

DOUBLE REDUCTION GEAR  
**REPORT ON STEAM TURBINE MACHINERY.** No. 4247

4a. Writing Report 25 April 1949 When handed in at Local Office 19 Port of Boston, Massachusetts  
 Date, First Survey January 24 Last Survey April 1, 1949  
 Survey held at Lynn, Mass. (Number of Visits 6)  
 Book on the "Ras All Ard"  
 at Chester, Pa. By whom built Sun Shipbuilding & Dry Dock Co. Yard No. 569 When built  
 Reduction gear Lynn, Mass. By whom made General Electric Co. Engine No. 83325 When made 1948  
 H.P. 83325  
 L.P. 83326  
 Boiler No. 83326 When made  
 Gear No. 67133  
 Port belonging to  
 Horse Power at Full Power 12,500 Owners Gulf Oil Corp.  
 Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted  
 for which Vessel is intended

STEAM TURBINE ENGINES, &c.—Description of Engines Cross compound turbines and double reduction gears  
 Ahead Two ~~Direct coupled~~  
 of Turbines One ~~single reduction geared~~ } to One propelling shafts. No. of primary pinions to each set of reduction gearing Two  
 Astern One ~~double reduction geared~~  
 coupled to { Alternating Current Generator phase periods per second } rated Kilowatts Volts at revolutions per minute;  
 Direct Current Generator }  
 applying power for driving Propelling Motors, Type  
 Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

MANUFACTURER	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.
EXPANSION	.65	29.3	1				1.28	40.7	1	.85	44.4	1
Jun	.86	19.0	1				1.62	41.4	1	1.13	44.7	1
"	.96	19.2	1				2.18	42.5	1	4.58	49.0	1
"	1.08	19.5	1				3.03	44.2	1			
Jan.	1.21	19.7	1				4.02	46.2	1			
Mar.	1.39	20.1	1				6.11	49.5	1			
Mar	1.62	20.6	1				8.79	53.4	1			
7 23	2.02	21.4	1				11.38	57.3	1			
n.21												
1-4												
4-3												

Horse Power at each turbine { H.P. 6688  
 I.P. Revolutions per minute, at full power, of each Turbine Shaft { H.P. 7062 1st reduction wheel 1006  
 L.P. 5812  
 4.0" Forward  
 Shaft diameter at journals { H.P. 4.5" Aft Pitch Circle { 1st pinion H.P. - 9.950" H.P. - 69.850"  
 I.P. 8.0" Fwd Diameter { 2nd pinion L.P. - 15.709" L.P. - 53.6905"  
 L.P. 6.5" Aft Diameter { 2nd pinion - 18.0" main wheel 161.666" Face { 1st reduction wheel 19 1/4"  
 { main wheel 41"

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 15 1/2" 1st reduction wheel 15 1/4"  
 { 2nd pinion 2'-5 3/4" main wheel 2'-8 1/2"  
 1st Pinion { 1st None  
 H.P. - 6.2" Pinion Shafts, diameter at bearings External 1st { H.P. - 5.0" H.P. - 13.0"  
 diameter { 2nd L.P. - 8.79" Internal 1st { L.P. - 6.0" L.P. - 13.0"  
 { Solid 2nd { Solid diameter at bottom of pinion teeth { 1st H.P. - 9.503"  
 { 2nd L.P. - 17.237"

Shafts, diameter at bearings { 1st 10.0" diameter at wheel shroud, { 1st 10 3/8" Generator Shaft, diameter at bearings  
 main 24.0" { main 26 1/2" Propelling Motor Shaft, diameter at bearings  
 Intermediate Shafts, diameter as per rule Thrust Shaft, diameter at collars as per rule Tube Shaft, diameter as per rule  
 as fitted 13-3/8" as fitted

Shaft, diameter as per rule Is the { tube } shaft fitted with a continuous liner { Bronze Liners, thickness in way of bushes as per rule  
 as fitted screw } as fitted  
 Distance 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  
 as fitted

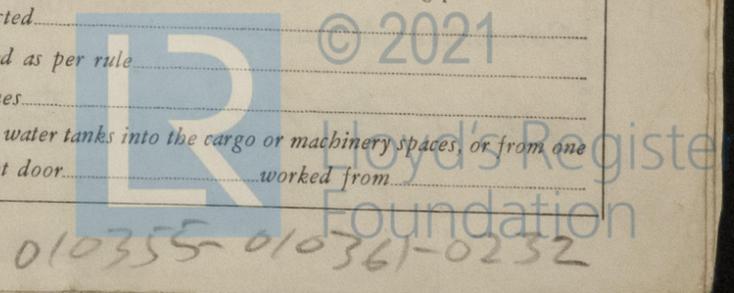
fusion through the whole thickness of the liner If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a  
 material insoluble in water and non-corrosive. If two liners are fitted, is the shaft lapped or protected between the liners. Is an approved Oil Gland  
 appliance fitted at the after end of the tube shaft. 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.  
 The 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  
 sea. Yes No. of Turbines fitted with astern wheels One Feed Pumps { No. and size  
 How driven

connected to the Main Bilge Line { No. and size  
 How driven  
 Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size  
 independent means arranged for circulating water through the Oil Cooler Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge  
 No. and size:—In Engine and Boiler Room

Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room  
 No. and size Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes  
 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

Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks  
 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  
 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  
 pipes pass through the bunkers How are they protected  
 pipes pass through the deep tanks Have they been tested as per rule

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?

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

Spare Gear. State the articles supplied: One complete bearing bush for each size of main gear wheel shafts, shafts and pinion shaft.

One half set of packing rings for each gland.

One set of thrust shoes for each size.

*R. E. Grube, Turbine Engineering Dept.  
General Electric Co* Manufacturer

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops - } January 24, 31, March 3, 4, 21, and April 1, 1949  
{ }  
Total No. of visits 6

Dates of Examination of principal parts—Casings Jan. 24, Mar. 3, 21, 1949 Rotors Jan. 24, 31, Mar. 4, 1949 Blading Jan. 24, 31, Mar. 4, 1949 Gearing Jan. 24, Mar. 4, 1949  
Wheel shaft Jan. 24, 1949 Thrust shaft Jan. 24, 1948 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 H. P.-O. H. Steel-111,500 lbs. Identification Mark LR 302 1-4-  
H. S. L. P.-O. H. Steel-103,000 lbs. Identification Mark LR 301 4-3-  
Pinion Shaft, Material and tensile strength H. P.-O. H. Steel-100,500 lbs. Identification Mark LR 301 31-1-  
L.S. Pinion shaft, Material and tensile strength L. P.-O. H. Steel-117,000 lbs. Identification Mark LR 301 31-1-  
1st Reduction Wheel Shaft, Material and tensile strength H. P.-O. H. Steel-96,000 lbs. Identification Mark LR 301 31-1-  
T.B.  
Wheel shaft, Material O. H. Steel Identification Mark LR 301 31-1-49 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

Is this machinery a duplicate of a previous case If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c. This machinery has been completed under Special Survey in accordance with approved plans. The forgings and castings were tested by A. B. S. Surveyors and for particulars of tests, please refer to A. B. S. Certificates which are to be supplied. The workmanship and materials are good. The gears have been tried out in the shop under 38% of full load torque conditions and found satisfactory. The unit has been forwarded to the Sun Shipbuilding & Dry Dock Co., Chester, Pa.

Arranged fee to be charged by Philadelphia Surveyors on completion.

The amount of Entry Fee	£	:	:	When applied for,
Special	£	:	:	19
Donkey Boiler Fee	£	:	:	When received,
Travelling Expenses (if any)	£ \$4.00	:	:	19

*Thomas Duvall*  
Engineer Surveyor to Lloyd's Register of Shipping.

NEW YORK AUG 31 1949

Committee's Minute

Assigned See First Entry Report attached



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