

DOUBLE REDUCTION GEAR AND
REPORT ON STEAM TURBINE MACHINERY. No. 4246

Received at London Office. **18 MAY 1949**

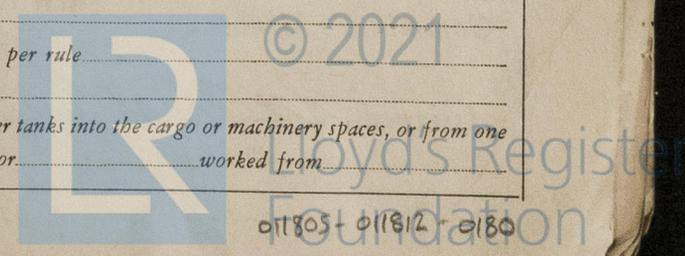
of writing Report. **21 January 49** When handed in at Local Office. **19** Port of **Boston, Massachusetts**
 in Survey held at **Lynn, Mass.** Date, First Survey **3 December 1948** Last Survey **17 December 1948**
 on the **S. S. KUWAIT** (Number of Visits **4**)
 Tons { Gross
 Net
 By whom built **Sun Shipbuilding & Dry Dock Co.** Yard No. **567** When built
 By whom made **General Electric Co.** Engine No. **H.P. 83315** When made **1948**
 By whom made **L.P. 83316** When made
 Owners **Gulf Oil Corp.** Gear No. **67131** Port belonging to
 Is Refrigerating Machinery fitted for cargo purposes. Is Electric Light fitted

STEAM TURBINE ENGINES, &C.—Description of Engines **Cross compound turbines and double reduction gears**

Ahead **Two** ~~XXXXXX~~
 of Turbines **One** ~~XXXXXX~~ 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;
 supplying power for driving Propelling Motors, Type
 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	.65	29.3	1				1.28	40.7	1	.85	44.4	1
2nd EXPANSION	.86	19.0	1				1.62	41.4	1	1.13	44.7	1
3rd EXPANSION	.96	19.2	1				2.18	42.5	1	4.58	49.0	1
4th EXPANSION	1.08	19.5	1				3.03	44.2	1			
5th EXPANSION	1.21	19.7	1				4.02	46.2	1			
6th EXPANSION	1.39	20.1	1				6.11	49.5	1			
7th EXPANSION	1.62	20.6	1				8.79	53.4	1			
8th EXPANSION	2.02	21.4	1				11.38	57.3	1			

1/3) Shaft Horse Power at each turbine { H.P. 6688
 I.P. 5812
 L.P. 5812 } Revolutions per minute, at full power, of each Turbine Shaft { H.P. 7062
 I.P. 3438
 L.P. 1006 }
 12- Propeller Shaft diameter at journals { H.P. 4.0" Forward
 I.P. 8.0" Fwd
 L.P. 6.5" Aft } Pitch Circle { H.P.-9.950"
 I.P.-15.709"
 L.P.-18.0" } 1st pinion 15 1/2" 1st reduction wheel 19 1/4"
 12- 2nd pinion 18.0" main wheel 161.666" Face { 1st reduction wheel 19 1/4"
 main wheel 41"
 12- 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"
 H.P.-5.0" H.P.-13.0"
 L.P.-6.0" L.P.-13.0" } diameter at bottom of pinion teeth { 1st L.P.-15.2625"
 2nd L.P.-17.237"
 12- Exible Pinion Shafts, diameter at bearings { 1st None
 H.P.-6.2"
 L.P.-8.79" } External
 Internal { 1st Solid
 2nd Solid } Generator Shaft, diameter at bearings (taper fit)
 Propelling Motor Shaft, diameter at bearings
 12- Wheel Shafts, diameter at bearings { 1st 10.0"
 main 24.0" } diameter at wheel shroud, { 1st 10 3/8"
 main 26 1/2" }
 12- Intermediate Shafts, diameter as per rule
 as fitted Thrust Shaft, diameter at collars as per rule
 as fitted 13-3/8" Tube Shaft, diameter as per rule
 as fitted
 12- 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 }
 12- 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
 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
 other appliance fitted at the after end of the tube shaft. Length of Bearing in Stern Bush next to and supporting propeller.
 12- Propeller, diameter Pitch No. of Blades State whether Moveable Total Developed Surface square feet.
 12- 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
 How driven }
 12- Pumps connected to the Main Bilge Line { No. and size
 How driven }
 12- Blast Pumps, No. and size Lubricating Oil Pumps, including Spare Pump, No. and size
 12- Are 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
 12- Holds, &c.
 12- Main Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room
 12- Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes
 12- 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
 12- Are all Sea Connections fitted direct on the skin of the ship Are they fitted with Valves or Cocks
 12- 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
 12- 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
 12- How are they protected
 12- How are they protected
 12- Have they been tested as per rule
 12- Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times
 12- 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?

Is { a Donkey } Boiler fitted? If so, is a report now forwarded?
 { an Auxiliary }

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, rotors, and pinion shaft.

One half set of packing rings for each gland.

One set of thrust shoes for each size.

The foregoing is a correct description,

*L. E. Gube, Turbine Engineering Dept
 General Electric Co* Manufacturer

Dates of Survey while building { During progress of work in shops - - } December 3, 6, 7, 17, 1948
 { ~~XXXXXX~~ }
 { ~~XXXXXX~~ }
 Total No. of visits 4

Dates of Examination of principal parts—Casings December 3, 7, 17, 1948 Rotors Dec. 3, 7, 17, 1948 Blading Dec. 3, 7, 17, 1948 Gearing Dec. 3, 7, 17, 1948
 Wheel shaft Dec. 3, 1948 Thrust shaft Dec. 3, 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-115,000 lbs. Identification Mark LR 300 17-12

H. S. H. P.-O. H. Steel-107,500 lbs. Identification Mark LR 300 17-12

~~XXXX~~ Pinion Shaft, Material and tensile strength..... L. P.-O. H. Steel-113,500 lbs. Identification Mark LR 300 17-12

L. Pinion shaft, Material and tensile strength..... H. P.-O. H. Steel-101,000 lbs. Identification Mark LR 300 17-12

1st Reduction Wheel Shaft, Material and tensile strength..... L. P.-O. H. Steel-106,000 lbs. Identification Mark LR 300 17-12

Wheel shaft, Material O. H. Steel Identification Mark LR 300, 17-16 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 Davis
 Engineer Surveyor to Lloyd's Register of Shipping.

NEW YORK APR 27 1949

Committee's Minute

Assigned See First Entry Report attached



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