

REPORT ON STEAM TURBINE MACHINERY. No. 41897

Received at London Office 12 FEB 1942

Date of writing Report Nov 5 1941 When handed in at Local Office Dec 10 1941 Port of New York
No. in Survey held at Trenton N.J. and Quincy, Mass Date, First Survey 28 Oct 1940 Last Survey Aug 15 1941
Reg. Book. on the STEEL SINGLE SCREEN STEAMER "SINCLAIR OPALINE" Tons { Gross 7874
Net 4605
Built at Quincy, Mass By whom built BETHLEHEM STEEL CO Yard No. 1488 When built 1941
Engines made at Trenton, N.J. By whom made DE LAVAL STEAM TURBINE CO Engine No. 230907 When made 1941
Boilers made at Garberton, Ohio By whom made BARBOCK-WALCOX CO Boiler No. 181521-1-2 When made 1941
Shaft Horse Power at Full Power 4000 Owners SINCLAIR REFINING CO Port belonging to Wilmington, Del
Nom. Horse Power as per Rule 205 898 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, &c.—Description of Engines DE LAVAL IMPULSE 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;
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	600"	22.500	1				1.020"	31.176	1	1.720	35.200	2
2ND	560	16.356	1				1.185	33.246	1	1.390	36.296	2
3RD		16.466	1				1.680	35.676	1	3.750	39.570	1
4TH		16.606	1				2.000	37.796	1			
5TH		16.756	1				3.100	40.160	1			
6TH		16.926	1				4.800	41.880	1			
7TH		20.146	1				8.300	45.948	1			
8TH		20.336	1									
9TH		20.576	1									
10TH		20.845	1									
11TH		21.166	1									
12TH												

Shaft Horse Power at each turbine { H.P. 2000 ✓ I.P. — L.P. 2000 ✓ }
Revolutions per minute, at full power, of each Turbine Shaft { H.P. 5938 ✓ 1st reduction wheel 862.3 ✓
I.P. — L.P. 4518 ✓ main shaft 90 ✓
Rotor Shaft diameter at journals { H.P. 5" ✓ Pitch Circle Diameter { 1st pinion 9.200 ✓ 1st reduction wheel 48.200" ✓ Width of Face { 1st reduction wheel 14" ✓
2nd pinion 13.041 ✓ main wheel 124.947 ✓ main wheel 29" ✓
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 10 1/4" ✓ 1st reduction wheel 12 1/8" ✓
2nd pinion 20 1/8" ✓ main wheel 21 7/8" ✓
Flexible Pinion Shafts, diameter { 1st — 2nd 6.3 ✓ Pinion Shafts, diameter at bearings { External 1st 4 1/2" ✓ 2nd 9" ✓ diameter at bottom of pinion teeth { 1st 6.584 ✓
Internal 1st 4" ✓ 2nd 7" ✓ 2nd 12.279 ✓
Wheel Shafts, diameter at bearings { 1st 6 1/2" ✓ diameter at wheel shroud, { 1st 8" ✓ Generator Shaft, diameter at bearings
main 16" ✓ main 20" ✓ Propelling Motor Shaft, diameter at bearings
Intermediate Shafts, diameter { as per rule 14.15 ✓ Thrust Shaft, diameter at collars { as per rule 10" ✓ Tube Shaft, diameter { as per rule 81 ✓
as fitted 14.501 ✓ as fitted 10" ✓ as fitted 1.00 ✓
Screw Shaft, diameter { as per rule 15.65 ✓ Is the shaft fitted with a continuous liner { YES ✓ Bronze Liners, thickness in way of bushes { as per rule 81 ✓
as fitted 17.75 ✓ Is the after end of the liner made watertight in the propeller boss { YES ✓ If the liner is in more than one length are the junctions
Thickness between bushes { as per rule 6.1 ✓ Is the after end of the liner made watertight in the propeller boss { YES ✓ If the liner is in more than one length are the junctions
as fitted 7.8 ✓
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 { ✓ Length of Bearing in Stern Bush next to and supporting propeller 7'5" ✓
Propeller, diameter 18'-0" Pitch 16.8' No. of Blades 4 ✓ State whether Movable NO ✓ Total Developed Surface 118 ✓ square feet.
If 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 ONE ✓ Feed Pumps { No. and size TWO HORIZ 31 Ton/HR ✓ ONE VERT 22.3 Ton/HR ✓
How driven STEAM TURBINE ✓ STEAM U.S.O.A. 10x6x24 ✓
Pumps connected to the Main Bilge Line { No. and size ONE HORIZ. CENT. 58.5 Ton/HR ✓ ONE VERT. 100 Tons/HR ✓
How driven MOTOR ✓ STEAM U.S.O.A. 12x8 1/2 x 12" ✓
Ballast Pumps, No. and size TWO - 61 Ton HR U.S.O.A. 10'x8'x10' ✓ Lubricating Oil Pumps, including Spare Pump, No. and size TWO 50.1 Ton/HR MOTOR DRIVEN ✓
Are two independent means arranged for circulating water through the Oil Cooler { YES ✓ C/D Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge 8'x18 ✓
Pumps, No. and size: — In Engine and Boiler Room 2-3", 2-2", 1-1 1/2" FORD ✓ 1-4" 1-2" AFT O/D
In Holds, &c. 2-4" (AFTER PUMP ROOM) ✓ 2-4", 2-2 1/2" (FORD PUMP ROOM) ✓
Main Water Circulating Pump Direct Bilge Suctions, No. and size ONE 14" ✓ Independent Power Pump Direct Suctions to the Engine Room
Bilges, No. and size 1-4" ✓ Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes { YES ✓
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 { YES ✓
Are all Sea Connections fitted direct on the skin of the ship { YES ✓ Are they fitted with Valves or Cocks { YES — VALVES ✓
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates { YES ✓ Are the Overboard Discharges above or below the deep water line { BELOW ✓
Are they each fitted with a Discharge Valve always accessible on the plating of the vessel { YES ✓ Are the Blow Off Cocks fitted with a spigot and brass covering plate { YES ✓
What pipes pass through the bunkers { NONE ✓ How are they protected {
What pipes pass through the deep tanks { OIL PIPES FROM FUEL TANK AND COOLER ✓ Have they been tested as per rule { YES ✓
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times { YES ✓
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 { YES ✓ Is the Shaft Tunnel watertight { — Is it fitted with a watertight door { — worked from —

BOILERS, &c.—(Letter for record)

Total Heating Surface of Boilers

3413 SQ FT EACH BOILER

Is Forced Draft fitted **YES**

No. and Description of Boilers **TWO SINGLE DRUM BACK-DRUM**

Working Pressure

500 LBS.

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 **AUG 31-1940**

Main Boilers **JAN 14-1941**

Auxiliary Boilers

Donkey Boilers

Superheaters **JAN 14-1941**

General Pumping Arrangements **DEC 11-1940**

Oil Fuel Burning Arrangements

MAR 15-1941

Spare Gear. State the articles supplied:—

AS PER RULE

Bethlehem Steel Company, Shipbuilding Division,
Fore River Yard.

The foregoing is a correct description,

L. H. Owens.
General Manager

Manufacturer

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

SEE PHILA. REPORT N° 8005

APR 29 MAY 8.10.12.14.19 JUNE 10.13 JULY 3.8.9.10.11.30 AUG 2.4.5.6.7.8.9.12.13.15

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Dates of Examination of principal parts—Casings **17 FEB 1941** Rotors **17 FEB 1941** Blading **17 FEB 1941** Gearing **15 FEB 1941**

Wheel shaft **15 FEB 1941** Thrust shaft Intermediate shafts **19 MAY 1941** Tube shaft Screw shaft **19 MAY 1941**

Propeller **19 MAY 1941** Stern tube **8 MAY 1941** Engine and boiler seatings **12 MAY 1941** Engine holding down bolts **19 MAY 1941**

Completion of pumping arrangements **21 JULY 1941** Boilers fired **24 JULY 1941** Engines tried under steam **12 AUG 1941**

Main boiler safety valves adjusted **9 AUG 1941** Thickness of adjusting washers

Rotor shaft, Material and tensile strength **OH STEEL 96500 - 97000 - 94000**

Identification Mark **3478 LR.**

Flexible Pinion Shaft, Material and tensile strength

Identification Mark

Pinion shaft, Material and tensile strength **OH STEEL 105000 - 104000 - 103500**

Identification Mark **4162 4161 WHR**

1st Reduction Wheel Shaft, Material and tensile strength **OH STEEL 78500**

Identification Mark **6603 6607 4BC**

Wheel shaft, Material **OH STEEL** Identification Mark **4156 WHR**

Identification Mark

Intermediate shafts, Material **OH STEEL** Identification Marks **4084 JULM**

Thrust shaft, Material

Identification Mark

Screw shaft, Material **OH STEEL** Identification Marks **4085 JULM**

Tube shaft, Material

Identification Marks

Date of test **JULY 22-1941**

Is an installation fitted for burning oil fuel **YES**

Is the flash point of the oil to be used over 150°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 **TANKER**

If so, have the requirements of the Rules been complied with **YES**

Is this machinery a duplicate of a previous case **NO** If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c. **THE MACHINERY OF THIS VESSEL, BUILT UNDER THE SPECIAL SURVEY OF THE SOCIETY'S SURVEYOR AT PHILADELPHIA (SEE ATTACHED PHILA. REPORT N° 8005) HAS NOW BEEN FITTED ABOARD IN ACCORDANCE WITH THE RULES AND APPROVED PLANS AND AFTERWARDS TRIED UNDER FULL WORKING CONDITIONS WITH GOOD RESULTS. THE MATERIALS AND WORKMANSHIP ARE GOOD AND IN MY OPINION THE MACHINERY OF THIS VESSEL IS ELIGIBLE TO BE CLASSED WITH THE RECORD OF LNTC 8-41 AND NOTATION 2WTB**

The amount of Entry Fee **Charged at Phil.**

When applied for,

Balance special ... **\$399.75**

26.12.41

Donkey Boiler Fee

When received,

Travelling Expenses (if any)

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P. W. Whelan Jr.
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

NEW YORK DEC 23 1941

Assigned + LMC - P, 41.

NOTE-CL
2 WTB (WHT)
500 Lbs.



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Foundation