

## REPORT ON STEAM TURBINE MACHINERY. No. 7403

Received at London Office

Date of writing Report 9<sup>th</sup> Dec 37 When made in at Local Office 10<sup>th</sup> Dec 37 Port of Philadelphia  
 No. in Survey held at Lester Pa. & Chester Pa. Date, First Survey 7<sup>th</sup> Sept Last Survey 27 Nov 1937  
 Reg. Book. S/S ESSO DAYTOWN (Number of Visits 5) Tons } Gross 8021  
 on the S/S ESSO DAYTOWN Net 4794  
 Built at Chester Pa. By whom built Am. S.B. & D. Co. Yard No. 162 When built 1937  
 Engines made at Lester Pa. By whom made Westinghouse Elec. Mfg. Co. Engine No. 41227 When made "  
 Boilers made at Barberton Ohio By whom made Babcock & Wilcox Co. Boiler No. " When made "  
 Shaft Horse Power at Full Power 3600 Owners The Standard Oil Co. of New Jersey Port belonging to Wilmington Del.  
 Nom. Horse Power as per Rule 852 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes  
 Trade for which Vessel is intended Carrying Petroleum in bulk.

## STEAM TURBINE ENGINES, &amp;c.—Description of Engines

Cross Compound impulse reaction

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;  
 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.

| T. P.         |                 |  |         | I. P.                |                     |                 |   | L. P.               |                 |                      |                     | ASTERN.         |                      |                     |                 |
|---------------|-----------------|--|---------|----------------------|---------------------|-----------------|---|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|
| BLADING.      |                 |  |         | HEIGHT OF<br>BLADES. | DIAMETER<br>AT TIP. | NO. OF<br>ROWS. | HEIGHT OF<br>BLADES.  | DIAMETER<br>AT TIP. | NO. OF<br>ROWS. | HEIGHT OF<br>BLADES. | DIAMETER<br>AT TIP. | NO. OF<br>ROWS. | HEIGHT OF<br>BLADES. | DIAMETER<br>AT TIP. | NO. OF<br>ROWS. |
| 1ST EXPANSION | Curtis<br>wheel | 17/32  | 26 7/32 | 1                    |                     |                 | 17 5/8  | 21.486              | 5               |                      |                     |                 |                      |                     |                 |
| 2ND           |                 | 1 1/8  | 27 1/8  | 1                    |                     |                 | 2.163   | 24"                 |                 | 5/8                  | 28 5/8              | 1               |                      |                     |                 |
| 3RD           |                 | 9 3/8  | 13.225  | 20                   |                     |                 | 2.351   | 25.811              | 8               |                      | 1 3/8               | 29 3/8          | 1                    |                     |                 |
| 4TH           |                 | 1.984  | 16.524  |                      |                     |                 | 5.077   | 35.075              |                 |                      | 1 13/16             | 29 13/16        | 1                    |                     |                 |
| 5TH           |                 | Reaction blades mounted on a gradually tapered drum. The cylinder is also tapered. |         |                      |                     |                 | These blades are mounted on a gradually tapered drum. The cylinder is also tapered. |                     |                 |                      |                     | 2 5/8           | 30 5/8               | 1                   |                 |
| 6TH           |                 |  |         |                      |                     |                 |   |                     |                 |                      |                     |                 |                      |                     |                 |
| 7TH           |                 |  |         |                      |                     |                 |   |                     |                 |                      |                     |                 |                      |                     |                 |
| 8TH           |                 |  |         |                      |                     |                 | 5.902   | 36.804              | 4               |                      |                     |                 |                      |                     |                 |
| 9TH           |                 |  |         |                      |                     |                 | 9.308   | 43.616              |                 |                      |                     |                 |                      |                     |                 |
| 10TH          |                 |  |         |                      |                     |                 | These blades are mounted on a straight drum. The cylinder is tapered.               |                     |                 |                      |                     |                 |                      |                     |                 |
| 11TH          |                 |  |         |                      |                     |                 |   |                     |                 |                      |                     |                 |                      |                     |                 |
| 12TH          |                 |  |         |                      |                     |                 |   |                     |                 |                      |                     |                 |                      |                     |                 |

Shaft Horse Power at each turbine { H.P. 1950 }  
 { I.P. }  
 { L.P. 1650 }  
 Rotor Shaft diameter at journals { H.P. 4 }  
 { I.P. }  
 { L.P. 6 1/4 }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 12 1/4 }  
 { 2nd pinion 33 }

Flexible Pinion Shafts, diameter { 1st 12 1/2 }  
 { 2nd 16 }

Wheel Shafts, diameter at bearings { 1st 12 1/2 }  
 { main 16 }

Intermediate Shafts, diameter as per rule 13 9/16  
 as fitted 14 1/2

Screw Shaft, diameter as per rule 15 1/4  
 as fitted 16 1/4

Thickness between bushes as per rule 2 3/32  
 as fitted 2 3/32

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

or other appliance fitted at the after end of the tube shaft No If two liners are fitted, is the shaft lapped or protected between the liners Is an approved Oil Gland

Propeller, diameter 18'-0" Pitch 16'-0" No. of Blades 4 State whether Moveable No Total Developed Surface 115 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 Yes No. of Turbines fitted with astern wheels 1 Feed Pumps No. and size 2 main 115 GPM. each. 1 aux 10" x 6" x 24 Ket Simplex

Pumps connected to the Main Bilge Line No. and size 1-12" x 8 1/2" x 12" for duplex. How driven Steam

Ballast Pumps, No. and size 1-12" x 8 1/2" x 12" for duplex. How driven Steam

Are two independent means arranged for circulating water through the Oil Cooler Yes

Pumps, No. and size:—In Engine and Boiler Room 4-3 1/2" eng room. 2-3 1/2" pump motor room. 4-3 1/2" coffee dam. 4-2 1/2" bilge flat.

In Holds, &c. 4-3" in dry cargo space. 1-3" in fuel pump room. 1-3" coffee dam. 1-3" chain locker. 1-4" in main pump room.

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-12"

Bilges, No. and size 1-5"

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 fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel

What pipes pass through the bunkers

What pipes pass through the deep tanks

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



BOILERS, &c. — (Letter for record *S*) Total Heating Surface of Boilers *71925*  
Is Forced Draft fitted *Yes* No. and Description of Boilers *2 B & W water tube* Working Pressure *475 lb.*  
Is a Report on Main Boilers now forwarded? *Yes*

Is *a Donkey* Boiler fitted? *No* If so, is a report now forwarded?

Plans. Are approved plans forwarded herewith for Shafting *Yes* Main Boilers *Yes* Auxiliary Boilers *Yes* Donkey Boilers *Yes*  
(If not state date of approval)

Superheaters *Yes* General Pumping Arrangements *Yes* Oil Fuel Burning Arrangements *Yes*

Spare Gear. State the articles supplied — as per rule, with the following additions, 1 set valve springs, 5% bolts & nuts each size fitted in gear casing, 1 set bolts & nuts for each size bearing, 1 turbine bearing each size, 1 pinion bearing each size, 1 gear shaft bearing, 1 propeller shaft, 8 Condenser tubes.

The foregoing is a correct description,

*W. McCunechy* Manufacturer

Dates of Survey *Sept 7-8 1937*  
During progress of work in shops --  
whole building *Oct 6-27 Nov 3 1937*  
Total No. of visits *5*

Dates of Examination of principal parts — Casings *8 Sept* Rotors *8 Sept* Blading *8 Sept* Gearing *8 Sept*  
Wheel shaft *8 Sept* Thrust shaft *8 Sept* Intermediate shafts *8 Sept* Tube shaft *6 Oct* Screw shaft *6 Oct*  
Propeller *6 Oct* Stern tube *6 Oct* Engine and boiler seatings *27 Nov* Engine holding down bolts *27 Nov*  
Completion of pumping arrangements *27 Nov* Boilers fixed *Locknuts* Engines tried under steam *27 Nov*  
Main boiler safety valves adjusted *27 Nov* Thickness of adjusting washers *Steel*  
Rotor shaft, Material and tensile strength *Steel* Identification Mark  
Flexible Pinion Shaft, Material and tensile strength *Steel* Identification Mark  
Pinion shaft, Material and tensile strength *Steel* Identification Mark  
1st Reduction Wheel Shaft, Material and tensile strength *Steel* Identification Mark  
Wheel shaft, Material *Steel* Identification Mark Thrust shaft, Material Identification Mark  
Intermediate shafts, Material Identification Marks Tube shaft, Material Identification Marks  
Screw shaft, Material *Steel* Identification Marks Steam Pipes, Material *Solid drawn steel* Test pressure *950 lb.*  
Date of test *25 Oct 1937* Is an installation fitted for burning oil fuel *Yes*  
Is the flash point of the oil to be used over 140°F. *Yes* Have the requirements of the Rules for the use of oil as fuel been complied with *Yes*  
Is the vessel (not being an oil tanker) fitted for carrying oil as cargo *Yes* If so, have the requirements of the Rules been complied with *Yes*  
Is this machinery a duplicate of a previous case *Yes* If so, state name of vessel *WALLACE E. PRATT*

General Remarks (State quality of workmanship, opinions as to class, &c.) *This installation has been constructed under the supervision of the American Bureau of Shipping, and all material tested by them. The steam trials have been witnessed by the undersigned, and all turbines & gears opened up examined & found satisfactory. In my opinion this installation is eligible to receive the record of LMC 11-37.*  
*Note. This installation has been built in accordance with the approved plans which are now being forwarded.*

|                              |   |   |   |                   |
|------------------------------|---|---|---|-------------------|
| The amount of Entry Fee      | £ | : | : | When applied for, |
| Special                      | £ | : | : | 19                |
| Donkey Boiler Fee            | £ | : | : | When received,    |
| Travelling Expenses (if any) | £ | : | : | 19                |

*W. D. Runham*  
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *NEW YORK JAN 5 - 1938*

Assigned *LMC 11-37*