

## REPORT ON MACHINERY

No. 16712  
FRI. JUN. 26 1914.

Received at London Office

Date of writing Report 19 When handed in at Local Office 25/6/14 Port of *Glasgow*  
No. in Survey held at *Port Glasgow* Date, First Survey *16<sup>th</sup> Decr/13* Last Survey *19<sup>th</sup> June 1914*  
Reg. Book. on the *S. S. "SANTA ISABEL"* (Number of Visits *34*) Gross *2023*  
Master *A. S. Graham* Built at *Port Glasgow* By whom built *Dunlop Brothers & Co Ltd* Tons Net *1211*  
Engines made at *Port Glasgow* By whom made *do* when made *1914*  
Boilers made at *Glasgow* By whom made *Dunsmuir & Jackson Ltd* when made *1914*  
Registered Horse Power Owners *Santa Isabel S. Co Ltd* Port belonging to *Liverpool*  
Nom. Horse Power as per Section 28 *236* Is Refrigerating Machinery fitted for cargo purposes *No* Is Electric Light fitted *Yes*

ENGINES, &c.—Description of Engines *Triple expansion* No. of Cylinders *3* No. of Cranks *3*  
Dia. of Cylinders *21"-35"-57"* Length of Stroke *36"* Revs. per minute *as per rule 11.5* Material of *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 *4'-3"*  
Dia. of Tunnel shaft *as per rule 10.28"* Dia. of Crank shaft journals *as per rule 10.8"* Dia. of Crank pin *11"* Size of Crank webs *14"x17"* Dia. of thrust shaft under  
collars *11"* Dia. of screw *14'-3"* Pitch of Screw *14'-3"* No. of Blades *4* State whether moveable *No* Total surface *60 sq ft*  
No. of Feed pumps *1* Diameter of ditto *3 1/2"* Stroke *21"* Can one be overhauled while the other is at work *Yes*  
No. of Bilge pumps *2* Diameter of ditto *3 1/2"* Stroke *21"* Can one be overhauled while the other is at work *Yes*  
No. of Donkey Engines *2* Sizes of Pumps *8"x6"x18" 2"x5"x12" 2"x4"x12"* No. and size of Suctions connected to both Bilge and Donkey pumps  
In Engine Room *2 2 1/2" off 12 1/2" above 10 2 1/2" tunnel well* In Holds, &c. *1 2 1/2" 2 2 1/2" 4 1/2" hold*  
No. of Bilge Injections *1* sizes *5 1/2"* Connected to condenser, or to circulating pump *Yes* Is a separate Donkey Suction fitted in Engine room & size *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 *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 *None* How are they protected *Yes*  
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*  
Dates of examination of completion of fitting of Sea Connections *12/5/14* of Stern Tube *12/2/14* Screw shaft and Propeller *12/5/14*  
Is the Screw Shaft Tunnel watertight *Yes* Is it fitted with a watertight door *Yes* worked from *Engine room*

BOILERS, &c.—(Letter for record) Manufacturers of Steel *Boilers made at Glasgow in separate report*  
Total Heating Surface of Boilers Is Forced Draft fitted *No* No. and Description of Boilers *2 4 ft multi*  
Working Pressure *180 lbs* Tested by hydraulic pressure to Date of test No. of Certificate  
Can each boiler be worked separately *Yes* Area of fire grate in each boiler No. and Description of Safety Valves to  
each boiler *2 spring loaded* Area of each valve *5.94"* Pressure to which they are adjusted *185 lbs* Are they fitted with easing gear *Yes*  
Smallest distance between boilers or uptakes and bunkers or woodwork *3'-0"* Mean dia. of boilers Length Material of shell plates  
Thickness Range of tensile strength Are the shell plates welded or flanged Descrip. of riveting: cir. seams  
long. seams Diameter of rivet holes in long. seams Pitch of rivets Lap of plates or width of butt straps  
Per centages of strength of longitudinal joint rivets. Working pressure of shell by rules Size of manhole in shell  
Size of compensating ring No. and Description of Furnaces in each boiler Material Outside diameter  
Length of plain part top Thickness of plates crown Description of longitudinal joint No. of strengthening rings  
bottom Working pressure of furnace by the rules Combustion chamber plates: Material Thickness: Sides Back Top Bottom  
Pitch of stays to ditto: Sides Back Top If stays are fitted with nuts or riveted heads Working pressure by rules  
Material of stays Diameter at smallest part Area supported by each stay Working pressure by rules End plates in steam space:  
Material Thickness Pitch of stays How are stays secured Working pressure by rules Material of stays  
Diameter at smallest part Area supported by each stay Working pressure by rules Material of Front plates at bottom  
Thickness Material of Lower back plate Thickness Greatest pitch of stays Working pressure of plate by rules  
Diameter of tubes Pitch of tubes Material of tube plates Thickness: Front Back Mean pitch of stays  
Pitch across wide water spaces Working pressures by rules Girders to Chamber tops: Material Depth and  
thickness of girder at centre Length as per rule Distance apart Number and pitch of stays in each  
Working pressure by rules Superheater or Steam chest; how connected to boiler Can the superheater be shut off and the boiler worked  
separately Diameter Length Thickness of shell plates Material Description of longitudinal joint Diam. of rivet  
holes Pitch of rivets Working pressure of shell by rules Diameter of flue Material of flue plates Thickness  
If stiffened with rings Distance between rings Working pressure by rules End plates: Thickness How stayed  
Working pressure of end plates Area of safety valves to superheater Are they fitted with easing gear



*Manufacturers of Steel*

No.	Description
	1 cask with the small end of the

Made at Glasgow. By whom made Dunsmuir & Jackson. When made 1914 Where fired Northolt

Working pressure 100 tested by hydraulic pressure to \_\_\_\_\_ Date of test \_\_\_\_\_ No. of Certificate \_\_\_\_\_ Fire grate area \_\_\_\_\_ Description of Safet No. \_\_\_\_\_

Valves 2 Spring loaded No. of Safety Valves 2 Area of each 4.9 Pressure to which they are adjusted 100 lbs Date of adjustment 15/6/14

<i>If fitted with easing gear</i>	<i>If steam from main boilers can enter the donkey boiler</i>	<i>Dia. of donkey boiler</i>	<i>Length</i>

<i>Material of shell plates</i>	<i>Thickness</i>	<i>Range of tensile strength</i>	<i>Descrip. of riveting long. seams</i>
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<i>Dia. of rivet holes</i>	<i>Whether punched or drilled</i>	<i>Pitch of rivets</i>	<i>Lap of plating</i>	<i>Per centage of strength of joint</i>
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<i>Working pressure of shell by rules</i>	<i>Thickness of shell crown plates</i>	<i>Radius of do.</i>	<i>No. of stays to do.</i>	<i>Dia. of stays</i>
100	1.0	10	10	1.0
150	1.2	12	12	1.2
200	1.4	14	14	1.4
250	1.6	16	16	1.6
300	1.8	18	18	1.8
350	2.0	20	20	2.0
400	2.2	22	22	2.2
450	2.4	24	24	2.4
500	2.6	26	26	2.6
550	2.8	28	28	2.8
600	3.0	30	30	3.0
650	3.2	32	32	3.2
700	3.4	34	34	3.4
750	3.6	36	36	3.6
800	3.8	38	38	3.8
850	4.0	40	40	4.0
900	4.2	42	42	4.2
950	4.4	44	44	4.4
1000	4.6	46	46	4.6
1050	4.8	48	48	4.8
1100	5.0	50	50	5.0
1150	5.2	52	52	5.2
1200	5.4	54	54	5.4
1250	5.6	56	56	5.6
1300	5.8	58	58	5.8
1350	6.0	60	60	6.0
1400	6.2	62	62	6.2
1450	6.4	64	64	6.4
1500	6.6	66	66	6.6
1550	6.8	68	68	6.8
1600	7.0	70	70	7.0
1650	7.2	72	72	7.2
1700	7.4	74	74	7.4
1750	7.6	76	76	7.6
1800	7.8	78	78	7.8
1850	8.0	80	80	8.0
1900	8.2	82	82	8.2
1950	8.4	84	84	8.4
2000	8.6	86	86	8.6
2050	8.8	88	88	8.8
2100	9.0	90	90	9.0
2150	9.2	92	92	9.2
2200	9.4	94	94	9.4
2250	9.6	96	96	9.6
2300	9.8	98	98	9.8
2350	10.0	100	100	10.0
2400	10.2	102	102	10.2
2450	10.4	104	104	10.4
2500	10.6	106	106	10.6
2550	10.8	108	108	10.8
2600	11.0	110	110	11.0
2650	11.2	112	112	11.2
2700	11.4	114	114	11.4
2750	11.6	116	116	11.6
2800	11.8	118	118	11.8
2850	12.0	120	120	12.0
2900	12.2	122	122	12.2
2950	12.4	124	124	12.4
3000	12.6	126	126	12.6
3050	12.8	128	128	12.8
3100	13.0	130	130	13.0
3150	13.2	132	132	13.2
3200	13.4	134	134	13.4
3250	13.6	136	136	13.6
3300	13.8	138	138	13.8
3350	14.0	140	140	14.0
3400	14.2	142	142	14.2
3450	14.4	144	144	14.4
3500	14.6	146	146	14.6
3550	14.8	148	148	14.8
3600	15.0	150	150	15.0
3650	15.2	152	152	15.2
3700	15.4	154	154	15.4
3750	15.6	156	156	15.6
3800	15.8	158	158	15.8
3850	16.0	160	160	16.0
3900	16.			

<i>Diameter of furnace</i>	<i>Top</i>	<i>Bottom</i>	<i>Length of furnace</i>	<i>Thickness of furnace plates</i>	<i>Description of joint</i>
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<i>Working pressure of furnace by rules</i>	<i>Thickness of furnace crown plates</i>	<i>Radius of do.</i>	<i>Stayed by</i>

*Diameter of uptake      Thickness of uptake plates      Thickness of water tubes      Dates of survey*

SPARE GEAR, State the articles supplied:— 2 to 4 ad 2 to 4 ad 8 ad main bearing bolts, nuts, 1 set of main bearing roller  
1 set each of feed & valve pump valves, 30 assorted bolts & nuts, 1 set of each of assorted iron & steel pipe  
tubes, 14 pump & valve tubes, 6 pump iron bolts, 1 set each of main & aux. & main & aux. cheek valve  
1 set each of pump & valve valves, 1 spare propeller, 1 pin & nut complete & 1 set of pin & nut  
for wrenches, 11 various spare gear for six machines.

DUNLOP, BRIDGMAN & COY., LIMITED

*The foregoing is a correct description,*

Manufacturer.

Dates of Survey while building	During progress of work in shops - -	1913. Dec. 16. 19. 26. 1914. Jan. 9. 16. 19. 21. 27. 30. Feb. 3. 6. 12. 20. 25. Mar. 9. 16. 23. 31. 4th
	During erection on board vessel - - -	3. May. 5. 6. 12. 18. 20. 29. June 2. 5. 8. 10. 12. 15. 18. 19.
	Total No. of visits	34

Is the approved plan of main boiler forwarded herewith *Yes*

Is the approved plan of main boiler forwarded herewith

Dates of Examination of principal parts—Cylinders 6/2/14 Slides 19/12/13 Covers 3/2/14 Pistons 19/12/13 Rods 9/1/14

Connecting rods  $9\frac{1}{4}$  Crank shaft  $29\frac{1}{4}$  Thrust shaft  $29\frac{1}{4}$  Tunnel shafts  $3\frac{1}{2}$  Screw shaft  $26\frac{1}{2}$  Propeller  $29\frac{1}{4}$

Stern tube 30/1/4      Steam pipes tested 10/5/4      Engine and boiler seatings 12/5/4      Engines holding down bolts 29/5/4

Completion of pumping arrangements  $15/6/14$  Boilers fired  $15/6/14$  Engines tried under steam  $19/6/14$

Main boiler safety valves adjusted	$\frac{15}{8} \times \frac{1}{4}$	Thickness of adjusting washers	STB WELER STB PORT 4" 2"	STB WELER STB PORT 3" 9"	DUNFEE REED FORD A 12"
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Material of Crank shaft W STEEL Identification Mark on Do. 1278 Material of Thrust shaft W STEEL Identification Mark on Do. 1278

Material of Tunnel shafts *W. STEE* Identification Marks on Do. *1970*      Material of Screw shafts *W. STEE* Identification Marks on Do. *1280*

Material of Steam Pipes W. STEEL & copper Test pressure W. STEEL 100 LBS. COPPER 360 LBS.

General Remarks (State quality of workmanship opinions as to class &c. The men & abilities of this vessel have

**General Remarks** (State quality of workmanship, opinions as to class, &c. *The engines & boiler of this vessel have been built under special survey, and the materials & workmanship are good. On completion they were examined while running full power trials in the Puget, with satisfactory results.*

The machinery is now in a good & efficient condition, & eligible in my opinion to have the record **✠ LMC-6-14** marked in the Society's Register Book.

It is submitted that  
this vessel is eligible for  
THE RECORD. + LMC. 6.14

The amount of Entry Fee	.. £	2-0-0	When applied for,
Special <sup>2nd Sub</sup> £ 21-4	} £	3-16-0	24/6/14
<sup>4th Sub</sup> £ 10-14			
Donkey Boiler Fee	.. .. £	:	When received,
Travelling Expenses (if any)	£	:	26/6/14

## Committee's Minute

FRI. JUN. 26. 1914

*Assigned*

+ Lm 6. 6. 14

*Engineer Surveyor to Lloyd's Register of British & Foreign Shipping*

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Foundation