

REPORT ON MACHINERY

No. 18082
THU. MAR. 25 1920

Received at London Office

Writing Report Feb. 10 - 1920 When handed in at Local Office 10 Port of New York
Survey held at Kearny, N. J. Date, First Survey 7 Oct 19 Last Survey 10 Feb 1920
on the % STEEL AGE Federal S.B. Co. Hull No. 31 (Number of Visits) Gross 6187
Tons Net 3821
Built at Kearny, N. J. By whom built Federal S.B. Co. When built 1920
s made at Indianapolis By whom made Midwest Engine Co. when made 1919
made at Kearny N. J. By whom made Federal S.B. Co. when made 1919
red Horse Power 645.6 Owners U.S. Steel Products Co. Port belonging to New York
Horse Power at Full Power 2800 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

INE ENGINES, &c.—Description of Engines Geared Turbines. Turb. No. 32815 No. of Turbines Two
of Rotor Shaft Journals, H.P. 4" L.P. 4" Diameter of Pinion Shaft 5" H.S. Pinion 7.75"
of Journals 5" Distance between Centres of Bearings Gear 59" Diameter of Pitch Circle 51.25"
of Wheel Shaft 16 1/4 6 14 1/4 Distance between Centres of Bearings 14.4" Diameter of Pitch Circle of Wheel Gear 93.5"
Face 26" Diameter of Thrust Shaft under Collars 11" 13 1/4" as per rule 12.94"
as fitted 13"
Diameter of Propeller 17'-0" Pitch of Propeller 13'-1"
Expansion 1-4=13"
5-8=16"
L.P. 22" astern L.P. 19 1/2"
22 1/2"
State whether Moveable no Total Surface 77.170"
Diameter of Rotor Drum, H.P. L.P. 22" astern L.P. 19 1/2"
22 1/2"
s at Bottom of Groove, H.P. solid L.P. solid Astern L.P. 7 1/8 x 1" Revs. per Minute at Full Power, Turbine 3600 Propeller 90

DETAILS OF BLADING.

| | H.P. REACTION | | | L.P. REACTION | | | ASTERN. IMPULSE | | |
|-----------|-------------------|------------------|--------------|-------------------|------------------|--------------|-------------------|------------------|--------------|
| | 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 | 5/8 | 14 1/4 | 6 | 2 1/4 | 26 1/2 | 2 | 1 9/16 | 27 3/8 | 1 |
| " | 1 1/16 | 14 3/8 | 6 | 2 3/4 | 27 1/2 | 2 | 2 9/16 | 28 3/8 | 1 |
| " | 1 3/8 | 15 1/8 | 5 | 3 1/2 | 29 | 2 | 3 1/8 | 29 | 1 |
| " | 1 3/8 | 15 3/4 | 5 | 4 3/8 | 30 3/4 | 2 | 3 1/8 | 29 | 1 |
| " | 1 1/8 | 18 1/4 | 3 | 5 | 32 | 4 | | | |
| " | 1 7/8 | 18 1/8 | 3 | | | | | | |
| " | 1 7/8 | 19 3/4 | 3 | | | | | | |
| " | 2 3/8 | 20 3/4 | 3 | | | | | | |

size of Feed pumps Two 10" x 7" x 24" Davidson Type
size of Bilge pumps Three - 6 x 5 1/4 x 6 - 12" x 8 1/2 x 12 - 10" x 10 1/4 x 12
size of Bilge suction in Engine Room Three 3 1/2"
In Holds, &c. No. 1. Two 3 1/2" - No. 2. Two 3 1/2" - No. 3. Two 3 1/2" -
H. Four 3" Tunnel well. One 3"
Bilge Injections one sizes 10" Connected to condenser, or to circulating pump Are pumps as a separate Donkey Suction fitted in Engine Room & size yes 3 1/2"
the bilge suction pipes fitted with roses yes Are the roses in Engine room always accessible yes
connections with the sea direct on the skin of the ship yes Are they Valves or Cocks both
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
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
pipes are carried through the bunkers none How are they protected
Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times yes
Bilge Suction Pipes, Cocks, and Valves arranged so as to prevent any communication between the sea and the bilges yes
crew Shaft Tunnel watertight yes Is it fitted with a watertight door yes worked from Top Platform

ERS, &c.—(Letter for record S) Manufacturers of Steel Illinois Steel Co.
Heating Surface of Boilers 7836 Is Forced Draft fitted yes No. and Description of Boilers 35.B3. S.E. Scotch Marine
ing Pressure 210 lbs. Tested by hydraulic pressure to 315 lbs. Date of test No. of Certificate p. 282. c. 283. s. 284
h boiler be worked separately yes Area of fire grate in each boiler oil fired No. and Description of Safety Valves to
ler Two 3 1/2" Area of each valve 9.62 sq. Pressure to which they are adjusted 210 lbs. Are they fitted with easing gear yes
st distance between boilers or uptakes and bunkers or woodwork 14" Mean dia. of boilers 15.3" Length 11.3 3/4" Material of shell plates OH Steel
ess 15/8 Range of tensile strength 60000/71680 lbs. Are the shell plates welded or flanged - Descrip. of riveting: cir. seams DR. lap
ams T.R.D.B.S. Diameter of rivet holes in long. seams 15/8 Pitch of rivets 10 1/8 Lap of plates or width of butt straps 23 3/8

ages of strength of longitudinal joint rivets 93.5 Working pressure of shell by rules 241 lbs. Size of manhole in shell 23 x 9
plates 83.8
compensating ring 38" x 34" x 1 1/8 No. and Description of Furnaces in each Boiler 3 horizontal Material OH Steel Outside diameter 4'-0 1/2"
of plain part top crown 21 1/2 Description of longitudinal joint welded No. of strengthening rings Corr.
bottom bottom 32
ing pressure of furnace by the rules 221 lbs. Combustion chamber plates: Material OH Steel Thickness: Sides 1/16 Back 3/4 Top 1/16 Bottom 1"
of stays to ditto: Sides 7 1/2 x 7 1/4 Back 8 x 7 1/2 Top 9 x 7 1/4 If stays are fitted with nuts or riveted heads riv heads Working pressure by rules 224 lbs
il of stays OH Steel Diameter at smallest part 1.516 Area supported by each stay 54.4" Working pressure by rules 250 lbs End plates in steam space
OH Steel Thickness 1 3/16 Pitch of stays 18 x 15 1/2 How are stays secured Dbl. nuts Working pressure by rules 235 lbs Material of stays OH Steel
er at smallest part 3" Area supported by each stay 279 sq. Working pressure by rules 263 lbs Material of Front plates at bottom OH Steel
10/11 ess 1 1/8 Material of Lower back plate OH Steel Thickness 1 1/8 Greatest pitch of stays 11 x 7 1/2 Working pressure of plate by rules 379 lbs
er of tubes 2 3/4 Pitch of tubes 4 x 3 3/4 Material of tube plates OH Steel Thickness: Front 1 1/8 Back 1 3/16 Mean pitch of stays 11 1/4 x 8
cross wide water spaces 13 Working pressures by rules 256 lbs Girders to Chamber tops: Material OH Steel Depth and
ss of girder at centre 10" x 2" Length as per rule 2' 11" Distance apart 9 Number and pitch of stays in each 24-20749
ing pressure by rules 237 lbs Steam dome: description of joint to shell % of strength of joint Diameter
ess of shell plates Material Description of longitudinal joint Diameter of rivet holes Pitch of rivets
ing pressure of shell by rules Crown plates: Thickness How stayed

SUPERHEATER. Type *Milua* Date of Approval of Plan *18 July 1919* Tested by Hydraulic Pressure to *630*
Date of Test *Various* 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.* Is Easing Gear fitted *no*

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

SPARE GEAR. State the articles supplied:— *2 studs & nuts for H.P. + L.P. rotor bearings. 2 studs & nuts for each pinion & gear bearings. Complete set of coupling bolts. Set of bearing bushes for each rotor, pinion & shaft. Set of shoes for H.P. L.P. & main thrust bearings. Set of liners. Set of labyrinth packing rings for gland & carbon packing rings. One High speed pinion. 5% of gear & turbine casing bolts, studs & nuts. 1 set of feed bridge & lubricating oil pump valves, seats & springs. Two thermometers for oil circ. system. escape valve spring for each C.I. propeller. tail shaft with continuous liners. number of boiler, superheater, oil cooler & condenser. two boiler check valves. quantity of assorted bolts, studs & nuts, also iron & steel bars & plates. 1 bucket & rod for lubricating oil pump. See N.Y. 66 11/6/20*

The foregoing is a correct description,

The Federal Shipbuilding Co., Bklyn. N.Y., Ch. Supr. Manufacturer.

Dates of Survey while building
During progress of work in shops -- *1919 Oct 7, 8, 10, 21, 24, 27, 28, 29 Nov 1, 7, 10, 14, 19, 24, 25, 28 Dec 5, 14, 15, 16, 17, 23, 24, 27, 29, 30, 31 Jan 5, 7, 8*
During erection on board vessel --- *14, 15, 16, 17, 19, 23, 24, 26, 27, 28, 29, 30 Feb 1, 2, 3, 4, 5, 6, 7, 9, 10*
Total No. of visits *53*

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

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.

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. Test pressure.

Is an installation fitted for burning oil fuel. 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. If so, state name of vessel.

General Remarks (State quality of workmanship, opinions as to class, &c.)

The turbines have been constructed under special survey by the American Bureau of Shipping.

The boilers have been built under special survey in accordance with approved plans.

The materials & workmanship are good & efficient. On completion the boiler

satisfactorily withstood a hydrostatic test of 315 lbs. per sq. inch. The whole of the

machinery has been installed on board the S/S STEEL AGE under special

survey & examined under working conditions & proved satisfactory.

The case is submitted for the notation of LMC. 2.20. FITTED FOR OIL CONDENSER

FUEL 2.20. F.P. ABOVE 150°F. in the Register Book.

The amount of Entry Fee ... £ *\$15.00* When applied for, *26/2/19*
Special ... £ *\$261.40*
Donkey Boiler Fee ... £ : : When received, *17/3/20*
Travelling Expenses (if any) £ : :

H. Morrison
Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute *New York FEB 24 1920*

Assigned

LMC. 2.20.

MACHINERY CERT
WRITTEN *25 3 20*



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Foundation