514 building by J Readhead & Sons Ltd.

The above machinery has been efficiently installed & fixed in the S.S. Teakstan, examined under working conditions & found satisfactory.
J. W. Mather

The amount of Entry Fee ... £ *17: 18*
 Special ... £
 Donkey Boiler Fee ... £
 Travelling Expenses (if any) ... £
 When applied for, **17 NOV 1938**
 When received, *10 Dec 1938*

A Watt
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute
 Assigned *See FE machy rpt.*
FRI 20 JAN 1939

