

Rpt. 4.

REPORT ON MACHINERY.

No. 1422
MON. JAN. 1921

Received at London Office

Date of writing Report 3 Dec 1920 When handed in at Local Office 4 Dec 1920 Port of Boston
No. in Survey held at Quincy, Mass Date, First Survey 15 October 1919 Last Survey 24 Nov 1920
Reg. Book. 79726 on the s/s JAPAN ARROW (Number of Visits 56)
Master F. Sandberg Built at Quincy, Mass By whom built Bethlehem S.B. Corporation Tons { Gross 8327
Net 5176
Engines made at Quincy, Mass By whom made Bethlehem S.B. Corporation when made 1920
Boilers made at Wilmington, Del. By whom made Bethlehem S.B. Corporation when made 1920
Registered Horse Power 636 Owners Standard Transportation Co. Port belonging to New York
Nom. Horse Power as per Section 28 636 Is Refrigerating Machinery fitted for cargo purposes no Is Electric Light fitted yes

ENGINES, &c.—Description of Engines Quadruple Expansion No. of Cylinders 4 No. of Cranks 4
Dia. of Cylinders 24-35-51-75" Length of Stroke 51" Revs. per minute 80 Dia. of Screw shaft 15.28" Material of screw shaft steel
Is the screw shaft fitted with a continuous liner the whole length of the stern tube yes Is the after end of the liner made water tight
in the propeller boss yes If the liner is in more than one length are the joints burned yes If the liner does not fit tightly at the part
between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive yes If two
liners are fitted, is the shaft lapped or protected between the liners yes Length of stern bush 5'-4"
Dia. of Tunnel shaft 13.47" Dia. of Crank shaft journals 14.14" Dia. of Crank pin 15" Size of Crank webs 30 1/2 x 10 Dia. of thrust shaft under
collars 14 1/4" Dia. of screw 19'-0" Pitch of Screw 16'-0" No. of Blades 4 State whether moveable yes Total surface 112 sq ft
No. of Feed pumps 2 Diameter of ditto 12x8" Stroke 24" Can one be overhauled while the other is at work yes
No. of Bilge pumps 2 Diameter of ditto 4 1/2" Stroke 24" Can one be overhauled while the other is at work yes
No. of Donkey Engines 2 Sizes of Pumps 16x10x14, 12x7 1/2 x 12 No. and size of Suctions connected to both Bilge and Donkey pumps
In Engine Room 8-3 1/2" In Holds, &c. Oil cargo pumping system

No. of Bilge Injections 1 sizes 12 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 the sluices on Engine room bulkheads always accessible yes
Are all connections with the sea direct on the skin of the ship yes Are they Valves or Cocks valves + cocks
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 above
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 Oil fuel + effluent suction How are they protected oil fuel
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 no tunnel Is it fitted with a watertight door yes worked from yes

BOILERS, &c.—(Letter for record T) Manufacturers of Steel Lukens Iron & Steel Co.
Total Heating Surface of Boilers 9315 Is Forced Draft fitted yes No. and Description of Boilers 3 single ended
Working Pressure 220 Tested by hydraulic pressure to 330 Date of test 1 14-4-20 No. of Certificate 440
Can each boiler be worked separately yes Area of fire grate in each boiler oil fired No. and Description of Safety Valves to
each boiler 2 spring loaded Area of each valve 9.62 sq ft Pressure to which they are adjusted 220 lbs Are they fitted with easing gear yes
Smallest distance between boilers or uptakes and bunkers or woodwork abt 6'-0" Mean dia. of boilers 15'-4 1/2" Length 11'-6" Material of shell plates steel
Thickness 1 1/8" Range of tensile strength 60/71600 lbs Are the shell plates welded or flanged no Descrip. of riveting: cir. seams D.R. Lap
long. seams T.R. D.B.S. Diameter of rivet holes in long. seams 1 9/16" Pitch of rivets 9 3/8" Lap of plates or width of butt straps 22 3/4"
Per centages of strength of longitudinal joint 90 Working pressure of shell by rules 240 Size of manhole in shell 16x12
Size of compensating ring 38x32 1/2 No. and Description of Furnaces in each boiler 3 Morrison Material steel Outside diameter 48 3/8"
Length of plain part top Thickness of plates crown Description of longitudinal joint welded No. of strengthening rings yes
Working pressure of furnace by the rules 234 Combustion chamber plates: Material steel Thickness: Sides 1 1/8" Back 1 1/8" Top 1 1/8" Bottom 1"
Pitch of stays to ditto: Sides 7 1/4 x 7 Back 7 3/8 x 7 Top 7 3/8 x 7 If stays are fitted with nuts or riveted heads Riveted heads Working pressure by rules 228
Material of stays iron Area at smallest part 2.06 sq ft Area supported by each stay 53.5 sq ft Working pressure by rules 289 End plates in steam space:
Material steel Thickness 1 1/8" Pitch of stays 16 1/2 x 15 How are stays secured double nuts Working pressure by rules 230 Material of stays steel
Area at smallest part 2 3/8" Area supported by each stay 247.5 sq ft Working pressure by rules 272 Material of Front plates at bottom steel
Thickness 1 1/8" Material of Lower back plate steel Thickness 1 1/8" Greatest pitch of stays 13 x 7 1/4" Working pressure of plate by rules 396
Diameter of tubes 2 1/2" Pitch of tubes 3 1/2 x 3 3/4" Material of tube plates steel Thickness: Front 1 1/8" Back 3/4" Mean pitch of stays 9"
Pitch across wide water spaces 12 3/4" Working pressures by rules 278 Girders to Chamber tops: Material steel Depth and
thickness of girder at centre 9 x 2" Length as per rule 2'-11" Distance apart 7 3/8" Number and pitch of stays in each 4-7"
Working pressure by rules 266 Steam dome: description of joint to shell none % of strength of joint yes
Diameter yes Thickness of shell plates yes Material yes Description of longitudinal joint yes Diam. of rivet holes yes
Pitch of rivets yes Working pressure of shell by rules yes Crown plates yes Thickness yes How stayed yes

SUPERHEATER. Type none Date of Approval of Plan yes Tested by Hydraulic Pressure to yes
Date of Test yes Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler yes
Diameter of Safety Valve yes Pressure to which each is adjusted yes Is Easing Gear fitted yes

IS A DONKEY BOILER FITTED?

yes.

If so, is a report now forwarded?

yes.

SPARE GEAR.

State the articles supplied:— 2 connecting rod top end bolts + nuts, 2 connecting rod bottom end bolts + nuts, 2 bearing bolts, 1 set of coupling bolts, 1 set of feed + bilge pump valves, assorted nuts, bolts + iron. One section of crank & propeller shaft, 2 propeller blades, one pair connecting rod bottom end brasses, one pair of cross head brasses, one eccentric HP, 1st MP + LP valve spindles, 1 set piston rings, check valves, cylinder + valve chest cover bolts, spare parts for pumps, condenser + boiler tubes, oil fuel fittings, 1 set safety valve springs.

The foregoing is a correct description,
BETHLEHEM SHIPBUILDING CORPORATION LTD
FORE RIVER PLANT

S. H. Mahewer

GEN. MANAGER

Manufacturer.

Dates of Survey while building
During progress of work in shops -- 1919 Oct 15, 21, 30 Nov 19 Dec 4, 10, 18 1920 Jan 6, 9, 27 Feb 2, 12, 26 Mar 10, 15, 19, 24 Apr 6, 9, 16, 27 May 16, 21, 25
During erection on board vessel -- 1920 Sept 23, 29 Oct 11, 16, 20, 29 Nov 3, 8, 11, 15, 16, 21, 24
Total No. of visits 56.

Is the approved plan of main boiler forwarded herewith

" " " donkey " " "

Dates of Examination of principal parts—Cylinders 19 Oct 1920 Slides 19 Oct 1920 Covers 11 Oct 1920 Pistons 11 Oct 1920 Rods 11 Oct 1920
Connecting rods 8 Jan 1920 Crank shaft 19 Jan 1920 Thrust shaft 9 Apr 1920 Tunnel shafts 13 Aug 1920 Propeller 13 Aug 1920
Stern tube 29 Sept 1920 Steam pipes tested 11 Nov 1920 Engine and boiler seatings 11 Oct 1920 Engines holding down bolts 3 Nov 1920
Completion of pumping arrangements 11 Nov 1920 Boilers fixed 15 Nov 1920 Engines tried under steam 21 Nov 1920
Completion of fitting sea connections 20 Oct 1920 Stern tube 5 Oct 1920 Screw shaft and propeller 16 Oct 1920
Main boiler safety valves adjusted 21 Nov 1920 Thickness of adjusting washers Pnc A 1 3/32 Centre A 1 15/16 Starboard A 1 1/4

Material of Crank shaft steel Identification Mark on Do. 341 JSH Material of Thrust shaft Identification Mark on Do. 341 JSH

Material of Tunnel shafts Identification Marks on Do. Material of Screw shafts steel Identification Marks on Do. 341 JSH

Material of Steam Pipes steel Test pressure 700 lb

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 duplicate of a previous case yes If so, state name of vessel China Arrow, Boston report

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

The machinery + boilers of this vessel have been built under Special Survey in accordance with the Rules + approved plans, as per Philadelphia reports 2779, 3586 hereon + the workmanship + material are good. They have been fitted on board + satisfactorily tried at sea at full power + they are now in good + safe working condition + eligible in my opinion, to receive the notations + LMC 11.20 (in red) FD + 'Fitted for Oil Fuel 11.20 F.P. above 150°F' in the Register Book.

It is submitted that
this vessel is eligible for
THE RECORD. + LMC 11.20 FD

FITTED FOR OIL FUEL 11.20 F.P. ABOVE 150°F.

MACHINERY CERTIFICATE
WRITTEN IN DUPLICATE
3. 1. 21

Recd.
6/1/21

ARR

The amount of Entry Fee ... £ \$15.00 :
Special ... 2/3 ... £ 173.00 :
Philadelphia 1/3 ... £ 86.50 :
Donkey Boiler Fee Phila. £ 35.00 :
Boston ... £ 10.00 :
Travelling Expenses (if any) £ :
Philadelphia (£.50 + 2.00) 10.50 :
New York DEC 14 1920

Committee's Minute

Assigned to LMC 11.20

John S. Heck

Engineer Surveyor to Lloyd's Register of Shipping.



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Foundation