

Reduction Gears for REPORT ON STEAM TURBINE MACHINERY. No. 1349

Port of **Cleveland, Ohio**
 Date, First Survey **3 August 48.** Last Survey **16 Feb. 1949**
 Survey held at **Milwaukee, Wisconsin**
 on the **Main Propulsion Reduction Gears for 28000 Ton Bulk Oil Carrier**
 built at **Baltimore, Maryland** By whom built **Bethlehem Sparrows Point Shipyard Inc.** Yard No. **4467**
 Engines made at **Milwaukee, Wisconsin** By whom made **Falk Corporation** Engine No. **422-500-A** When made **1949**
 Shaft Horse Power at Full Power **12,500** Owners **-** Port belonging to **-**
 Is Refrigerating Machinery fitted for cargo purposes **-** Is Electric Light fitted **-**

STEAM TURBINE ENGINES, &C.—Description of Engines
 of Turbines Ahead **-** Direct-coupled, single reduction geared } to **one** propelling shafts / No. of primary pinions to each set of reduction gearing **two**
 Astern **-** double reduction geared }
 Direct coupled to **Alternating Current Generator** phase **-** periods per second } rated **-** Kilowatts **-** Volts at **-** revolutions per minute;
 supplying power for driving **-** Propelling Motors, Type **-**
 Direct Current Generator }
 Kilowatts **-** Volts at **-** revolutions per minute. Direct coupled, single or double reduction geared to **-** propelling shafts.

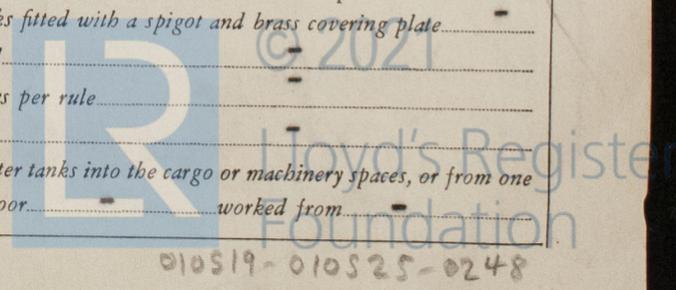
TURBINE LOADING.	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
1st EXPANSION												
2nd												
3rd												
4th												
5th												
6th												
7th												
8th												
9th												
10th												

Shaft Horse Power at each turbine { H.P. **-** I.P. **-** L.P. **-** } Pinion { H.P. **4688** I.P. **-** L.P. **2625** } 1st reduction wheel **765** main shaft **100**
 Shaft diameter at journals { H.P. **-** I.P. **-** L.P. **-** } Pitch Circle { 1st pinion **20.193"** 1st reduction wheel **69.304"** 2nd pinion **21.951"** main wheel **167.911"** } Width of Face { 1st reduction wheel **10.875" x 2** main wheel **42.500"** }

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion **HP. 35.500"** LP. **36.000"** 2nd pinion **38.75"** } 1st reduction wheel **13.4375"** main wheel **30.25"**
 Pinion Shafts, diameter at bearings { External **6.986"** LP. **8.985"** Internal **17.975"** } { **17.975"** } diameter at bottom of pinion teeth { HP. **10.928"** LP. **19.813"** } 2nd **21.411"**
 Wheel Shafts, diameter at bearings { 1st **17.975"** } diameter at wheel shroud, { 1st **69.590"** } Generator Shaft, diameter at bearings **-** Propelling Motor Shaft, diameter at bearings **-**
 Intermediate Shafts, diameter as per rule **-** as fitted **-** Thrust Shaft, diameter at collars as per rule **-** as fitted **22.475"** Tube Shaft, diameter as per rule **-** as fitted **-**
 Propeller 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 **-** as fitted **-**
 Thickness between bushes as per rule **-** as fitted **-** 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

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
 other appliance fitted at the after end of the tube shaft **-** 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.

Angle Screw, are arrangements made so that steam can be led direct to the L.P. Turbine **-** Can the H.P. or I.P. Turbine 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 **-** }
 Bilge Pumps, No. and size **-** Lubricating Oil Pumps, including Spare Pump, No. and size **-**
 Two independent means arranged for circulating water through the Oil Cooler **-** Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge
 Pumps, No. and size:—In Engine and Boiler Room **-**
 Holds, &c. **-**
 Water Circulating Pump Direct Bilge Suctions, No. and size **-** Independent Power Pump Direct Suctions to the Engine Room
 Pumps, No. and size **-** Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes **-**
 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
 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 **-**
 How are they protected **-**
 How are they protected **-**
 Have they been tested as per rule **-**
 All Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times **-**
 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?
 Is { a Donkey } Boiler fitted? If so, is a report now forwarded?
 { an Auxiliary }
 Plans. Are approved plans forwarded herewith for Shafting **Gears** **Yes** Main Boilers Auxiliary Boilers Donkey Boilers
 (If not state date of approval)
 Superheaters General Pumping Arrangements Oil Fuel Burning Arrangements
 Spare Gear. State the articles supplied: **AS per rule requirements.**

The foregoing is a correct description, Manufacturer

Dates of Survey while building { During progress of work in shops - - } **3 Aug. 5 Oct. 10 Dec. 1948 18-19 Jan. 14-15-16 Feb. 1949.**
 { During erection on board vessel - - - }
 Total No. of visits **8**
 Dates of Examination of principal parts—Casings Rotors Blading **19 Jan. 49**
 Gearing **16 Feb. 49**
 Wheel shaft **19 Jan. 49** Thrust shaft **19 Jan. 49** Intermediate shafts Tube shaft Screw shaft
 Propeller Stern tube Engine and boiler seatings Engine holding down bolts
 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 Identification Mark
 Flexible Pinion Shaft, Material and tensile strength Identification Mark
 Pinion shaft, Material and tensile strength **O.H. Forged Steel** HP. 107000 psi LP. 108,500 psi Identification Mark **Lloyd's 1688**
 1st Reduction Wheel Shaft, Material and tensile strength **O.H. Forged Steel** HP. 108500 - 109500 psi LP. 97500 - 99500 psi Identification Mark **Lloyd's 1682**
Steel **Lloyd's 3620** Identification Mark **Lloyd's 3022** main wheel shaft
 Wheel shaft, Material **O.H. Forged Steel** Identification Mark **19.1.49 LAD.** Thrust shaft, Material **Integral with** 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
 Is this **gearing** 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. **This set of main propulsion, double reduction, double helical gears was constructed under Special Survey in accordance with the approved plans and the Rules of this Society. The materials were tested by the Surveyors and the workmanship is of good quality throughout. On completion the unit was subjected to a series of running tests at the manufacturer's works including maximum R.P.M. and Torque. The gearing was observed to operate in a satisfactory manner under all conditions of loading, ahead and astern. The gearing was afterwards dismantled, carefully examined and found in good condition. The gear components were subsequently despatched to the shipbuilders for installation. It is recommended this set of reduction gears be incorporated in the vessel's Machinery Record, subject to being installed on board and tested under working conditions to the satisfaction of the Society's Surveyor.**

The amount of Entry Fee	£ \$ 350 - :	When applied for,
Special	£ : :	19
Donkey Boiler Fee	£ : :	When received,
Travelling Expenses (if any)	£ \$ 175 - :	19

J. A. Ballet
 Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute **NEW YORK JUL 27 1949**

Assigned *See First Entry Report Vol. 89/11 attached*

Certificate (if required) to be sent to
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)