

## Report on Steam Turbine Machinery. No. 10140

Rpt. 4a.

Date of writing Report 5 May, 1954 When handed in at Local Office 5 May, 1954 Port of PHILADELPHIA, PA. Received at London Office DEC 1954  
No. in Survey held at Essington, Pa. Date, First Survey 26 April, Last Survey 27th April, 1954  
Reg. Book (Number of Visits two)

on the \_\_\_\_\_ Tons (Gross \_\_\_\_\_ Net \_\_\_\_\_)  
Built at Quincy, Mass. By whom built Bethlehem Steel Co. Yard No. 1635 When built \_\_\_\_\_  
Engines & Gears made at Essington, Pa. By whom made Westinghouse Elec. S.B. Div. Serial 1041508- When made 1954  
Boilers made at \_\_\_\_\_ By whom made \_\_\_\_\_ Boiler No. 3 & 4 When made \_\_\_\_\_  
Shaft Horse Power at Full Power \_\_\_\_\_ Owners Orion Shipping Co. Port belonging to \_\_\_\_\_  
Nom. Horse Power as per Rule \_\_\_\_\_ 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, &amp;c.—Description of Engines 400 K.W. Geared Turbine Generator Sets (2 units per ship)

No. of Turbines ~~one~~ one generator ~~one~~ one No. of primary pinions to each set of reduction gearing one  
direct coupled to Alternating Current Generator 3 phase 60 periods per second rated 400 Kilowatts 440 Volts at 1200 revolutions per minute;  
for supplying power for driving \_\_\_\_\_ Auxiliary Machinery and Lighting.  
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.

Impulse Blading { No. of rows \_\_\_\_\_  
Reaction Blading { No. of stages \_\_\_\_\_  
No. of rows in each stage \_\_\_\_\_

Shaft Horse Power at each turbine { H.P. \_\_\_\_\_ I.P. \_\_\_\_\_ L.P. \_\_\_\_\_  
Revolutions per minute, at full power, of \_\_\_\_\_ Turbine Shaft \_\_\_\_\_  
H.P. 9018 1st reduction wheel \_\_\_\_\_  
main shaft 1200

Rotor Shaft diameter at journals { H.P. 2" Pitch Circle Diameter \_\_\_\_\_ 1st pinion \_\_\_\_\_ main wheel 29.446  
Width of Face { 1st reduction wheel 10" main wheel 10"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 6-13/16" main wheel 6-13/16"  
1st 3.7076

Flexible Pinion Shafts, diameter at bearings { 1st \_\_\_\_\_ 2nd \_\_\_\_\_  
External 1st { 2-3/4" 2nd { \_\_\_\_\_ diameter at bottom of pinion teeth  
Internal 1st { \_\_\_\_\_ 2nd { \_\_\_\_\_

Wheel Shafts, diameter at bearings { 1st 4" diameter at wheel shroud, { 1st \_\_\_\_\_ Generator Shaft, diameter at bearings 4"  
main \_\_\_\_\_ Propelling Motor Shaft, diameter at bearings \_\_\_\_\_

Intermediate Shafts, diameter \_\_\_\_\_ as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Thrust Shaft, diameter at collars \_\_\_\_\_ as per rule \_\_\_\_\_ as fitted \_\_\_\_\_

Tube Shaft, diameter \_\_\_\_\_ as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Screw Shaft, diameter \_\_\_\_\_ as per rule \_\_\_\_\_ as fitted \_\_\_\_\_ Is the { tube { screw } shaft fitted with a continuous liner { \_\_\_\_\_

Bronze Liners, thickness in way of bushes \_\_\_\_\_ as per rule \_\_\_\_\_ Thickness between bushes \_\_\_\_\_ as per rule \_\_\_\_\_ Is the after end of the liner made watertight in the propeller boss \_\_\_\_\_

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 \_\_\_\_\_ If so, state type \_\_\_\_\_ Length of Bearing in Stern Bush next to and supporting propeller \_\_\_\_\_  
Propeller, diameter \_\_\_\_\_ Pitch \_\_\_\_\_ No. of Blades \_\_\_\_\_ State whether Moveable \_\_\_\_\_ Total Developed Surface \_\_\_\_\_ 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. Turbines exhaust direct to the \_\_\_\_\_  
Condenser \_\_\_\_\_ No. of Turbines fitted with astern wheels \_\_\_\_\_ Feed Pumps { No. and size \_\_\_\_\_ How driven \_\_\_\_\_

Pumps connected to the Main Bilge Line { No. and size \_\_\_\_\_ How driven \_\_\_\_\_  
Ballast Pumps, No. and size \_\_\_\_\_ Lubricating Oil Pumps, including Spare Pump, No. and size \_\_\_\_\_

Are two independent means arranged for circulating water through the Oil Cooler \_\_\_\_\_ Suctions, connected both to Main Bilge Pumps and Auxiliary Bilge Pumps, No. and size:—In Engine and Boiler Room \_\_\_\_\_ In Pump Room \_\_\_\_\_

In Holds, &c. \_\_\_\_\_ Main Water Circulating Pump Direct Bilge Suctions, No. and size \_\_\_\_\_ Independent Power Pump Direct Suctions to the Engine Room \_\_\_\_\_

Bilges, No. and size \_\_\_\_\_ Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes \_\_\_\_\_  
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 fitted with Valves or Cocks \_\_\_\_\_  
Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates \_\_\_\_\_ Are the Overboard Discharges above or below the deep water line \_\_\_\_\_

Are they each fitted with a Discharge Valve always accessible on the plating of the vessel \_\_\_\_\_ Are the Blow Off Cocks fitted with a spigot and brass covering plate \_\_\_\_\_ What pipes pass through the bunkers \_\_\_\_\_ How are they protected \_\_\_\_\_

What pipes pass through the deep tanks \_\_\_\_\_ Have they been tested as per rule \_\_\_\_\_  
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 \_\_\_\_\_ worked from \_\_\_\_\_

BOILERS, &c.—(Letter for record \_\_\_\_\_) Total Heating Surface of Boilers \_\_\_\_\_  
Is Forced Draft fitted \_\_\_\_\_ No. and Description of Boilers \_\_\_\_\_ Working Pressure \_\_\_\_\_

Is a Report on Main Boilers now forwarded? \_\_\_\_\_  
cc: New York

If not, state whether, and when, one will be sent?

Is a Report also sent on the Hull of the Ship?

NOTE.—The words which do not apply should be deleted.

Is { a Donkey Boiler fitted? If so, is a report now forwarded? }  
{ an Auxiliary }  
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)  
Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements  
Geared turbines Have torsional vibration characteristics of system been approved Date of approval  
situated aft.

SPARE GEAR.

Has the spare gear required by the Rules been supplied As specified.

State the principal additional spare gear supplied

The foregoing is a correct description.

J. Brown, Manager Quality Control  
WESTINGHOUSE ELECTRIC CORP.

Dates of Survey while building During progress of work in shops - - 26th and 27th April, 1954  
During erection on board vessel - - -  
Total No. of visits

Dates of Examination of principal parts—Casings 27.4.54 Rotors 27.4.54 Blading 27.4.54 Gearing 27.4.54

Wheel shaft Thrust shaft Intermediate shafts Tube shaft Screw shaft

Propeller Stern tube Engine and boiler seatings Engine holding down bolts

Completion of fitting sea connections Completion of pumping arrangements Boilers fixed Engines tried under steam

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength O.H. Steel 100,000 lbs. (Spec. 5875) Identification Mark T.B. 272

Flexible Pinion Shaft, Material and tensile strength Identification Mark

Pinion shaft, Material and tensile strength O.H. Steel 108,000 lbs. (Spec. 2877) Identification Mark B 30812

C .47, Mn .84, P .018, S .011, Si .24, Cr .63, ; Chemical analysis.

If Pinion Shafts are made of special steel state date of approval of chemical analyses, physical properties and heat treatment

1st Reduction Wheel Shaft, Material and tensile strength O.H. Steel 79,500 (Spec. 8126) Identification Mark T.B. 352

Wheel shaft, Material Identification Mark Thrust shaft, Material Identification Mark

Intermediate shafts, Material Identification Marks Tube shaft, Material Identification Marks

Screw shaft, Material Identification Marks Steam Pipes, Material Test pressure

Date of test Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F Have the requirements of the Rules for the use of oil as fuel been complied with

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo If so, have the requirements of the Rules been complied with

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 Quincy, Mass. Hull 162

General Remarks. (State quality of workmanship, opinions as to class, &c.) These turbo generators have been built un

Special Survey in accordance with approved plans, New York letters and otherwise in conformi

with the Society's Rules.

The materials and workmanship are good and the tests required by the Rules have been satisfac

torily carried out except where under these special circumstances, American Bureau of Ship

ping tests have been accepted.

The turbines have been examined and tested under working conditions in the shop coupled to

their respective generators which also have been built under Special Survey (3S47P714 &

3S47P714 J.M.G.) afterwards part opened out and found satisfactory.

These units will be forwarded to the Bethlehem Steel Shipbuilding Div., Quincy, Mass. for in

stallation in their Hull No. 1635 and have been stamped for identification as follows:-

Serial 10A4508-3 Serial 10A4508-4

LLOYD'S PHL. LLOYD'S PHL.

No. 1045 No. 1044

E.P.W. E.P.W.

27.4.54 27.4.54

The amount of Entry Fee ... When applied for 27.4.54

Special ... Inclusive fee ... 19

Donkey Boiler Fee ... to be charged When received

Travelling Expenses (if any) later. ... 19

Committee's Minute NEW YORK NOV 17 1954

Assigned See attached 1<sup>st</sup> entry Report