

## REPORT ON MACHINERY.

No. 100  
3819

Received at London Office

Writing Report 15 June 1920 When handed in at Local Office 15 June 1920 Port of Pittsburgh, Pa.  
in Survey held at East Pittsburgh, Pa. Date, First Survey 20 Dec 1918 Last Survey 9 June 1920  
g. Book. ESSINGTON, PA.  
on the New Steel S.S. "City of Vernon" (Pennacola SSB Co. Hull # 971) (Westinghouse Co. H.P. Turbine # 7689, L.P. # 7709) GEAR. 964. Tons { Gross 5407  
Net 3364  
Master Mr. Lavin Built at Pennacola, Fla. By whom built Pennacola SSB Co. When built 1920  
Engines made at East Pittsburgh, Pa. By whom made Westinghouse E & M. Co. when made 1920  
Boilers made at Oil City, Pa. By whom made Oil City Boiler Works when made 1920  
Registered Horse Power 664 Owners United States Shipping Board Port belonging to Pennacola  
Net Horse Power at Full Power 3000 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

INE ENGINES, &c.—Description of Engines Double Reduction Geared Turbines No. of Turbines 2 { One H.P. L.P.  
Diameter of Rotor Shaft Journals, H.P. 4.49" L.P. 4.49" Diameter of Pinion Shaft 12 1/4" 2nd 8" BORE 4 3/4".  
Diameter of Journals 4 1/2" 2nd 4 1/2" Distance between Centres of Bearings 18 1/2" 3' 4 1/2" Diameter of Pitch Circle 2nd 9.238 (28 TEETH)  
Diameter of Wheel Shaft 13.235. Distance between Centres of Bearings 4' 0 1/2". Diameter of Pitch Circle of Wheel 66.45 (18 TEETH)  
Diameter of Face 2nd 2" 18. Diameter of Thrust Shaft under Collars of Main Shaft as per rule 13.26  
as fitted 13 1/4". Diameter of Tunnel Shaft as fitted 13 1/4".  
Screw Shafts One Diameter of same as per rule 14 1/2"  
as fitted 14 3/4". Diameter of Propeller 14' 0" Pitch of Propeller 14' 0"  
Blades 4 State whether Moveable Yes Total Surface 90 sq ft Diameter of Rotor Drum, H.P. 17" L.P. 24" Astern Impulse  
Revs. per Minute at Full Power, Turbine 3360 Propeller 90

## PARTICULARS OF BLADING.

	H.P. REACTION			L.P. REACTION			Impulse Blading Data 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.
EXPANSION	2"	21"	8	3"	30"	3	Quadrant Rotating	30 1/2"	27 1/2"
"	3"	23"	6	4"	32"	2	" " 2" " "	29 1/2"	27 1/2"
"				5"	34"	1	Quadrant, past the blades	32"	32"
"				6"	36"	3	Quadrant, past the blades	33 1/2"	35 1/2"
"				6"	36"	1	" " 2" " "	34 1/2"	36 1/2"
"							1" of Rotating Rows	2	2
"							Width of Blade Rotating	1"	1 1/2"
"							" " 2" " "	1"	1"

Size of Feed pumps Two Cameron 12" x 8" x 24" ✓  
Size of Bilge pumps One 12" x 8 1/2" x 12" One 6" x 5 3/4" x 6" ✓  
Size of Bilge suction in Engine Room 4 of 3 1/2" ✓  
In Holds, &c. 2 of 3 1/2" in each hold and one 3 1/2" in Tunnel Well ✓  
Bilge Injections One sizes 10" Connected to condenser, or to circulating pump Pump Is a separate Donkey Suction fitted in Engine Room & size 3 1/2" ✓  
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 Both ✓  
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 Both ✓  
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 ✓  
How are the pipes carried through the bunkers None ✓  
How are they protected Yes ✓  
Are the 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 ✓  
Screw Shaft Tunnel watertight Yes Is it fitted with a watertight door Yes worked from upper deck platform ✓

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

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  
Which boiler be worked separately Area of fire grate in each boiler No. and Description of Safety Valves to  
Boiler Area of each valve Pressure to which they are adjusted Are they fitted with easing gear  
Least distance between boilers or uptakes and bunkers or woodwork Mean dia. of boilers Length Material of shell plates  
Stress Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams  
Seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps  
Mountings of strength of longitudinal joint rivets Working pressure of shell by rules Size of manhole in shell  
plates  
Compensating ring No. and Description of Furnaces in each Boiler Material Outside diameter  
Top Thickness of plates crown Description of longitudinal joint No. of strengthening rings  
Bottom  
Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom  
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  
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  
Across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and  
Material 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.

Ty. e

Date of Approval of Plan

Tested by Hydraulic Pressure to

5c.

Date of Test

Diameter of Safety Valve

Pressure to which each is adjusted

Is Easing Gear fitted

IS A DONKEY BOILER FITTED?

If so, is a report now forwarded?

SPARE GEAR.

State the articles supplied:

Two bolts & nuts for each eye of Prop. Bearing: 2 Bolts & nuts for  
Bear. Wheel Bearing: 2 Bolts & nuts for Pinion Bearing: 46 Bolts & nuts, Caps, Studs & nuts for Gear & Yaw  
Casing joints: 3 Thermometers for Oil system: 1 Set of Bearing Bushes for each eye fitted: 1 Set of  
for Adjusting Blocks: 20 Spindle Gland packing rings: 24 Packing Ring Springs: 6 Kingstons  
bearing shoes: 2 Turbine bearings complete: 1 Set of Hard pump valves: 1 Set of  
Pump valves (for each pump): 1 Set of valves & assorted spare parts for oil pumps: 1 Set  
valve spring: Assorted Bolts & nuts, Rod, & plate steel etc.

The foregoing is a correct description,

Westinghouse Electric & Mfg. Co. Machine Works

Successors to

The Westinghouse Machine Co.

East Pittsburgh, Pa.

Manufacturer.

ASSISTANT TO VICE PRESIDENT

1918 Dec. 20. - 1919 Jan 7. 20. Feb. 10. 27. March. 11. 27. April 8. 21. 26.

Dates of Survey while building: During progress of work in shops -- June 4. 23. July 7. 30. Aug. 28 (16 visits at E. Pittsburgh)  
During erection on board vessel --- Jan 27. 30. Feb 5. 16. 18. 26. March 9. 15. 17. 19. 26. 27. April 2. 5. 20. 23. 24. May 6. 14. 19. June 7. 9  
Total No. of visits 53  
Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts: Casings 12. 20. 18 Rotors 1. 20. 19 Blading 3. 11. 19 Gearing 18. 11. 19

Rotor shaft 1. 20. 19 Thrust shaft 1. 20. 19 Tunnel shafts 24. 1. 20 Screw shaft 24. 1. 20 Propeller 24. 1. 20

Stern tube 24. 1. 20 Steam pipes tested 30. 1. 20 4. 20. 4. 20 Engine and boiler seatings 24. 1. 20 Engines holding down bolts 24. 4. 20

Completion of pumping arrangements 3. 5. 20 Boilers fixed 24. 4. 20 Engines tried under steam 3. 5. 20

Main boiler safety valves adjusted 3. 5. 20 Thickness of adjusting washers Double check nuts.

Material and tensile strength of Rotor shafts and Cast Steel H.P. 67820 L.P. 44200 Identification Mark on Do. L.P. 711, P.H.C. seams

Material and tensile strength of Pinion shafts 557005 CARBON 25 000 " " Identification Mark on Do. 964

Material of Wheel shafts Cast Steel Identification Mark on Do. 964 Material of Thrust shaft Identification Mark on Do. 964

Material of Tunnel shafts Steel Identification Marks on Do. 964 Material of Screw shafts Steel Identification Marks on Do. 964

Material of Steam Pipes Steel Test pressure 480 lbs

Is an installation fitted for burning oil fuel Yes Is the flash point of the oil to be used over 150°F. Yes

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 S.S. Newburgh

General Remarks (State quality of workmanship, opinions as to class, &c.) The turbines have been built under special survey. The materials & workmanship are of good quality. The hydro tests on the Casings & the shop steaming trials proved satisfactory. They have been shipped to Pensacola, Fla. to be fitted into the vessel & the Survey there have been notified. The machinery of this vessel has been satisfactorily fitted on and tried under steam and is eligible in my opinion to have the notation of "Fitted for Oil Fuel 6.20. F.P. above 150°F." in the Register Book; also the notation of "Fitted for Oil Fuel 6.20. F.P. above 150°F."

It is submitted that this vessel is eligible for THE RECORD. + LMC 6.20. F.D.

25 Steam Turbines geared to 1 Screw Shaft Fitted for oil fuel 6.20. F.P. above 150°F.

3 Water Tube Boilers

Screw Shaft fitted with Continuous Liner.

Credit Pittsburgh & Philadelphia 16 fees each.

The amount of Entry Fee ... \$ 15 : 00 : When applied for, 24th April 1920

Special ... £ 266 : 75 : When received, 15th May 1920

Donkey Boiler Fee ... £ : : Travelling Expenses (if any) \$ 2 : 50 : 5. 00.

Committee's Minute New York JUN 22 1920

Assigned + Lmb 6.20 Subject.

Subject to the Water Tube Boiler being surveyed annually.

Engineer Surveyor to Lloyd's Register of Shipping.

Survey Fee

Travelling Expenses (if any)

Committee's Minute

Assigned

Machine Works

6.7.20

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