

# REPORT ON STEAM TURBINE MACHINERY. No. 42143

Date of writing Report 10 Feb 1942, When handed in at Local Office Feb 21 1942 Port of New York Received at London Office 4 APR 1942

No. in Survey held at Kearny New Jersey Date, First Survey 4 Oct 1941 Last Survey 21 Jan 1942  
Reg. Book. on the Tanker "E. W. SINCLAIR" (Hull No. 192) (Number of Visits 26)

Built at Kearny New Jersey By whom built Federal Shipbuilding & D. Co. Yard No. 192 Tons { Gross 10907 Net 6498  
Engines made at Lynn Mass. By whom made General Electric Co. Engine No. 46421 When built 1941  
Boilers made at Easton New Jersey By whom made Foster Wheeler Corporation Boiler No. B-1016 When made 1941  
Shaft Horse Power at Full Power 6000 Owners Sinclair Refining Co. Port belonging to Wilmington, Delaware  
Nom. Horse Power as per Rule 1376 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 cross compound, double reduction gear

No. of Turbines two Direct coupled, single reduction geared to one propelling shafts. No. of primary pinions to each set of reduction gearing two  
Astern one 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 .....	8.45"	29.210"	1				1.195"	34.990"	1	1.930	37.230	2	
2ND       " .....	6.80"	17.710"	1				1.735"	35.870"	1	3.940	40.940		1
3RD       " .....	7.40"	17.830"	1				2.320"	36.840"	1				
4TH       " .....	8.20"	17.990"	1				3.170"	38.340"	1				
5TH       " .....	9.50"	18.250"	1				4.860"	40.720"	1				
6TH       " .....	1.000"	18.350"	1				7.250"	44.300"	1				
7TH       " .....	1.110"	18.570"	1				9.560"	47.760"	1				
8TH       " .....	1.230"	18.810"	1										
9TH       " .....	1.480"	19.310"	1										
10TH       " .....	1.710"	19.770"	1										
11TH       " .....	2.000"	20.350"	1										
12TH       " .....													

Shaft Horse Power at each turbine { H.P. 3000 I.P. ✓ L.P. 3000 ✓ Revolutions per minute, at full power, of each Turbine Shaft { H.P. 6072 I.P. ✓ L.P. 4048 ✓  
1st reduction wheel 882 main shaft 92

Rotor Shaft diameter at journals { H.P. 3" 8/16" I.P. ✓ L.P. 6" 3/16" ✓ Pitch Circle { 1st pinion 8.4" 2nd pinion 14.88" 1st reduction wheel 54.8" main wheel 142.77" Width of Face { 1st reduction wheel 17" main wheel 33.25"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 15" 2nd pinion 26 1/2" 1st reduction wheel 14" main wheel 28 1/2"

Flexible Pinion Shafts, diameter { 1st none 2nd 8 1/2" Pinion Shafts, diameter at bearings { External 6" Internal 12" 1st solid 2nd 3 3/4" diameter at bottom of pinion teeth { 1st HP 8.025" 2nd HP 12.325" 14.180"

Wheel Shafts, diameter at bearings { 1st 9" main 21" diameter at wheel shroud, { 1st 58.068" main 143.625" Generator Shaft, diameter at bearings ✓ Propelling Motor Shaft, diameter at bearings ✓

Intermediate Shafts, diameter { as per rule 16.11" as fitted 16.5" Thrust Shaft, diameter at collars { as per rule 14.69" as fitted 14.25" 90 torque

Tube Shaft, diameter { as per rule ✓ as fitted ✓ Screw Shaft, diameter { as per rule 19.5" as fitted 19.5" Is the { Wedge screw } shaft fitted with a continuous liner { Yes

Bronze Liners, thickness in way of bushes { as per rule 8.4" as fitted 1.0" Thickness between bushes { as per rule 6.3" as fitted 9.7" 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 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 No If so, state type ✓

Propeller, diameter 19'0" Pitch variable No. of Blades 4 State whether Moveable Solid propeller Total Developed Surface 135.6 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 2-1/2 inch centrifugal & 1-3 inch simplex How driven 4" steam turbine - 3 inch vertical steam

Pumps connected to the Main Bilge Line { No. and size one centrifugal 450 G.P.M. - one (14" x 8 1/2" x 12") 450 G.P.M. How driven centrifugal two stage motor driven - one duplex steam driven

Ballast Pumps, No. and size 2-1/4" main cargo, 2-8" stripping Lubricating Oil Pumps, including S.P. Pump, No. and size 1-6" motor driven, 1-6" simplex steam

Are two independent means arranged for circulating water through the Oil Cooler Yes Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size 4-3 inch In Pump Rooms 1-3 inch each

In Holds, &c. Tanker

Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-12 inch Independent Power Pump Direct Suctions to the Engine Room

Bilges, No. and size 1-4 inch 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 No on welded stools Are they fitted with Valves or Cocks Yes

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 main discharge 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 oil fuel suctions How are they protected oil fuel

What pipes pass through the deep tanks cargo suctions 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 Tanker Is the Shaft Tunnel watertight Engines aft Is it fitted with a watertight door ✓ worked from ✓



7 5820 total  
BOILERS, &c.—(Letter for record ✓) Total Heating Surface of Boilers 4590 each  
Is Forced Draft fitted Yes No. and Description of Boilers 2 Foster Wheeler Water Tube (Rt) Working Pressure 525 lbs " "  
Is a Report on Main Boilers now forwarded? Yes  
Is a Donkey Boiler fitted? No 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 Shafting ✓ Main Boilers ✓ Auxiliary Boilers ✓ Donkey Boilers ✓  
(If not state date of approval) Plans approved and forwarded 5. Oct. 1940.  
Superheaters ✓ General Pumping Arrangements ✓ Oil Fuel Burning Arrangements ✓

SPARE GEAR.  
Has the spare gear required by the Rules been supplied Yes  
State the principal additional spare gear supplied Tail Shaft (C.L.). Propeller solid bronze. Thrust Shoes (6). Packing complete Main Engine  
spare brasses for reduction gears, spares lubricating oil pumps. Impellers & shafts for Main & Aux circulating pumps  
spare tubes for condensers, spares condensate pumps, spare valves feed pumps, fire & bilge pumps and pump  
Bilge pumps, spares for oil burning equipment and sundry spares for all motors and generators and electrical  
equipment.

The foregoing is a correct description,

Federal S. B. & O. P. Co.  
W. H. Armstrong, Asst. to Ch. Engrs Manufacturer.

Dates of Survey while building { During progress of work in shops -- April 21 & 30. May 29 & 30 June 2 & 9 July 22 & 23, 1941. (8)  
During erection on board vessel -- Oct 4-20-23-27-30-31 (1941) Nov 3-6-10-14-19-26-27, Dec 1-4-6-8-12-15-18-27-31, January 2-7-10-12-15-21 (1942) (26)  
Total No. of visits 34

Dates of Examination of principal parts—Casings April 21-30. June 2-9 July 2-3 Rotors June 9 July 2-3 Blading July 2-3 Gearing July 9 July 2-3  
Wheel shaft June 9 July 2-3 Thrust shaft ✓ Intermediate shafts 4th Dec 1941 Tube shaft ✓ Screw shaft 14th Nov 1941  
Propeller 14th Nov 1941 Stern tube 10th Nov 1941 Engine and boiler seatings 27 Oct 1941 Engine holding down bolts 1st Dec 1941  
Completion of fitting sea connections 1st Dec 1941 Completion of pumping arrangements 2 Jan 1942 Boilers fixed 27th Dec 1941 Engines tried under steam 10th Jan 1942  
Main boiler safety valves adjusted 31st Dec 1941 Thickness of adjusting washers 7/16"

Rotor cast, Material and tensile strength O.H. Steel, H.P. 124,000 L.P. 106,200 Identification Mark 458 459 23-7-41

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

Pinion shaft, Material and tensile strength O.H. Steel, H.P. 100,000 L.P. 109,500 Identification Mark 460 23-7-41

1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel, L.P. 120,000 L.P. 105,000 Identification Mark 461 23-7-41

Wheel shafts Material O.H. Steel Identification Mark 462 23-7-41 Thrust shaft, Material ✓ Identification Mark ✓

Intermediate shafts, Material O.H. Steel Identification Marks 463 23-7-41 Pinions ✓ Identification Marks 770-571-5

Screw shaft, Material O.H. Steel Identification Marks 772-4394 W.H.R. Tube shaft, Material O.H. Steel Identification Marks 770-571-5

Date of test 31st Oct. 1941 Is an installation fitted for burning oil fuel Yes Test pressure 1500 lbs " "

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

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 "Albert & Watts" - "Patrick J. Hurley"

General Remarks (State quality of workmanship, opinions as to class, &c.)

The machinery and boilers have been installed in accordance with the rules and approved plans and the workmanship has been satisfactory. The installation throughout has been tried under various and full working conditions and I am of the opinion that the vessel is eligible to have the record of + LMC 1,42. and the notation of C.L. and Fitted for Oil Fuel 1,42. F.P. above 150°F.

The amount of Entry Fee ... \$30.00 : When applied for, 11-2-1942  
Installation n.y. ... \$150.00 :  
Donkey Boiler Fee ... £ : When received, 19  
Travelling Expenses (if any) \$25.00 :

Committee's Minute

NEW YORK FEB 25 1942

Assigned + LMC-1,42

E. S. Whitham  
Engineer Surveyor to Lloyd's Register of Shipping.

NOTE-C.L.  
2 WTB (Skt) 525 lbs.



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Foundation