

REPORT ON MACHINERY.

No. 8692

Date of writing Report 28-2-22 When handed in at Local Office 10 Port of Belfast
No. in Survey held at Belfast Date, First Survey 7th Sep 1920 Last Survey 23rd Feb 1922
Reg. Book. T.S.S. Arania (Number of Visits 129) Gross 9771
on the T.S.S. Arania Tons Net 5732
Master J. Mass Built at Belfast By whom built Warriman Clark & Co. Ltd. When built 1922
Engines made at Belfast By whom made - when made -
Boilers made at - By whom made - when made -
Registered Horse Power 1246 NHP Owners Koninklijke Hollandische Lloyd Port belonging to Amsterdam
Shaft Horse Power at Full Power 5500 Is Refrigerating Machinery fitted for cargo purposes Yes Is Electric Light fitted Yes

TURBINE ENGINES, &c.—Description of Engines Two Screw Propellers No. of Turbines 4 on 2 Shafts
Diameter of Rotor Shaft Journals, H.P. 3" L.P. 6 1/2" Diameter of Pinion Shaft 5" x 10"
Diameter of Journals 5" x 10" Distance between Centres of Bearings 27 1/2" x 68" Diameter of Pitch Circle 7.245" x 130.00"
Diameter of Wheel Shaft 13 1/4" Distance between Centres of Bearings 70.75" Diameter of Pitch Circle of Wheel 8.45" x 66.8" x 94.12"
Width of Face 16" x 36" Diameter of Thrust Shaft under Collars 13 1/8" Diameter of Tunnel Shaft as per rule 12.0"
No. of Screw Shafts 2 Centrifugal Diameter of same as per rule 13.33" as fitted 14.25" Diameter of Propeller 16'-0" Pitch of Propeller 76'-3"
No. of Blades 3 State whether Moveable Yes Total Surface 66 sq ft Diameter of Rotor Drum, H.P. 5" L.P. 4" Astern ✓
Thickness at Bottom of Groove, H.P. ✓ L.P. ✓ Astern ✓ Revs. per Minute at Full Power, Turbine 3538 x 2355 Propeller 100

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									
2ND "									
3RD "									
4TH "									
5TH "									
6TH "									
7TH "									
8TH "									

No. and size of Feed pumps 2 Simplex 16" x 11 1/2" x 26" 1 Simplex 9 1/2" x 7" x 24" 1 Simplex 14" x 10" x 24"
No. and size of Bilge pumps 2 7" x 8" x 18" 1 14 1/2" x 12" x 24" 1 Turbine Emergency 100 lbs. Turbine
No. and size of Bilge suction in Engine Room 5-3 1/2" 2-4" 1-2"
In Holds, &c. 73-3 1/2"

No. of Bilge Injections 2 sizes 11" Connected to condenser, or to circulating pump Yes Is a separate Donkey Suction fitted in Engine Room & size 2 1/2" Emergency
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 Four with suction How are they protected Wood casing
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 Bridge

BOILERS, &c.—(Letter for record S) Manufacturers of Steel Brandenburg & Co. Ltd.
Total Heating Surface of Boilers 6836 sq ft Forced Draft fitted Yes No. and Description of Boilers 6 Simplex Tub. by Lind
Working Pressure 215 lbs Tested by hydraulic pressure to 378 lbs Date of test 26-8-91 No. of Certificate 797
Can each boiler be worked separately Yes Area of fire grate in each boiler 70 sq ft No. and Description of Safety Valves to each boiler 2 Direct Spring Area of each valve 11.04 sq in Pressure to which they are adjusted 215 lbs Are they fitted with easing gear Yes
Smallest distance between boilers or uptakes and bunkers or woodwork Plant 8 ft. Mean dia. of boilers 16'-0" Length 2'-0" Material of shell plates Steel
Thickness 1 1/2" Range of tensile strength 28-32 tons Are the shell plates welded or flanged No Descrip. of riveting: cir. seams Lap with
long. seams Welded Diameter of rivet holes in long. seams 1 1/8" Pitch of rivets 10 1/2" Lap of plates or width of butt straps 23 1/2"
rivets 98' 6" plates 84' 8" Working pressure of shell by rules 226 lbs Size of manhole in shell 16" x 12"

Per centages of strength of longitudinal joint plates 84' 8" Working pressure of shell by rules 226 lbs Size of manhole in shell 16" x 12"
Size of compensating ring Plant 8 ft. Mean dia. of boilers 16'-0" No. and Description of Furnaces in each Boiler 4 Waggon Material Steel Outside diameter 44 1/2"
Length of plain part top 5" bottom 8" Thickness of plates crown 3 1/4" bottom 3 1/4" Description of longitudinal joint Weld No. of strengthening rings -
Working pressure of furnace by the rules 207 lbs Combustion chamber plates: Material Steel Thickness: Sides 7/8" Back 1 1/4" Top 1 1/4" Bottom 3/4"
Pitch of stays to ditto: Sides 8 1/2" x 8 1/2" Back Varies Top 8" x 8 1/2" If stays are fitted with nuts or riveted heads No Working pressure by rules 216 lbs
Material of stays Steel Diameter at smallest part 1 1/2" 5259 sq in Area supported by each stay Varies Working pressure by rules 216 lbs End plates in steam space
Material Steel Thickness 1 1/2" Pitch of stays 21 1/4" x 15" How are stays secured Welded Working pressure by rules 219 lbs Material of stays 6" 66 sq in
Diameter at smallest part 2 1/4" 377 sq in Area supported by each stay 318 1/4 sq in Working pressure by rules 217 lbs Material of Front plates at bottom Steel
Thickness 1" Material of Lower back plate Steel Thickness 3/4" Greatest pitch of stays 14" Working pressure of plate by rules 219 lbs
Diameter of tubes 3" Pitch of tubes 14" x 48" Material of tube plates Steel Thickness: Front 1" Back 1 1/4" Mean pitch of stays 22 1/2" x 8 1/2"
Pitch across wide water spaces 14" Working pressures by rules 265 lbs Girders to Chamber tops: Material Steel Depth and thickness of girder at centre 10 1/2" x (2 x 1 1/2") Length as per rule 228 3/4" Distance apart 6 1/2" x 8 1/2" Number and pitch of stays in each 3-8 1/2"
Working pressure by rules 226 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 ✓

SUPERHEATER. Ty. 6 *Schmidt* Date of Approval of Plan 28-6-21

Date of Test 22-11-21

Is a Safety Valve fitted to each Section of the Superheater which can be shut off from the Boiler

Diameter of Safety Valve 3"

Pressure to which each is adjusted 217 lbs

Is Easing Gear fitted

IS A DONKEY BOILER FITTED? No

If so, is a report now forwarded?

SPARE GEAR. State the articles supplied:— See separate sheet

The foregoing is a correct description,
FOR WORKMAN, CLARK & CO., LIMITED,

Manufacturer.

Dates of Survey
while building
Total No. of visits

7th Sep^r 1920 & 23rd February 1922

129

Is the approved plan of main boiler forwarded herewith

Yes

Dates of Examination of principal parts—Casing 13-8-21 Rotors 1-8-21 Blading 3-9-21 Gearing 24-8-21

Rotor shaft 1-8-21 Thrust shaft 30-8-21 Tunnel shafts 30-8-21 Screw shaft 30-8-21 Propeller 9-9-21

Stern tube 9-9-21 Steam pipes tested 16-1-22 Engine and boiler seatings 19-11-21 Engines holding down bolts 19-11-21

Completion of pumping arrangements 21-2-22 Boilers fired 19-11-21 Engines tried under steam 23-2-22

Main boiler safety valves adjusted 3-2-22 Thickness of adjusting washers 8-15-22

Material and tensile strength of Rotor shaft 1. Steel 36.8 tons Identification Mark on Do. 6995 AF

Material and tensile strength of Pinion shaft 1. Steel 34-38 tons Identification Mark on Do. 40 645 tons

Material of Wheel shaft 1. Steel Identification Mark on Do. 6995 AF Material of Thrust shaft do Identification Mark on Do. 40 645 tons

Material of Tunnel shafts do Identification Marks on Do. do Material of Screw shafts do Identification Marks on Do. do

Material of Steam Pipes 1. Steel & W. Iron Test pressure 650 lbs sq. in.

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 No If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.) The machinery of this vessel has been constructed under Special Survey, and in accordance with the Rules. The materials and the workmanship are of good description and on trials in Belfast Lough, the machinery, which is fitted with the builders "Nodal Drive" worked satisfactorily.

In my opinion, it is eligible for record + L.M.C. 2-22, with notation "Fitted for oil fuel F.P. above 150° F." "Forced Draft" & "Electric Light and 'Refrigerating Machinery'". It is submitted that this vessel is eligible for THE RECORD + L.M.C. - 2.22. F.D. C.L. 1246 N.

The amount of Entry Fee ... £ 6 : 0 : 0 When applied for,
Special ... £ 131-2-6 28-2-1922
Donkey Boiler Fee ... £ 1 : 0 : 0 When received,
Travelling Expenses (if any) £ 93-22/100

Committee's Minute FEB 10 MAR 1922

Assigned + L.M.C. 2.22

Fitted for oil fuel 2.22 F.P. above 150° F.

CERTIFICATE WRITTEN 8-3-22

Rpt. 9a.

Port of

Belfast

Continuation of Report No. 8692 dated

28-2-22 on the

T.S.S. "Orania"

Principal items of Spare Gear (in addition to Rule Requirements)

1 Propeller shaft complete

2 blades & one boss.

20 Main Condenser tubes & 200 females

3 Bolt nuts for tunnel shaft couplings

H.P. and L.P. Primary Pinions

L.P.

Secondary Pinion

2 Internal shafts for "Nodal Drive"

2 Pair bushes

4 Bolt nuts for H.P. & L.P. turbine shaft couplings

1/2 set segments and springs each turbine flank

1 set blades with shrouding, H.P. 1st stage wheel

2 - diaphragms for heads & stern manoeuvring valves

50 Boiler tubes & stay tubes

Set spare gear for White oil fuel burning installation

Superheaters

all Pumps

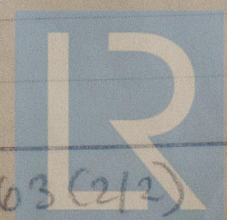
Forced Draft Fans

Feed Filters

Oil

R.F. Breen

Engineer Surveyor to Lloyd's Register of Shipping.



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