

## REPORT ON MACHINERY.

No. 17668  
1919

Received at London Office

Date of writing Report 30-10-1919 When handed in at Local Office

Port of New York

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

Date, First Survey 24 May

Last Survey Oct. 31st 1919

Reg. Book.

on the S.S. "BELLHAVEN"

(Number of Visits)

Tons Gross 6517  
Net 4045

Master H. E. McNeill 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 645.6

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, &amp;c.—Description of Engines Geared Turbines Turbine No. 32798

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 65 1/2" Diameter of Pitch Circle 65 1/2" 5' 2 1/2"

Diameter of Wheel Shaft 14 1/2" to 16 1/4" Distance between Centres of Bearings 44" Diameter of Pitch Circle of Wheel 15' 5" 23' 5"

Width of Face 26" Diameter of Thrust Shaft under Collars 13 3/4" as per rule 12' 9 1/4" as fitted 13"

No. of Screw Shafts One Diameter of same as per rule 14' 2 1/2" 14' 3" Diameter of Propeller 17' 0" Pitch of Propeller 13' 1"

Fitted with continuous one piece liner

No. of Blades Four State whether Moveable No Total Surface 77' 17" Diameter of Rotor Drum, H.P. 13' 16" L.P. 22' 8" 23' 1/2" 24' 1/4" 19' 1/2" 22' 3/4"

Thickness at Bottom of Groove, H.P. Solid L.P. Solid Astern 11' 16" 13' 16" Revs. per Minute at Full Power, Turbine 3600 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	5' 8"	14 1/4"	6	2' 1/4"	26 1/2"	2	19 1/6" - 2' 5"	27 3/8" - 28"	1 - 1
2ND	13 1/6"	14 5/8"	6	2' 3/4"	27 1/2"	2	2' 1/6" - 4 1/4"	28 5/8" - 29"	1 - 1
3RD	11 1/6"	15 1/8"	5	3 1/2"	29"	2	3' 1/8" - 5 3/4"	29" - 31"	1 - 1
4TH	13 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 1/4"	3						
8TH	2 3/8"	20 3/4"	3						

No. and size of Feed pumps Two 10" x 7" x 2 1/2" Davidson type

No. and size of Bilge pumps Three 6" x 5 1/4" 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, &amp;c. No. 1. One 3" - No. 2. One 3" No. 3 Two 3" No. 4 Two 3"

No. 5 Two 3" &amp; Two 3" Emergency screw-down non-return valves in Ford holds.

No. of Bilge Injections One size 10" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine Room &amp; 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

## 38. BOILERS, &amp;c.—(Letter for record S.) Manufacturers of Steel Carnegie &amp; Illinois Steel Co.

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

Working Pressure 210 lbs. per sq. in. Tested by hydraulic pressure to 315 lbs. per sq. in. Date of test 28-7-19-1-8-19 No. of Certificates 264-265-266

Can each boiler be worked separately Yes Area of fire grate in each boiler 61.8' No. and Description of Safety Valves to

each boiler Two 3 1/2" brane Area of each valve 9.62' 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 60,716.80 lbs. per sq. in. Are the shell plates welded or flanged Yes Descrip. of riveting: cir. seams D. W. Lap.

long. seams S. W. D. B. Diameter of rivet holes in long. seams 15/8" Pitch of rivets 9' 3" Lap of plates or width of butt straps 23 3/8"

rivets 100% Working pressure of shell by rules 237 lbs. Size of manhole in shell 23" x 19"

plates 82.6

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 5/8"

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

bottom Working pressure of furnace by rules 217 lbs. Combustion chamber plates: Material Steel Thickness: Sides 5/8" Back 5/8" Top 5/8" 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 lbs.

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

Material Steel Thickness 1 1/4" Pitch of stays 17 1/2" x 16" How are stays secured All nuts Working pressure by rules 225 lbs. Material of stays Steel

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

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

Diameter of tubes 2 3/4" Pitch of tubes 33/4" x 4" Material of tube plates Steel 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 lbs. Girders to Chamber tops: Material Steel Depth and

thickness of girder at centre 10" x 14" Length as per rule 2' 10" Distance apart 8" Number and pitch of stays in each Four 7"

Working pressure by rules 262 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

Total No. of Visits

J. Macdonald



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SUPERHEATER. Type milne Date of Approval of Plan 26-12-17 Tested by Hydraulic Pressure to 630 lbs. per sq. in.  
Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler Yes  
Date of Test FINAL - 16-8-19. Is Easing Gear fitted Yes  
Diameter of Safety Valve 1" Pressure to which each is adjusted 225 lbs. per sq. in.

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 coupling bolts. Set of bearing bushes for each Rotor, Pinion & Gear shaft. Set of shoes for H.P. main thrust bearings. Set of liners. Set of labyrinth rings (packing). Three carbon packing rings. One H.S. Pinion. Five per cent. Turbine & Gear casing joints bolts, nuts & nuts. Set of feed, Bilge, & Lubr. oil pumps valves. Two thermometers for oil circ. system. Bkt. & rod lubr. oil pump. Escape valve springs for each size used. C.I. Propeller number of Bkr. Superheater, oil cooler & condenser tubes. Two Bkr. check valves. Quantity of assorted bolts, studs, nuts bars & plates of iron & steel.

The foregoing is a correct description,  
The Federal Shipbuilding Co., W. W. Smith, Ch. Super. Manufacturer.

FLAT P  
(1) Bar  
GARBOA  
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thickness  
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Bottom

Dates of Survey while building  
During progress of work in shops - 1919 May 24 for 4. 9. 10. 13. 24. 28. 31 Aug. 5. 6. 20. 25. 26. 27 Sept. 5. 12. 13. 16. 19. 25. 26 Oct.  
During erection on board vessel - 9. 10. 15. 17. 24. 27. 28. 30. 31  
Total No. of visits 35  
Is the approved plan of main boiler forwarded herewith Retained for Reference.

U. D. Sheel. D. S. A.

Dates of Examination of principal parts - Casings ✓ Rotors ✓ Blading ✓ Gearing ✓  
Rotor shaft ✓ Thrust shaft ✓ Tunnel shafts 6-8-19 Screw shaft 6-8-19 Propeller 5-8-19  
Stern tube 5-8-19 Steam pipes tested 24-10-19 Engine and boiler seatings 16-9-19 Engines holding down bolts 27-10-19  
Completion of pumping arrangements 28-10-19 Boilers fired 10-10-19 Engines tried under steam 28-10-19  
Main boiler safety valves adjusted 30-10-19 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. J.A.R. 1389 Material of Thrust shaft Steel Identification Mark on Do. ✓  
Material of Tunnel shafts Steel Identification Marks on Do. C.F.M. 434 Material of Screw shafts Steel Identification Marks on Do. C.F.M. 434  
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. No.

General Remarks (State quality of workmanship, opinions as to class, &c.) The Turbines & Gears have been constructed under Amer. Bureau of Shipping Survey. The Gear materials have been tested by Lloyd's Surveyors. The Boilers have been constructed 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.

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

The amount of Entry Fee ... \$ 15.00  
Special ... \$ 261.40  
Donkey Boiler Fee ... £  
Travelling Expenses (if any) ... £

When applied for, 5 Nov 1919  
When received, 29 Nov 1919

Committee's Minute

Assigned

L.M.C. 10.19

C. F. Macdonald.

Engineer Surveyor to Lloyd's Register of Shipping.



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