

REPORT ON MACHINERY.

No. 2923

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. " (Number of Visits 39)
on the STEEL SINGLE SCREW STEAMER MIDDLEBURY 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
NOMINAL 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 4000 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	28.4 28.2	2				1.84 2.58	31.15 32.15	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						
9TH	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 2-3", 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 yesAre all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valvesAre 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 aboveAre 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 yesWhat 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 yesAre the Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yesIs 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
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
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 thrusts: 1 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*
The foregoing is a correct description, *propeller and 20 condenser tubes*
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* *Wheels* *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 "Pigua"*

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 mauline & 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.

It is submitted that the vessel be eligible for THE RECORD + LMC 7-18 F.D. 1 GEARED STEAM TURBINE
The amount of Entry Fee ... \$ 10 : 00 :
De Laval ... \$ 52 : 75 :
Special ... \$ 52 : 75 :
Donkey Boiler Fee ... \$ 7 : 00 :
Travelling Expenses (if any) ... \$ 30 : 00 :
Philadelphia
When applied for, 19
When received, *Aug 19 1918*
A. T. Thomas & J. B. Block
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *New York AUG 26 1918*

Assigned *+ LMC 7-18*
Elec. H.

Philadelphia (if required) to be sent to

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

MACHINERY CERTIFICATE WRITTEN 3-8-18

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