

Rpt. 4a.

REPORT ON MACHINERY.

No. 17516

Received at London Office NOV. 1919

Date of writing Report Sept 30th 1919 When handed in at Local Office

Port of New York.

No. in Survey held at Kearny, N.J.

Date, First Survey 30 July Last Survey Oct. 2nd 1919.

Reg. Book.

(Number of Visits)

on the S.S. BELLEMINA.

Tons { Gross 6517.
Net 4045.

Master Ellis. Built at Kearny, N.J. By whom built Federal S. B. Co. When built 1919-10.

Engines made at Indianapolis, Ind. By whom made Midwest Engine Co. when made 1919-10.

Boilers made at Kearny, N.J. By whom made Federal S. B. Co. when made 1919-10.

Registered Horse Power 6456. Owners U.S. Shipping Board Port belonging to Kearny, N.J.

Shaft Horse Power at Full Power 2800. Is Refrigerating Machinery fitted for cargo purposes No. Is Electric Light fitted Yes.

TURBINE ENGINES, &c.—Description of Engines Geared Turbines Turbine No. 32796. No. of Turbines Two.

Diameter of Rotor Shaft Journals, H.P. 4" L.P. 4" Diameter of Pinion Shaft 5"
Diameter of Journals 5" Distance between Centres of Bearings H.S. PINION - 28 1/2" GEAR - 59" Diameter of Pitch Circle H.S. PINION - 51 1/2" GEAR - 51 1/2"
Diameter of Wheel Shaft 16 1/4" to 14 1/4" Distance between Centres of Bearings 44" Diameter of Pitch Circle of Wheel L.S. PINION - 15 5/8" GEAR - 98 5/8"
Width of Face 26" Diameter of Thrust Shaft under Collars 13 3/4" as per approved plan Diameter of Tunnel Shaft as per rule 12 9/4" 12 9/6"
No. of Screw Shafts One Diameter of same as per rule 14 23" 14 3" Diameter of Propeller 17'0" Pitch of Propeller 13'1"
Fitted with continuous one piece liner as fitted 14 25"
No. of Blades 4 State whether Moveable No. Total Surface 77'17" Diameter of Rotor Drum, H.P. 13 1/2" L.P. 22" as per rule 17 4 5/8" 17 4 5/8"
Thickness at Bottom of Groove, H.P. Solid L.P. Solid Astern 11 1/8" - 13 1/8" Revs. per Minute at Full Power, Turbine 3600. Propeller 90
HP 22 3/4 to 24 1/4
LP 19 1/8 to 22 3/8

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 H.P. BLADES. | DIAMETER AT TIP. | NO. OF ROWS. |
| 1ST EXPANSION | 5 5/8" | 14 1/4" | 6. | 2 1/4" | 26 1/2" | 2 | 19 1/6" - 2 5/8" | 27 3/8" - 28" | 1 - 1 |
| 2ND | 13 1/6" | 14 5/8" | 6. | 2 3/4" | 27 1/2" | 2 | 29 1/6" - 4 1/4" | 28 5/8" - 29" | 1 - 1 |
| 3RD | 1 1/6" | 15 1/8" | 5. | 3 1/2" | 29" | 2 | 3 1/8" - 5 3/4" | 29" - 31" | 1 - 1 |
| 4TH | 1 3/8" | 15 3/4" | 5. | 4 3/8" | 30 3/4" | 2 | | | |
| 5TH | 1 1/8" | 18 1/4" | 3. | 5" | 32" | 4. | | | |
| 6TH | 1 7/16" | 18 7/8" | 3. | | | | | | |
| 7TH | 1 7/8" | 19 3/4" | 3. | | | | | | |
| 8TH | 2 3/8" | 20 3/4" | 3. | | | | | | |

No. and size of Feed pumps Two - 10" x 7" x 24"

No. and size of Bilge pumps Three - 6" x 5 3/4" x 6" - 14" x 8 1/2" x 12" - 12" x 10 1/4" x 12"

No. and size of Bilge suction in Engine Room Three 3 1/2". Tunnel well. one 3".

In Holds, &c. No. 1 - One 3". No. 2 - One 3". No. 3 - Two 3". No. 4 - Two 3".

No. 5 - Two 3". + Two 3". Emergency Screw-down non-return valves in Ford hold.

No. of Bilge Injections One sizes 10" Connected to condenser, or to circulating pump Yes. 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 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 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 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 Top platform

BOILERS, &c.—(Letter for record S.) Manufacturers of Steel Carnegie + Illinoian Steel Co.

Total Heating Surface of Boilers 8934 sq. ft. Is Forced Draft fitted Yes. No. and Description of Boilers 3 S. B. Scotch Marine

Working Pressure 210 lbs. per sq. in. Tested by hydraulic pressure to 315 lbs. per sq. in. Date of tests 9-8-19 - 15-8-19 No. of Certificate 267-268-269.

Can each boiler be worked separately Yes. Area of fire grate in each boiler 61.8 sq. ft. No. and Description of Safety Valves to each boiler Two - 3 1/2" brace. Area of each valve 9.62 sq. in. Pressure to which they are adjusted 210 lbs. per sq. in. Are they fitted with easing gear Yes.

Smallest distance between boilers or uptakes and bunkers or woodwork 14" Mean dia. of boilers 15'6" Length 11'6" Material of shell plates Steel.

Thickness 1 1/4" Range of tensile strength 60,71680 lbs. Are the shell plates welded or flanged Descrip. of riveting: cir. seams D. T. Lap.

long. seams J. K. D. B. S. Diameter of rivet holes in long. seams 1 5/8" Pitch of rivets 9 3/8" Lap of plates or width of butt straps 23 3/8".

rivets 100:1 plates 82:6 Working pressure of shell by rules 237 lbs. per sq. in. Size of manhole in shell 23" x 19"

Per centages of strength of longitudinal joint top crown } 2 1/32" Description of longitudinal joint Welded. No. of strengthening rings 600.

Size of compensating ring 38" x 34" x 1 1/4" No. and Description of Furnaces in each Boiler 3 Morrison Material Steel Outside diameter 49 5/16"

Length of plain part bottom Thickness of plates bottom 2 1/32" Description of longitudinal joint Welded. No. of strengthening rings 600.

Working pressure of furnace by the rules 217 Combustion chamber plates: Material S Thickness: Sides 7/8" Back 7/8" Top 7/8" Bottom 1"

Pitch of stays to ditto: Sides 6 1/2 x 7 Back 6 1/2 x 7 Top 8 x 7 If stays are fitted with nuts or riveted heads Riv heads Working pressure by rules 240

Material of stays S Diameter at smallest part 1.26 Area supported by each stay 6 1/2 x 7 Working pressure by rules 221 End plates in steam space

Material S Thickness 1 3/16" Pitch of stays 17 1/2 x 16 How are stays secured Dbl. nuts Working pressure by rules 225 Material of stays S

Diameter at smallest part 3 Area supported by each stay 17 1/2 x 16 Working pressure by rules 227 Material of Front plates at bottom S

Thickness 25/32" Material of Lower back plate S Thickness 1 1/4" + 5/8" Greatest pitch of stays 13 x 7 Working pressure of plate by rules 235

Diameter of tubes 2 3/4" Pitch of tubes 3 3/4 x 4 Material of tube plates S Thickness: Front 25/32" Back 25/32" Mean pitch of stays 12 x 7 1/2

Pitch across wide water spaces 13 Working pressures by rules 230 Girders to Chamber tops: Material S Depth and

thickness of girder at centre 10 x 13 1/4" Length as per rule 2 x 10 Distance apart 8 Number and pitch of stays in each 2020

Working pressure by rules 267 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

002215-002221-0092

SUPERHEATER. Type *Turbine* Date of Approval of Plan *26-12-17* Tested by Hydraulic Pressure to *630 lbs. per sq. in.*
Date of Test *FINAL 15-9-19.* 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"* Pressure to which each is adjusted *225 lbs. per sq. in.* Is Easing Gear fitted *No*

IS A DONKEY BOILER FITTED? *No.* If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:—*Two studs & nuts H.P. Rotor bearings Two studs & nuts each size Pinion & Gear bearings. Complete set of couplings bolts, set of bearing bushes for each Rotor, Pinion & Gear shaft, of shoes for H.P. L.P. & main Thrust Bearings, set of liners, set of Labyrinth rings (Packing) Three carbon packing rings. One H.S. Pinion. 50% Turbine & Gear casing joints, bolts, studs & nuts, set of dead. Bilge Subr. oil pump valves. Two thermometers for oil. Air system. Bkt & rod. Subr. oil pump. Escape valve springs for each size used, C.I. Propeller. Number of Boiler, Superheater, Oil-cooler & Condenser tubes. Two Bk. check valves. Quantity of assorted bolts, studs, nuts, bars & plates of iron & steel.*

The foregoing is a correct description,

Federal Shipbuilding Co.

Manufacturer.

Per pro Sam D. Garblner, Ch. Eng. drafts.

Dates of Survey while building
During progress of work in shops --
During erection on board vessel --
Total No. of visits

1919 July 30 Sept 24 5. 6. 11. 12. 13 16. 17. 22. 23. 24. 25. 27. 28. 30 Oct 2
18

Is the approved plan of main boiler forwarded herewith *Retained for reference.*

Dates of Examination of principal parts—Casings *✓* Rotors *✓* Blading *✓* Gearing *✓*
Rotor shaft *✓* Thrust shaft *✓* Tunnel shafts *12-9-19.* Screw shaft *3-9-19.* Propeller *4-9-19.*
Stern tube *5-9-19.* Steam pipes tested *27-9-19* Engine and boiler seatings *16-9-19* Engines holding down bolts *30-9-19.*
Completion of pumping arrangements *28-9-19* Boilers fired *23-9-19* Engines tried under steam *28-9-19.*
Main boiler safety valves adjusted *30-9-19.* Thickness of adjusting washers *not used.*
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 *Steel.* Identification Mark on Do. *W.L. 1744* Material of Thrust shaft *Steel.* Identification Mark on Do. *✓*
Material of Tunnel shafts *Steel* Identification Marks on Do. *C.F.M. 441.* Material of Screw shafts *Steel* Identification Marks on Do. *C.F.M. 441.*
Material of Steam Pipes *Steel* *✓* Test pressure *630 lbs. per sq. in.*
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 *S/S Belfort. N.Y. Rept.*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The Turbines & Gears have been built under survey of the American Bureau of Shipping. The Gear materials have been tested & examined by the Surveyors to Lloyds Reg. of Shipping. The Boilers have been built under special Survey in accordance with approved plans (12-1-18). The workmanship & materials are good & efficient. On completion the Boilers satisfactorily withstood a hydrostatic test of 315 lbs. per sq. in. The whole of the machinery has now been efficiently placed on board & examined under working conditions & proved satisfactory. The case is submitted for the notation of L.M.C (1919-10) in the Register Book.*

It is submitted that this vessel is eligible for THE RECORD L.M.C 10.19. F.D. 2 Steam Turbines geared to 1 Screw Shaft.

The amount of Entry Fee ... *\$ 15.00* : When applied for, *11 Oct. 1919*
Special ... *\$ 261.40* :
Donkey Boiler Fees ... *\$ 20.00* : When received, *31.10.19*
SUNDAY & LATE 28.12. SEPT.
Travelling Expenses (if any) *\$:* :

G. F. Macdonald.

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

L.M.C. 10.19

*RECEIVED CERTIFICATE
MAY 11 1919*



© 2020

Lloyd's Register Foundation