

REPORT ON MACHINERY.

Received at London Office.....

Date of writing Report 2nd Aug 1918 When handed in at Local Office 2nd Aug 1918 Port of Philadelphia
 No. in Survey held at Trenton & Wilmington Del Date, First Survey 15th May 1917 Last Survey 26th July 1918
 Reg. Book. on the STEEL SINGLE SCREW STEAMER "MIDDLEBURY" (Number of Visits 39)
 Tons { Gross 2585
 Net 1469
 Master C. E. Blackler Built at Wilmington By whom built Pusey & Jones When built 1918
 Engines made at Trenton By whom made De Laval Steam Turbine Co (26637) when made 1918
 Boilers made at Newport News By whom made Newport News S & S Co. when made 1917
 Registered Horse Power 310 Owners United States Shipping Board Port belonging to Wilmington Del
 Shaft Horse Power at Full Power 1400 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

TURBINE ENGINES, &c.—Description of Engines De Laval Double Reduction Turbine No. of Turbines 1
 Diameter of Rotor Shaft Journals, H.P. 9 L.P. 4 1/2 Diameter of Pinion Shaft 4 1/2 9 10 7/8
 Diameter of Journals 4 1/2 10 Distance between Centres of Bearings 22 1/2 48 Diameter of Pitch Circle 6.6 11.25
 Diameter of Wheel Shaft 6 12 Distance between Centres of Bearings 48 48 Diameter of Pitch Circle of Wheel 47.6 69.25
 Width of Face 20 31 Diameter of Thrust Shaft under Collars 11 Diameter of Tunnel Shaft as per rule 10.28
 as fitted 10.5
 No. of Screw Shafts one Diameter of same as per rule 12.46 Diameter of Propeller 15'-0" Pitch of Propeller 14'-6"
 as fitted 12.5
 No. of Blades 4 State whether Moveable no Total Surface 70.57 Diameter of Rotor Drum, H.P. L.P. astern
 Thickness at Bottom of Groove, H.P. L.P. astern Revs. per Minute at Full Power, Turbine 4,000 Propeller 90

PARTICULARS OF BLADING.

| | 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. |
| 1ST EXPANSION | 469.505 | 28.4928.2 | 2 | | | | 1.8492.58 | 31.15932.15 | 2 |
| 2ND | " | " | 2 | | | | | | |
| 3RD | 1.77 | 29 | 1 | | | | | | |
| 4TH | 2.75 | 30.98 | 1 | | | | | | |
| 5TH | 3.15 | 31.78 | 1 | | | | | | |
| 6TH | 3.15 | 31.78 | 1 | | | | | | |
| 7TH | 4.00 | 33.5 | 1 | | | | | | |
| 8TH | 4.72 | 34.94 | 1 | | | | | | |
| 9 th | 5.51 | 35.14 | 1 | | | | | | |

No. and size of Feed pumps Two 10" x 6" x 24"
 No. and size of Bilge pumps Two 7 1/2" x 8 1/2" x 6" and 9" x 7 1/2" x 10"
 No. and size of Bilge suction in Engine Room Four 3-3" and 1-3 1/2"
 In Holds, &c. No 1 Hold 3-3", No 2 Hold 2-3"
No 3 Hold 3-3" Tunnel well 1-3"
 No. of Bilge Injections 1 sizes 8" Connected to condenser, or to circulating pump pump Is a separate Donkey Suction fitted in Engine Room & size yes-3 1/2"
 Are all the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes
 Are all 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 yes
 What pipes are carried through the bunkers none How are they protected ✓
 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 yes Is it fitted with a watertight door yes worked from upper engine platform
 SEE REPORT 5a.

BOILERS, &c.—(Letter for record) Manufacturers of Steel

Total Heating Surface of Boilers Is Forced Draft fitted No. and Description of Boilers _____
 Working Pressure _____ Tested by hydraulic pressure to _____ Date of test _____ No. of Certificate _____
 Can each boiler be worked separately _____ Area of fire grate in each boiler _____ No. and Description of Safety Valves to each boiler _____
 Area of each valve _____ Pressure to which they are adjusted _____ Are they fitted with easing gear _____
 Smallest distance between boilers or uptakes and bunkers or woodwork _____ Mean dia. of boilers _____ Length _____ Material of shell plates _____
 Thickness _____ Range of tensile strength _____ Are the shell plates welded or flanged _____ Descrip. of riveting: cir. seams _____
 long. seams _____ Diameter of rivet holes in long. seams _____ Pitch of rivets _____ Lap of plates or width of butt straps _____
 Per centages of strength of longitudinal joint _____ Working pressure of shell by rules _____ Size of manhole in shell _____
 rivets _____ plates _____
 Size of compensating ring _____ No. and Description of Furnaces in each Boiler _____ Material _____ Outside diameter _____
 Length of plain part _____ Thickness of plates _____ Description of longitudinal joint _____ No. of strengthening rings _____
 top _____ bottom _____
 Working pressure of furnace by the rules _____ Combustion chamber plates: Material _____ Thickness: Sides _____ Back _____ Top _____ Bottom _____
 Pitch of stays to ditto: Sides _____ Back _____ Top _____ If stays are fitted with nuts or riveted heads _____ Working pressure by rules _____
 Material of stays _____ Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ End plates in steam space _____
 Material _____ Thickness _____ Pitch of stays _____ How are stays secured _____ Working pressure by rules _____ Material of stays _____
 Diameter at smallest part _____ Area supported by each stay _____ Working pressure by rules _____ Material of Front plates at bottom _____
 Thickness _____ Material of Lower back plate _____ Thickness _____ Greatest pitch of stays _____ Working pressure of plate by rules _____
 Diameter of tubes _____ Pitch of tubes _____ Material of tube plates _____ Thickness: Front _____ Back _____ Mean pitch of stays _____
 Pitch across wide water spaces _____ Working pressures by rules _____ Girders to Chamber tops: Material _____ Depth and _____
 thickness of girder at centre _____ Length as per rule _____ Distance apart _____ Number and pitch of stays in each _____
 Working pressure by rules _____ Steam dome: description of joint to shell _____ % of strength of joint _____ Diameter _____
 Thickness of shell plates _____ Material _____ Description of longitudinal joint _____ Diameter of rivet holes _____ Pitch of rivets _____
 Working pressure of shell by rules _____ Crown plates: Thickness _____ How stayed _____

SUPERHEATER. Type *Foster* Date of Approval of Plan *La New York* Tested by Hydraulic Pressure to *600 lbs*
 Date of Test *3-5-17* Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler *yes*
 Diameter of Safety Valve *1 1/2"* Pressure to which each is adjusted *208* Is Easing Gear fitted *yes*

IS A DONKEY BOILER FITTED? *no* If so, is a report now forwarded? *✓*

SPARE GEAR. State the articles supplied:— *2 studs & nuts for each size of rotor bearing. 2 studs & nuts for low & high speed main gear bearings also pinion bearings. 1 set of coupling bolts for each size used. 50 of total number of bolts & nuts for each gear case joint and turbine casing joint. 2 thermometers for oil circulating system. 2 sets of bearing bushes for gear wheel shaft (1 high & 1 low speed). 1 set of bearing bushes for rotor. 3 set of bearing bushes for pinion shafts. 3 sets of carbon packing rings with springs. 2 thrust & turbine thrust bearing complete. 1 set of valves each for feed pump, bilge pump, lubricating oil pump. 1 bucket & rod for lubricating oil pump. 2 safety valve springs. quantity of assorted bolts, studs & nuts. quantity of steel plates & bars. 1 propeller shaft one propeller and 20 condenser tubes.*

The foregoing is a correct description, *de Laval Steam Turbine Co.* Manufacturer.
A. Peterson, asst Chief Engineer. *H. Baupre* Marine Manager

1917 1918
 Dates of Survey while building
 During progress of work in shops -- *May 15, June 6, July 11, Aug 2, 30, Sept 10, 20, Oct 5, Nov 2, 19, Dec 6, 19, Jan 10, 24, Feb 15, 25, Mar 7, 13, 21*
 During erection on board vessel --- *1918 Feb 6, Mar 22, 30, April 25, May 9, 28, 29, June 5, 8, 11, 19*
 Total No. of visits *39* Is the approved plan of main boiler forwarded herewith *no*

Dates of Examination of principal parts—Casings *2-8-17* Rotor *20-9-17* Blading *2-11-17* Gearing *20-9-17*
 Rotor shaft *11-7-17* Thrust shaft *22-3-18* Tunnel shafts *6-2-18* Screw shaft *23-5-18* Propeller *23-5-18*
 Stern tube *23-5-18* Steam pipes tested *18-7-18* Engine and boiler seatings *23-5-18* Engines holding down bolts *17-7-18*
 Completion of pumping arrangements *25-7-18* Boilers fixed *11-7-18* Engines tried under steam *26-7-18*
 Main boiler safety valves adjusted *25-7-18* Thickness of adjusting washers *lock nuts*
 Material and tensile strength of Rotor shaft *Steel: 82,000 to 91,000 lbs* Identification Mark on Do. *A.T.T.*
 Material and tensile strength of Pinion shaft *chrome nickel steel, 110,000 lbs min.* Identification Mark on Do. *A.T.T.*
 Material of Wheel shaft *steel* Identification Mark on Do. *A.T.T.* Material of Thrust shaft *steel* Identification Mark on Do. *2972*
 Material of Tunnel shafts *steel* Identification Marks on Do. *A.N.* Material of Screw shafts *steel* Identification Marks on Do. *3175*
 Material of Steam Pipes *lap welded steel* Test pressure *600 lbs*

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 *yes* If so, state name of vessel *"Waukesha" and "Piqua"*

General Remarks (State quality of workmanship, opinions as to class, &c.)
The machinery has been built under special survey; the material & workmanship being good. It has been forwarded to Wilmington for fitting aboard. The tail shaft is fitted with two liners, lapped with marline & covered with canvas between liners.

The boilers and machinery of this vessel have been securely fitted aboard and satisfactorily tried under steam. It is submitted that the vessel be eligible for a record of + LMC 7-18 in the Register Book.

The amount of Entry Fee ... \$ 10 : 00 :
 3 De Laval Special ... \$ 52 : 75 :
 3 Pusy Jones Donkey Boiler Fee ... \$ 52 : 75 :
 De Laval Expenses ... \$ 7 : 00 :
 Travelling Expenses (if any) ... \$ 20 : 00 :
 Philadelphia
 When applied for, 19
 When received, *A. 1. 1919*
It is submitted that this vessel is eligible for THE RECORD. + LMC 7.18 F.D. 1 GEARED STEAM TURBINE
A. T. Thomas + J. Bellook
 Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute *New York AUG 76 1918*
 Assigned *+ LMC 7.18 Elec H.*

Philadelphia (if registered) to be sent to...



MACHINERY CERTIFICATE WRITTEN 30 8 18