

# 7 REPORT ON STEAM TURBINE MACHINERY.

No. 42056  
25 APR 1942

pt. 4a. Date of writing Report JAN 9 1942 When handed in at Local Office JAN 19 1942 Port of NEW YORK (ASTON DISTRICT)  
 No. in Survey held at QUINCY, MASS Date, First Survey NOV 29 1941 Last Survey JAN 6 1942  
 Reg. Book. on the STEEL SINGLE SKEW TANKER "SINCLAIR HC" (Number of Visits 19)  
 Built at QUINCY, MASS. By whom built BETHLEHEM STEEL CO. Yard No. 1491 When built 1941  
 Engines made at TRENTON, N.J. By whom made DE LAVAL STEAM TURBINE CO. Engine No. 230910 When made 1941  
 Boilers made at BARBERTON, OHIO By whom made BABCOCK WILCOX CO. Boiler No. MB1524-1-R 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 897 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 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;  
 Direct Current Generator }  
 supplying power for driving — Propelling Motors, Type —  
 led — Kilowatts — Volts at — revolutions per minute. Direct coupled, single or double reduction geared to — propelling shafts.

TURBINE LOADING.	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	1.600	22.580	1				1.020	31.476	1	1.770	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	2.750	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									

Shaft Horse Power at each turbine { H.P. 2000 ✓  
 I.P. — ✓  
 L.P. 2000 ✓  
 for Shaft diameter at journals { H.P. 5" ✓  
 I.P. — ✓  
 L.P. 7" ✓  
 Pitch Circle Diameter { 1st pinion 9.200 ✓ 1st reduction wheel 48.200 ✓  
 2nd pinion 13.041 ✓ main wheel 124.947 ✓  
 Width of Face { 1st reduction wheel 14" ✓  
 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" ✓  
 Visible Pinion Shafts, diameter at bearings { External 1st 4 1/2" ✓ 2nd 9" ✓  
 Internal 1st — ✓ 2nd 7" ✓  
 diameter at bottom of pinion teeth { 1st 6.584 40 ✓  
 2nd 12.279 ✓  
 Pinion Shafts, diameter at bearings { 1st 8" ✓ Generator Shaft, diameter at bearings —  
 main 20" ✓ Propelling Motor Shaft, diameter at bearings —

Intermediate Shafts, diameter { as per rule 14.15 ✓  
 as fitted 14.50 ✓  
 Thrust Shaft, diameter at collars { as per rule — ✓  
 as fitted 10" ✓  
 Tube Shaft, diameter { as per rule — ✓  
 as fitted — ✓  
 New Shaft, diameter { as per rule 15.65 ✓  
 as fitted 16.75 ✓  
 Is the shaft fitted with a continuous liner { YES ✓  
 Thickness between bushes { as per rule .61 ✓  
 as fitted .86 ✓  
 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 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 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 appliance fitted at the after end of the tube shaft — ✓

Propeller, diameter 18'-0" Pitch 16.8" No. of Blades 4 State whether Moveable YES ✓  
 Length of Bearing in Stern Bush next to and supporting propeller 7'-5"  
 Total Developed Surface 118 square feet.  
 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 sea YES ✓  
 No. of Turbines fitted with astern wheels ONE Feed Pumps { No. and size TWO HORIZ 31 TON/HR ✓  
 How driven STEAM TURBINE ✓  
ONE VERT 22.3 TON/HR ✓  
 STEAM V.S.D.A. 10" x 6 1/2" ✓

Pumps connected to the Main Bilge Line { No. and size ONE HORIZ. CENT. 55 TON/HR ✓  
 How driven ELECTRIC MOTOR ✓  
ONE VERT 100 TON/HR ✓  
 STEAM V.S.D.A. 12" x 8 1/2" x 12" ✓  
 MOTOR DRIVEN ✓  
 STEAM V.S.D.A. 8" x 8 1/2" ✓  
 Lubricating Oil Pumps, including Spare Pump, No. and size TWO 50 TON/HR ✓  
 How driven STEAM V.S.D.A. ✓  
 Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size 2-3" FORD ✓  
1-4" AFT ✓  
3-2" IN COFFERDAMS ✓  
2-1 1/2" IN FATHOMETER WELL ✓

Water Circulating Pump Direct Bilge Suctions, No. and size ONE 14" ✓  
 Independent Power Pump Direct Suctions to the Engine Room { 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 man-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 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 ✓  
 How are they protected EXTRA HEAVY GAL. PIPE ✓  
 How are they protected IN PIPE TUNNEL ✓  
 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 — ✓

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**BOILERS, &c.**—(Letter for record) Total Heating Surface of Boilers 6826 sq ft

Is Forced Draft fitted YES No. and Description of Boilers TWO SINGLE DRUM BABCOCK & WILCOX 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 APR 31-1940 Main Boilers JAN 14-1941 Auxiliary Boilers — Donkey Boilers —

(If not state date of approval)

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  
General Manager

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops -- } SEE PHILA REPORT N° 8100  
{ During erection on board vessel --- } NOV 29 DEC 1, 2, 9, 10, 13, 16, 17, 19, 20, 29, 30, 31 JAN 1, 2, 3, 4, 5, 6  
{ Total No. of visits } 19

Dates of Examination of principal parts—Casings 11 JULY Rotors 11 JULY Blading 11 JULY Gearing 11 JULY

Wheel shaft 11 JULY Thrust shaft — Intermediate shafts DEC 5 Tube shaft — Screw shaft DEC 4

Propeller DEC 4 Stern tube DEC 1 Engine and boiler seatings DEC 17 Engine holding down bolts DEC 17

Completion of pumping arrangements JAN 1 Boilers fixed JAN 1 Engines tried under steam JAN 3

Main boiler safety valves adjusted JAN 4 Thickness of adjusting washers —

Rotor shaft, Material and tensile strength HP 103000 105,000 04 STEEL Identification Mark 3491 40

Flexible Pinion Shaft, Material and tensile strength — Identification Mark —

Pinion shaft, Material and tensile strength 04 STEEL HP 105000 LP 105000 Identification Mark 6600-6613

1st Reduction Wheel Shaft, Material and tensile strength 04 STEEL HP 77000 LP 79500 Identification Mark 4152-4158

Wheel shaft, Material 04 STEEL Identification Mark 9187 WHR Thrust shaft, Material — Identification Mark —

Intermediate shafts, Material 04 STEEL Identification Marks 9147 JULM Tube shaft, Material — Identification Marks —

Screw shaft, Material 04 STEEL Identification Marks 9801 JULM Steam Pipes, Material 04 STEEL Test pressure 900 LBS W 750 LB

Date of test DEC 31-1941 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 OIL TANKER 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 "SINCLAIR OPALINE"

**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 SURVEYORS AT  
PHILADELPHIA (SEE ATTACHED PHILA REPORT N° 8100) 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  
⊕ LMC 1-42 AND NOTATION 2 WTB (SAT) 500 LBS, FITTED FOR FUEL OIL  
1-42

The amount of Entry Fee ... Charged Phil. When applied for, 31 Jan 1942

Special ... \$399.25 When received, —

Donkey Boiler Fee ... £ : : 19...

Travelling Expenses (if any) £ : : 19...

P. J. Whitson Jr.  
Engineer Surveyor to Lloyd's Register of Shipping.

NEW YORK JAN 28 1942

Committee's Minute

Assigned + LMC-1,42

NOTE - 1 CL  
2 WTB (SAT) 500 lbs.



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