

## REPORT ON MACHINERY. No. 528

MON 21 OCT 1918

RECEIVED NEW YORK Sept 24 1918  
 Date of writing Report Sept 19 1918 When handed in at Local Office Sept 19 1918 Port of Portland, Oregon  
 Date, First Survey July 3 '18 Last Survey Aug 16 1918  
 in Survey held at Portland, Oregon  
 on the Steel S.S. WESTERN MAID  
 Gross 5841.32 Tons  
 Net 3578.91 Tons  
 Master C. O. Smith Built at Portland, Ore By whom built North West Steel Co When built 1918  
 Engines made at Trenton N.J. By whom made De Laval Steam Turbine Co when made 1918  
 Gilders made at Portland, Ore By whom made Willamette Iron & Steel Co when made 1918  
 Registered Horse Power 442 594 Owners U.S. Emergency Fleet Corporation Port belonging to Portland, Ore  
 Shaft Horse Power at Full Power 2650 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

TURBINE ENGINES, &c.—Description of Engines Seared Turbine, double reduction No. of Turbines One  
 Diameter of Rotor Shaft Journals, H.P. 6 L.P. 6 Diameter of Pinion Shaft 1st Red. 7 1/16, 2nd Red. 9  
 Diameter of Journals 1st 6, 2nd 9 Distance between Centres of Bearings 1st 32 1/2, 2nd 33 1/2 Diameter of Pitch Circle 1st Red 7.4, 2nd 10.25  
 Diameter of Wheel Shaft 1st 9, 2nd 14 1/2 Distance between Centres of Bearings 1st 35, 2nd 44 1/2 Diameter of Pitch Circle of Wheel 1st 55.62, 2nd 52.75  
 Width of Face 1st 18, 2nd 45 Diameter of Thrust Shaft under Collars 13 3/8 Diameter of Tunnel Shaft as per rule 12.48 as fitted 12 3/4  
 No. of Screw Shafts 1 Diameter of same as per rule 13.98 as fitted 14 1/2 Diameter of Propeller 16.6 Pitch of Propeller 14 ft  
 No. of Blades 4 State whether Moveable yes Total Surface 62.96 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 3596 Propeller 93

## 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 Row	1.660 32.551 2		1.660 32.551 2
2nd Row	1.150 33.041 1		1.150 33.041 1
3rd Row	1.784 39.256 1		1.785 32.869 2
4th Row	1.181 40.040 1		1.260 38.349 2
5th Row	1.771 41.220 1		
6th Row	2.165 40.632 1		
7th Row	3.150 43.600 1		
8th Row	4.425 44.190 1		
9th Row	5.510 45.000 1		

No. and size of Feed pumps Two 1 1/2" x 9" x 16" Simplex  
 No. and size of Bilge pumps One 12" x 8 1/2" x 12" Horizontal Duplex One do 6" x 6" x 6" One do 12" x 10 1/2" x 12" Ballast  
 No. and size of Bilge suction in Engine Room Four 3", In shaft collar 2 of 3", In Thrust Recess 1 of 3"  
 In Holds, &c. Two in each of 3"

No. of Bilge Injections One sizes 10 1/2" Connected to condenser, or to circulating pump yes Is a separate Donkey Suction fitted in Engine Room & size Two 5"  
 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 below  
 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 Vent and Sounding How are they protected by wood casings  
 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 Room.  
 Screw Shaft knier is in three lengths turned together at the two joints, to full depth of knier.

OILERS, &c.—(Letter for record 7) Manufacturers of Steel Illinois Steel Co.  
 Total Heating Surface of Boilers 8055 Is Forced Draft fitted yes No. and Description of Boilers 3 Scotch Marine 3SB  
 Working Pressure 210 lbs. Tested by hydraulic pressure to 315 lbs. Date of test July 19 1918 No. of Certificate 71  
 Can each boiler be worked separately yes Area of fire grate in each boiler 55 sq. ft. No. and Description of Safety Valves to each boiler 2 Continental Area of each valve 9.6 sq. in. Pressure to which they are adjusted 190 lbs. U.S. Steamboat Inspection Are they fitted with easing gear yes  
 Smallest distance between boilers or uptakes and bunkers or woodwork 2 ft. Mean dia. of boilers 14' 9" Length 11' 0" Material of shell plates Steel  
 Thickness 1 3/8 Range of tensile strength 61,400, 68,340 Are the shell plates welded or flanged flanged Descrip. of riveting: cir. seams double  
 long. seams triple riveted Diameter of rivet holes in long. seams 1 1/16 Pitch of rivets 4 1/16 + 9 3/8 Lap of plates or width of butt straps 22 5/8  
 rivets 912  
 Per centages of strength of longitudinal joint plates 85 Working pressure of shell by rules 207 lbs. Size of manhole in shell 12" x 16"

Size of compensating ring Head flanged No. and Description of Furnaces in each Boiler 3 Morrison Material Steel Outside diameter 45 1/16  
 Length of plain part top 32 bottom 21 Thickness of plates crown 32 bottom 21 Description of longitudinal joint No. of strengthening rings  
 Working pressure of furnace by the rules 238 lbs. Combustion chamber plates: Material Steel Thickness: Sides 1 1/16 Back 1 1/16 Top 1 1/16 Bottom 1 1/16  
 Pitch of stays to ditto: Sides 7' x 8" Back 7 1/4' x 7 3/4' Top 7' x 8 1/16" If stays are fitted with nuts or riveted heads 1 1/8" riveted Working pressure by rules 214 lbs  
 Material of stays Ant. iron Diameter at smallest part 1 3/4" + 1 1/2" Area supported by each stay 54.3 sq. in. Working pressure by rules 225 lbs End plates in steam space  
 Material Steel Thickness 1 1/4" Pitch of stays 16 3/8" + 14 1/2" How are stays secured double nuts Working pressure by rules 243 lbs Material of stays Steel  
 Diameter at smallest part 3 1/4" Area supported by each stay 186.56 sq. in. Working pressure by rules 300 lbs Material of Front plates at bottom Steel  
 Thickness 1 1/2" Material of Lower back plate Steel Thickness 1 1/16 Greatest pitch of stays 13 Working pressure of plate by rules 423 lbs  
 Diameter of tubes 3 1/2" Pitch of tubes 4' 4 1/2" 5' 6 1/2" Material of tube plates Steel Thickness: Front 1 1/16 Back 1 1/16 Mean pitch of stays tubes 10 7/16  
 Pitch across wide water spaces 13 Working pressures by rules 283 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 3 1/4" x 11" Length as per rule 34 Distance apart 8 3/16 Number and pitch of stays in each 4 at 4" pitch  
 Working pressure by rules 286 lbs 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 Wheeler* Date of Approval of Plan

Tested by Hydraulic Pressure to *630 lbs*

Date of Test

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 *215 lbs*

Is Easing Gear fitted *yes*

IS A DONKEY BOILER FITTED? *no*

If so, is a report now forwarded?

SPARE GEAR.

State the articles supplied:—

*1 Propeller Shaft, 2 do. Blades, 6 coupling Bolts, 1 Set Feed Pump Values; 1 Set Bilge Pump Values; 1 Set of Boilers & Check Values; 1 Set of Air Pump Values; 4 Condenser Tubes, 100 do. Ferris rollers an assortment of bolts, nuts, studs and iron of various sorts & sizes.*

The foregoing is a correct description,

WILLAMETTE IRON & STEEL WKS.  
PORTLAND, OREGON.

Manufacturer.

Dates of Survey while building

During progress of work in shops ---  
During erection on board vessel ---  
Total No. of visits

*1918 July 3, 5, 9, 10, 11, 15, 19.  
July 20, 24, 25, 29, 31 Aug. 1, 6, 8, 10, 11, 12, 13, 14, 16.*

Is the approved plan of main boiler forwarded herewith *no*

Dates of Examination of principal parts—Casings

Rotors

Blading

Gearing

Rotor shaft

Thrust shaft

Tunnel shafts

Screw shaft

Propeller

Stern tube

Steam pipes tested

Engine and boiler seatings

Engines holding down bolts

Completion of pumping arrangements

Boilers fixed

Engines tried under steam

Main boiler safety valves adjusted

Thickness of adjusting washers

*check nuts*

Material and tensile strength of Rotor shaft

Identification Mark on Do.

Material and tensile strength of Pinion shaft

Identification Mark on Do.

Material of Wheel shaft

Identification Mark on Do.

Material of Thrust shaft

Identification Mark on Do.

Material of Tunnel shafts

Identification Marks on Do.

Material of Screw shafts

Identification Marks on Do.

Material of Steam Pipes

*Steel*

Test pressure *630 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 *yes*

Is this machinery a duplicate of a previous case *yes*

If so, state name of vessel

*"Western Wave"*

General Remarks

(State quality of workmanship, opinions as to class, etc.)

*Screw shaft fitted with continuous liner  
See telegram from Portland Surveyors.*

*The Turbine and Reduction Gears have been constructed under special survey at Kenton St. J. and installed at Portland Oregon. The Boilers have been built under special survey at Portland Oregon, the material having been tested by the Society's Surveyors and workmanship good. On Steam Trial all the machinery worked satisfactorily and it is submitted that the record of + L.M.C. 8-18 Electric high be made in the Register Book in the case of this vessel.*

The amount of Entry Fee

*\$ 45.00*

When applied for,

Special

*\$ 210.50*

19.

Donkey Boiler Fee

*£ —*

When received,

Travelling Expenses (if any)

*£ 13.50*

*31/10/18 611*

*J. A. Yates*

Engineer Surveyor to Lloyd's Register of Shipping.

*It is submitted that this vessel is eligible for THE RECORD. + L.M.C. 8-18 F. 1 GEARED STEAM TURBINE*

Committee's Minute

*New York OCT. 1 - 1918*

Assigned

*+ L.M.C. 8-18*

MACHINERY CERTIFICATE  
WRITTEN 21-10-18



Lloyd's Register  
Foundation