

Rpt. 4a.

# REPORT ON STEAM TURBINE MACHINERY. No. 42143

Date of writing Report 10<sup>th</sup> 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<sup>th</sup> Oct 1941 Last Survey 21<sup>st</sup> January 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.P. Co Yard No. 192 Tons Gross 10907  
Engines made at Lynn, Mass. By whom made General Electric Co Engine No. 46420 Net 6498 When built 1941  
Boilers made at Carters 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  
direct coupled to Alternating Current Generator phase periods per second Direct Current Generator 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	1.130"	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	1.420"	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. 6072 L.P. 3000 Revolutions per minute, at full power, of each Turbine Shaft 1st reduction wheel 882  
Rotor Shaft diameter at journals H.P. 3" 7/8 4" aft. Pitch Circle 1st pinion 8.4" 12.6" 1st reduction wheel 57.8" Width of Face 1st reduction wheel 17"  
L.P. 6" 3/4 5 1/2" aft. Diameter 2nd pinion 14.88" main wheel 142.77" main wheel 33.25"

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

Flexible Pinion Shafts, diameter 1st none 2nd 8 1/2" Pinion Shafts, diameter at bearings External 6" Internal 1st 12" 2nd 13 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" diameter at wheel shroud, 1st 58.068" Generator Shaft, diameter at bearings main 21" Propelling Motor Shaft, diameter at bearings main 143.625"

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

Tube Shaft, diameter as per rule Screw Shaft, diameter as per rule 17.69" Is the ✓ shaft fitted with a continuous liner ✓  
as fitted as fitted 19.5" Is the ✓ screw ✓

Bronze Liners, thickness in way of bushes as per rule 8 1/4" Thickness between bushes as per rule 6 1/2" Is the after end of the liner made watertight in the  
as fitted 1.0" as fitted 9.7" 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 ✓ Length of Bearing in Stern Bush next to and supporting propeller 7' 6 1/2"

Propeller, diameter 19' 0" Pitch variable No. of Blades 4 State whether Moveable Solid prop. 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 Spare 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:—In Engine and Boiler Room 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 the Overboard Discharges above or below the deep water line main discharge below  
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes Are the Blow Off Cocks fitted with a spigot and brass covering plate Yes

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 suction How are they protected oil fuel  
What pipes pass through the deep tanks cargo suction 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 ✓

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 (Sht) Working Pressure 525 lbs

Is a Report on Main Boilers now forwarded?  Yes

Is  a Donkey  an Auxiliary 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 (Ct), 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-rooms, 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 4-20-25-27-30-31, 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 4 Dec 1941 Tube shaft  Screw shaft 14 Nov 1941

Propeller 14 Nov 1941 Stern tube 10 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 27 Dec 1941 Engines tried under steam 10 Jan 1942

Main boiler safety valves adjusted 31st Dec 1941 Thickness of adjusting washers 2 & 5/16"

Rotor shaft, Material and tensile strength O.H. Steel, HP, 124,000 LP, 106,200 Identification Mark 458 23-7-41

Flexible Pinion Shaft, Material and tensile strength  Identification Mark

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

1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel, HP, 120,000 LP, 105,000 Identification Mark 462 23-7-41

Wheel shafts Material O.H. Steel Identification Mark 464 23-7-41 Thrust shaft, Material  Identification Mark

Intermediate shafts, Material O.H. Steel Identification Marks 465 23-7-41 Pinions 466 23-7-41 Tube shaft, Material O.H. Steel Identification Marks 467 23-7-41

Screw shaft, Material O.H. Steel Identification Marks 468 23-7-41 Steam Pipes, Material Steel Test pressure 1500 lbs

Date of test 31st Oct. 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

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, etc.)

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 Ct. and fitted for oil fuel 1,42. F.P. above 150°F.

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

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

Committee's Minute NEW YORK FEB 25 1942

Assigned + LMC-1,42

NOTE-C2  
2 WTB (Sht) 525 lbs.

