

# REPORT ON STEAM TURBINE MACHINERY. No. 8159

pt. 4a. 3 Nov 41 When handed in at Local Office 3 Nov 41 Port of Philadelphia Received at London Office 23 JUN 1942

Date of writing Report 3 Nov 41

No. in Survey held at 6 Essington Pa Date, First Survey 10 May Last Survey 16 Oct

Reg. Book. on the Hull 4316 "Columba" (Number of Visits 15)

Built at Sparrows Pt. Ma By whom built Bethlehem SBC Co Yard No. 4316 Tons { Gross Net

Engines made at Essington By whom made Westinghouse EOM Co Engine No. 1A9364-4 When built 1941

Boilers made at By whom made Boiler No. When made

Shaft Horse Power at Full Power 12000 Owners Socony Vacuum Oil Co Port belonging to

Nom. Horse Power as per Rule 2337 1884 Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted Yes

Trade for which Vessel is intended Carrying Petroleum in bulk

## STEAM TURBINE ENGINES, &c.—Description of Engines Impulse Reaction Cross Compound

No. of Turbines Ahead 2 Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2

Astern 1 double reduction geared

Direct coupled to { Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;

or 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        | 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. |
| EXPANSION      | 1.12              | 23.12            | 1            |                   |                  |              |                   |                  |              |                   |                  |              |
| 1st Blade ring | 2.26              | 24.26            | 1            |                   |                  |              | 1.27              | 30.84            | 5            | 1.40              | 30.65            | 1            |
| 2nd Blade ring | 1.14              | 16.28            | 6            |                   |                  |              | 3.47              | 35.00            | 5            | 2.82              | 32.07            | 1            |
| 3rd Blade ring | 1.69              | 17.43            | 8            |                   |                  |              |                   |                  |              |                   |                  |              |
| 4th Blade ring | 1.81              | 17.67            | 8            |                   |                  |              | 4.47              | 37.06            | 5            | 2.25              | 32.00            | 1            |
| 5th Blade ring | 3.06              | 20.18            | 8            |                   |                  |              | 9.98              | 48.00            | 5            | 3.61              | 33.36            | 1            |

Shaft Horse Power at each turbine H.P. 5300 I.P. 6353 L.P. 4503

Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel 1588 main shaft 105

Motor Shaft diameter at journals H.P. 9.831 I.P. 13.86 L.P. 25.912

Pitch Circle Diameter 1st pinion 106.211 2nd pinion 145.130 main wheel 15.78 3rd wheel 3.4

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 15.78 2nd pinion 3.4 main wheel 15.78 3rd wheel 3.4

Pinion Shafts, diameter at bearings External 1st 5.72 2nd 16 Internal 1st 102.78 2nd 141.0

Generator Shaft, diameter at bearings 1st 102.78 2nd 141.0

Propelling Motor Shaft, diameter at bearings 1st 102.78 2nd 141.0

Intermediate Shafts, diameter as per rule as fitted

Thrust Shaft, diameter at collars as per rule as fitted

Tube Shaft, diameter as per rule as fitted

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

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

Sealed 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

die 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

ther appliance fitted at the after end of the tube shaft 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.

Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes

Can the H.P. or I.P. Turbine exhaust direct to the

Condenser Yes No. of Turbines fitted with astern wheels 1 Feed Pumps No. and size How driven

Pumps connected to the Main Bilge Line No. and size How driven

Last Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size

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

Folds, &c.

In Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room

es, No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes

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

all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks

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

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

pipes pass through the bunkers How are they protected

pipes pass through the deep tanks Have they been tested as per rule

all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times

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

partment to another Is the Shaft Tunnel watertight Is it fitted with a watertight door



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?

Plans. Are approved plans forwarded herewith for Shafting  
(If not state date of approval)

Main Boilers

Auxiliary Boilers

Donkey Boilers

Superheaters

General Pumping Arrangements

Oil Fuel Burning Arrangements

Spare Gear. State the articles supplied:—

Please see attached list.

The foregoing is a correct description,

Westinghouse E. &amp; M. Co. J. H. Brown Manufacturer

Dates  
of Survey  
while  
building{ During progress of  
work in shops -- }  
{ During erection on  
board vessel --- }  
Total No. of visits

10.20 May 3.11.16.29 June 7.30 July 5 Aug 2.16.19 Sept 1.13.16 Oct 1941

Dates of Examination of principal parts—Casings

16 Oct

Rotors

16 Oct

Blading

16 Oct

Gearing

16 Oct

Wheel shaft

16 Oct

Thrust shaft

Intermediate shafts

Tube shaft

Screw shaft

Propeller

Stern tube

Engine and boiler seatings

Engine holding down bolts

Completion of pumping arrangements

Boilers fixed

Engines tried under steam

Main boiler safety valves adjusted

Thickness of adjusting washers

Rotor shaft, Material and tensile strength

OH Steel HP 95000 91500 LP 95000 94500

Identification Mark

HP 7052 JKH  
LP 4404 WHR

Flexible Pinion Shaft, Material and tensile strength

OH Steel

Identification Mark

1372 1373  
HP 1407 JWB

Pinion shaft, Material and tensile strength

OH Steel HP 109500 107500 LP 104500 102000

Identification Mark

LP 4379 WHR

1st Reduction Wheel Shaft, Material and tensile strength

OH Steel HP 103000 105000 LP 105000 107500

Identification Mark

6754 HBC  
7023 JKH

Wheel shaft, Material

OH Steel

Identification Mark

6736 HBC

Thrust shaft, Material

Identification Mark

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

Is this machinery a duplicate of a previous case

Yes

If so, state name of vessel Hull #311

General Remarks

(State quality of workmanship, opinions as to class, &amp;c.)

This unit has been constructed under Special Survey, and in accordance with the approved plans the workmanship & materials are good. It has been tested under steam in the shop & the results found satisfactory. The installation has been shipped to Sparrows Pt. Md. When it has been fitted on board, tried under full power to the satisfaction of the Society's Surveyors it will in my opinion be eligible to receive the record of +LNC with date.

The amount of Entry Fee

\$30 00

Special

\$264 00

Donkey Boiler Fee

\$ 15 00

Travelling Expenses (if any)

\$ 15 00

When applied for,

5th Nov 1941

When received,

19

W. W. Cumham  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

NEW YORK MAY 27 1942

Assigned

See attached first entry rpt.



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Foundation