

REPORT ON MACHINERY.

No. 2086

Received at London Office 3 SEP 1927

Writing Report 10 When handed in at Local Office 10 Port of Boston & Cleveland
 Survey held at LYNN, Lorain, Ohio Date, First Survey SEPT. 7 1926 Last Survey APRIL 26 1927
 Book on the S/S "CARL D. BRADLEY" (Number of Visits 12) Tons Gross 8805 Net 6420
 Built at Lorain, Ohio By whom built Amer. S. B. Boy When built 1924-'4
 Engines made at LYNN By whom made GENERAL ELECTRIC CO when made 1927
 Boilers made at Bayonne N.J. By whom made Babcock & Wilcox Co. when made 1924
 Registered Horse Power 985 Owners BRADLEY TRANSPORTATION CO. Port belonging to Rogers City
 Net Horse Power at Full Power 4200 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted YES

TURBINE ENGINES, &c.—Description of Engines CURTIS TYPE STEAM TURBINE ELECTRIC GENERATOR AC 60 CYCLE 2400 VOLTS No. of Turbines ONE
 Diameter of Rotor Shaft Journals, H.P. END 8" L.P. 5" Diameter of Pinion Shaft ✓
 Diameter of Journals ✓ Distance between Centres of Bearings ✓ Diameter of Pitch Circle ✓
 Diameter of Wheel Shaft ✓ Distance between Centres of Bearings ✓ Diameter of Pitch Circle of Wheel ✓
 Diameter of Face ✓ Diameter of Thrust Shaft under Collars 14 1/2" 15 7/8" plan Diameter of Tunnel Shaft as per rule 13.2"
 Screw Shafts one Diameter of same as per rule 15.15" Diameter of Propeller 16'-0 1/4" Pitch of Propeller as fitted 14'-3"
 Blades 4 State whether Moveable yes Total Surface 89" Diameter of Rotor Drum, H.P. ✓ L.P. ✓ Astern ✓
 Revs. per Minute at Full Power, Turbine 3600 Propeller 106"

DETAILS OF BLADING.

EXPANSION	H. 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.
.....	58 1/2"	3'-3 1/8"	2						
"	1.9"	2'-4"	1						
"	2.1"	2'-4 3/8"	1						
"	2.6"	3'-0 7/8"	1						
"	3.0"	3'-1 3/8"	1						
"	3.8"	3'-6 1/4"	1						
"	5.4"	4'-0 1/2"	1						
"	9.5"	5'-0 7/8"	1						

ELECTRIC DRIVE FITTED

and size of Feed pumps 1-100 H.P. Centri. motor driven 1-75 H.P. Centri. turbine driven 1-10" x 18" S.A. Steam
 and size of Bilge pumps 1-20 H.P. rotary motor driven 1-20 H.P. Centri. motor driven
 and size of Bilge suction in Engine Room 1-7.5 H.P. rotary motor driven 1-5 H.P. rotary motor driven 50 H.P. Centri. motor driven
4" In Holds, &c. Ford & after pumps - 4" ✓

Bilge Injections none sizes ✓ Connected to condenser, or to circulating pump ✓ Is a separate Donkey Suction fitted in Engine Room & size 1-4"
 Are the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes
 Are the connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valves
 Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates yes Are the Discharge Pipes above or below the deep water line above
 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 no
 How are they protected so fixed as to be free from damage
 Are the pipes carried through the bunkers five windlass etc.
 Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes
 Are the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes
 Is the Screw Shaft Tunnel watertight ✓ Is it fitted with a watertight door ✓ worked from ✓

BOILERS, &c.—(Letter for record S) Manufacturers of Steel see Report No. 27263. New York
 Heating Surface of Boilers 11000 Is Forced Draft fitted yes No. and Description of Boilers Two Babcock & Wilcox
 Working Pressure 325# Tested by hydraulic pressure to 650# Date of test 30 June 27 No. of Certificate 5037504
 Is each boiler worked separately yes Area of fire grate in each boiler 108" No. and Description of Safety Valves to
 each boiler 2-3/4" Consolidated Area of each valve 8.295" Pressure to which they are adjusted 325# Are they fitted with easing gear yes
 Greatest distance between boilers or uptakes and bunkers or woodwork ✓ Mean dia. of boilers ✓ Length ✓ Material of shell plates ✓
 Range of tensile strength ✓ Are the shell plates welded or flanged ✓ Descrip. of riveting: ✓ cir. seams ✓
 Diameter of rivet holes in long. seams ✓ Pitch of rivets ✓ Lap of plates or width of butt straps ✓
 Working pressure of shell by rules ✓ Size of manhole in shell ✓
 No. and Description of Furnaces in each Boiler ✓ Material ✓ Outside diameter ✓
 Thickness of plates ✓ Description of longitudinal joint ✓ No. of strengthening rings ✓
 Combustion chamber plates: Material ✓ Thickness: Sides ✓ Back ✓ Top ✓ Bottom ✓
 Working pressure by rules ✓ If stays are fitted with nuts or riveted heads ✓ Working pressure by rules ✓
 Diameter at smallest part ✓ Area supported by each stay ✓ Working pressure by rules ✓ End plates in steam space ✓
 How are stays secured ✓ Working pressure by rules ✓ Material of stays ✓
 Material of Front plates at bottom ✓
 Material of Lower back plate ✓ Thickness ✓ Greatest pitch of stays ✓ Working pressure of plate by rules ✓
 Material of tube plates ✓ Thickness: Front ✓ Back ✓ Mean pitch of stays ✓
 Working pressures by rules ✓ Girders to Chamber tops: Material ✓ Depth and ✓
 Length as per rule ✓ Distance apart ✓ Number and pitch of stays in each ✓
 Description of joint to shell ✓ % of strength of joint ✓ Diameter ✓
 Description of longitudinal joint ✓ Diameter of rivet holes ✓ Pitch of rivets ✓
 Crown plates: Thickness ✓ How stayed ✓



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SUPERHEATER. Type BxW Date of Approval of Plan Nov. 19, 1926. Tested by Hydraulic Pressure to 650
Date of Test 30 June 1927. Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes
Diameter of Safety Valve 2" Pressure to which each is adjusted (325# for reg. in. 245# for 1 1/2 in. Superheat) Is Easing Gear fitted yes

IS A DONKEY BOILER FITTED? no If so, is a report now forwarded? ✓
SPARE GEAR. State the articles supplied:— Rotor for main generator. Two Propeller blades. Valves for ballast feed, & bilge pumps. Boilers two traps. etc.

The foregoing is a correct description.
General Electric Co. by R. S. Grube Manufacturer.
Turbine Engineering Dept.

Dates of Survey while building: During progress of work in shops -- Oct. 1-15, Dec 21-30, 1926. JAN 13-28, FEB 9-21, MAR 9-23, APR 12-26, 1927
During erection on board vessel -- 1927. March 31, April 2, 9, 11, 16, 20, 26, June 11, 12, 14, 18, 22, 25, 31, June 3, 7, 9, 15, 16, 20, 21, 22, 24, 25, 27, 30, July 4, 5, 6, 8, 9, 11, 12, 13, 14, 15, 16.
Total No. of visits 49. Is the approved plan of main boiler forwarded herewith ✓

Dates of Examination of principal parts—Casings 30-12-26, 28-1-27 Rotors 30-12-26, 26-4-27 Blading 21-2-26, 26-4-27 Gearing ✓
Rotor shaft 30-12-26, 26-4-27 Thrust shaft March 31-27 Tunnel shafts March 31-27 Screw shaft March 31-27 Propeller April 20-30 June.
Stern tube March 31-27 Steam pipes tested 1927. Engine and boiler seatings March 31-27 Engines holding down bolts June.
Completion of pumping arrangements July 5-27. Boilers sized June 3-27. Engines tried under steam July 6-27.
Main boiler safety valves adjusted July 5-27. Thickness of adjusting washers Lock nuts fitted, no washers.
Material and tensile strength of Rotor shaft 0.14 STEEL 103,300 LBS PER SQ INCH. Identification Mark on Do. LLOYDS No 129-2
Material and tensile strength of ~~Rotor~~ shaft 0.14 STEEL 71,300 LBS PER SQ INCH. Identification Mark on Do. LLOYDS No 130-2
Motor shaft: 0.14 Steel. LLOYDS. 729. 10-8-26. G.D. Identification Mark on Do. LLOYDS 6-6
Material of Wheel shaft Identification Mark on Do. 0.14 Steel Identification Mark on Do. LLOYDS 1051
Material of Tunnel shafts 0.14 Steel. Identification Marks on Do. LLOYDS 6-6-27. Material of Screw shafts 0.14 Steel Identification Marks on Do. LLOYDS 1051
Material of Steam Pipes 0.14 Seamless steel Test pressure 945#
Is an installation fitted for burning oil fuel no Is the flash point of the oil to be used over 150°F. ✓
Have the requirements of Section 49 of the Rules been complied with ✓

Is this machinery a duplicate of a previous case no If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, etc.) THE DIRECT CONNECTED TURBINE AND GENERATOR HAVE BEEN BUILT ACCORDING TO THE RULES AND APPROVED PLANS, TESTED UNDER STEAM, AND THE OIL GOVERNOR ADJUSTED TO TRIP AT 3. THE QUALITY OF WORKMANSHIP AND MATERIAL IS GOOD AND IN THE OPINION OF THE UNDERSIGNED ELIGIBLE TO HAVE THE RECORD OF L.M.C. WHEN FITTED IN THE VESSEL AND TESTED UNDER WORKING CONDITIONS.

The above described machinery has been installed in accordance with the Rules, & was found to be safe & efficient under working conditions. The vessel is eligible, in my opinion, for record of L.M.C. 7.27, in the Register Book, and Turbo electric generator electrically coupled to screw shaft.

Installation of Turbo Electric Machinery & Accessories
The amount of Entry Fee \$ 450.00 When applied for 19 Aug 1927
Inspection of Castings 40.00
Special 40.00
Donkey Boiler Fee £ When received 5-10-27
Travelling Expenses (if any) \$ 490.00

Committee's Minute NEW YORK AUG 21 1927
Assigned + L.M.C. 7.27

Note Turbo electric generator electrically coupled to screw shaft.
F.D.

CERTIFICATE WRITTEN

NEW YORK Continuation of Report No. 17585 dated 13 May '27. on the

AMERICAN SHIP BUILDING COMPANY'S HULL NO. 797.

S. S. "CARL D. BRADLEY"

Turbo Electric Machinery

Main Motor

Main Motor for this vessel is of the three (3) phase induction type with wound rotor. It has 68 poles and will therefore make about 106 R.P.M. at full speed. The Horse Power is 4200 at 106 R.P.M. The shaft diameter is 14 1/2" as approved. The speed can be regulated by altering the speed of the turbine and in addition five changes of speed are provided by resistances which can be switched in across the phases of the motor. The motor has been built at Schenectady in accordance with the Rules and approved plans and the workmanship and material are good. It has been satisfactorily tested for insulation, and also at full speed (but not at full load) and has been shipped to Cleveland to be fitted on board the vessel. This has been done to the satisfaction of the Surveyor and the machinery has been satisfactorily tested at full power, it will be eligible, in my opinion, to receive the notation L.M.C. (with date) Turbo electric generator electrically coupled to screw shaft.

John S. Heck

Surveyor to Lloyd's Register of Shipping.

The foregoing is a correct description.

General Electric Company

By: J. H. Keuley

Fee \$ 700 (New York \$575 B.S. Murphy ret \$125)
Expenses 107 New York Applied for 16 May 1927
10 Boston Paid - 4 June 1927

The vessel is eligible, in my opinion, for record of L.M.C. 4.27, in the Register Book, and Turbo electric generator electrically coupled to screw shaft.

G. Drummond
Surveyor to R.R.