

# REPORT ON MACHINERY.

Date of writing Report **23 JUN 1916** When handed in at Local Office **23 JUN 1916** Port of **DUNDEE** Received at London Office **SAT. JUN. 24. 1916**

No. in Survey held at **Dundee** Date, First Survey **5<sup>th</sup> May 1915** Last Survey **15<sup>th</sup> June 1916**  
Reg. Book. on the MACHINERY OF THE STEEL S.S. "DENPARK" (Number of Visits **45**)

Master **James G. G. G. G.** Built at **Grangemouth** By whom built **Grangemouth & Grangemouth Ship Co. Ltd.** (SHIP N<sup>o</sup> 364) When built **1916**

Engines made at **Dundee** By whom made **Cooper & Frig. L.** (ENG. N<sup>o</sup> 172) when made **1916**

Boilers made at **Glasgow** By whom made **Dunsmuir & Jackson, L.** (BR. N<sup>o</sup> 461) when made **1916**

Registered Horse Power **228** Owners **Dunblair Steam Navigation Co. Ltd.** Port belonging to **Grangemouth**

Nom. Horse Power as per Section 28 **228** Is Refrigerating Machinery fitted for cargo purposes **no** Is Electric Light fitted **yes**

ENGINES, &c.—Description of Engines **Triple Expansion Surface Condensing** No. of Cylinders **3** No. of Cranks **3**

Dia. of Cylinders **21" 35" & 57"** Length of Stroke **36"** Revs. per minute **78** Dia. of Screw shaft **11" 7/8"** Material of screw shaft **Wrought iron**

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 **solid**

If two liners are fitted, is the shaft lapped or protected between the liners **yes** Length of stern bush **4' 1 1/2"**

Dia. of Tunnel shaft **10.29"** Dia. of Crank shaft journals **10.91"** Dia. of Crank pin **11"** Size of Crank webs **18" x 7 1/2"** Dia. of thrust shaft under collars **11"**

Dia. of screw **14' 9"** Pitch of Screw **15' 6"** No. of Blades **4** State whether moveable **solid** Total surface **75 sq ft**

No. of Feed pumps **2** Diameter of ditto **3 1/4"** Stroke **18"** Can one be overhauled while the other is at work **yes**

No. of Bilge pumps **2** Diameter of ditto **3 1/2"** Stroke **18"** Can one be overhauled while the other is at work **yes**

No. of Donkey Engines **3** Sizes of Pumps **BALLAST PUMP 9" x 11" x 10" DOW. GEN. DV. " 7" x 5" x 7" DONKEY EN. " 4" x 2 1/2" x 5"** No. and size of Suctions connected to both Bilge and Donkey pumps

In Engine Room **2 @ 2 3/4" Port & Starboard & 2 @ 2 1/2" in stokehold** In Holds, &c. **Fore peak 1 @ 2 1/2" Fore hold 2 @ 2 3/4" After hold 1 @ 2 1/2" Forward Well 1 @ 2 1/2" and After peak 1 @ 2 1/2"**

No. of Bilge Injections **1** sizes **4 1/4"** Connected to **condenser** or to circulating pump **yes** Is a separate Donkey Suction fitted in Engine room & size **yes 3"**

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 **no**

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 **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 **bilge suction only** How are they protected **wood sheathing**

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 **18. 2. 16** of Stern Tube **17-4-16** Screw shaft and Propeller **17-4-16**

Is the Screw Shaft Tunnel watertight **yes** Is it fitted with a watertight door **yes** worked from **top platform in engine room**

BOILERS, &c.—(Letter for record **Y**) Manufacturers of Steel

Total Heating Surface of Boilers **3734 sq ft** Is Forced Draft fitted **no** No. and Description of Boilers **2 S.E. cylindrical multitubular**

Working Pressure **180 lbs.** Tested by hydraulic pressure to **360 lbs.** Date of test **6-7-15** No. of Certificate **13201**

Can each boiler be worked separately **yes** Area of fire grate in each boiler **56 sq ft** No. and Description of Safety Valves to each boiler **2 direct spring loaded**

Area of each valve **7.57 sq in** Pressure to which they are adjusted **185 lbs.** Are they fitted with easing gear **yes**

Smallest distance between boilers **9"** Mean dia. of boilers **14' 7 1/2"** Length **10' 6"** Material of shell plates

Thickness **3/8"** Range of tensile strength **45,000 lbs.** Are the shell plates welded or flanged **no** Descrip. of riveting: **circ. seams**

long. seams **no** Diameter of rivet holes in long. seams **1 1/8"** Pitch of rivets **4"** Lap of plates or width of butt straps **1 1/2"**

Per centages of strength of longitudinal joint **85%** Working pressure of shell by rules **185 lbs.** Size of manhole in shell **30"**

Size of compensating ring **35" dia.** No. and Description of Furnaces in each boiler **1** Material **cast iron** Outside diameter **35"**

Length of plain part **10' 6"** Thickness of plates **3/8"** Description of longitudinal joint **butt** No. of strengthening rings **0**

Working pressure of furnace by the rules **185 lbs.** Combustion chamber plates: Material **cast iron** Thickness: Sides **3/8"** Back **3/8"** Top **3/8"** Bottom **3/8"**

Pitch of stays to ditto: Sides **12"** Back **12"** Top **12"** If stays are fitted with nuts or riveted heads **no** Working pressure by rules **185 lbs.**

Material of stays **cast iron** Diameter at smallest part **1 1/2"** Area supported by each stay **10 sq ft** Working pressure by rules **185 lbs.** End plates in steam space: **no**

Material **cast iron** Thickness **3/8"** Pitch of stays **12"** How are stays secured **by nuts** Working pressure by rules **185 lbs.** Material of stays **cast iron**

Diameter at smallest part **1 1/2"** Area supported by each stay **10 sq ft** Working pressure by rules **185 lbs.** Material of Front plates at bottom **cast iron**

Thickness **3/8"** Material of Lower back plate **cast iron** Thickness **3/8"** Greatest pitch of stays **12"** Working pressure of plate by rules **185 lbs.**

Diameter of tubes **1 1/2"** Pitch of tubes **12"** Material of tube plates **cast iron** Thickness: Front **3/8"** Back **3/8"** Mean pitch of stays **12"**

Pitch across wide water spaces **12"** Working pressures by rules **185 lbs.** Girders to Chamber tops: Material **cast iron** Depth and thickness of girder at centre **12" x 12"**

Length as per rule **12"** Distance apart **12"** Number and pitch of stays in each **12" x 12"**

Working pressure by rules **185 lbs.** Superheater or Steam chest; how connected to boiler **direct** Can the superheater be shut off and the boiler worked separately **no**

Diameter **12"** Length **12"** Thickness of shell plates **3/8"** Material **cast iron** Description of longitudinal joint **butt** Diam. of rivet holes **1 1/8"**

Pitch of rivets **4"** Working pressure of shell by rules **185 lbs.** Diameter of flue **12"** Material of flue plates **cast iron** Thickness **3/8"**

If stiffened with rings **no** Distance between rings **12"** Working pressure by rules **185 lbs.** End plates: Thickness **3/8"** How stayed **by nuts**

Working pressure of end plates **185 lbs.** Area of safety valves to superheater **10 sq ft** Are they fitted with easing gear **no**

IS A DONKEY BOILER FITTED? *Yes.* If so, is a report now forwarded? *Yes. GLS. REP. N° 3578.*

SPARE GEAR. State the articles supplied: - 2 top and 2 bottom end bolts and nuts; 2 main bearing bolts; 1 set of coupling bolts; 1 set fuel and bilge pump valves; 1 set springs for HP pistons; 1 piston ring for M & L.P. 1 propeller; Assorted bolts & nuts; iron swivels; pump valves for air, circulating and drain pumps; 12 boiler tubes; safety valve spring; escape valve spring for each size; 1 fuel check valve

The foregoing is a correct description,

FOR COOPER & GREIG, LIMITED.

*W. H. Cooper*  
MANAGING DIRECTOR

Manufacturer.

Dates of Survey while building { During progress of work in shops - - 1915. MAY 5, 27, JUNE 17, JULY 2, 15, AUG. 16, 19, 28, SEPT. 6, 17, 30, NOV. 17, 30, DEC. 16, 21 1916. JAN. 4, 31, FEB. 1, 8, 15, 17, 24, 24, MAR. 3, 10, 16, 24, 29, APR. 14, 17, 18, 24, 25, 27 MAY 1, 3, 4, 8, 12, 14, 18, 23, 29, 31 JUNE 12, 13, 15. Total No. of visits 48

Is the approved plan of main boiler forwarded herewith *no.*

Dates of Examination of principal parts - Cylinders 17/6/15 & 21/12/15 Slides 4/1/16 & 3/3/16 Covers 4/1/16 & 3/3/16 Pistons 16/9/15 & 29/3/16 Rods 16/9/15 & 12/1/16 Connecting rods 12/8/15 & 30/9/15 Crank shaft 5/7/15 & 16/3/16 Thrust shaft 14/9/15 & 17/1/16 Tunnel shafts 30/9/15 & 14/3/16 Screw shaft 14/12/15 & 14/3/16 Propeller 29/3/16 & 17/1/16 Stern tube 24/2/16 & 3/3/16 Steam pipes tested 14-6-16 Engine and boiler seatings 14-3-16 Engines holding down bolts 31-5-16 Completion of pumping arrangements 12-6-16 Boilers fixed 31-5-16 Engines tried under steam 12-6-16 Main boiler safety valves adjusted 12-6-16 Thickness of adjusting washers Port { P 11/32 S 11/32 Starboard { P 9/32 S 17/64

Material of Crank shaft *Steel* Identification Mark on Do. N° 7908 Material of Thrust shaft *Steel* Identification Mark on Do. N° 7908 Material of Tunnel shafts *M. Iron* Identification Marks on Do. N° 7908 Material of Screw shafts *M. Iron* Identification Marks on Do. N° 7908

Material of Steam Pipes *Lapwelded steel tubes* Test pressure 540 lbs. ✓

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 duplicate of a previous case *no.* ✓ If so, state name of vessel ✓

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

*This vessel's engines and boilers have been constructed under special survey in accordance with the approved plans and the Society's rules. The material and workmanship are of good description. The machinery has been examined under full working conditions and found satisfactory and eligible, in my opinion, to have record of + LMC 6, 16.*

*For full particulars of main and donkey boilers see Glasgow Report Nos. 35845 and 35783.*

*First entry report on Electric Lighting Installation will follow as soon as received from Electricians. It is submitted that this vessel is eligible for THE RECORD + LMC 6, 16.*

Certificate (if required) to be sent to Committee's Minute.

The amount of Entry Fee ... £ 2 : 0 : 0 When applied for, 23 June 1916  
3/3 Special ... £ 20 : 18 : 8  
Donkey Boiler Fee ... £ : : :  
Travelling Expenses (if any) £ : 13 : 4 26/7/1916 29/9/16

*James Carraghan*  
Engineer Surveyor to Lloyd's Register of British & Foreign Shipping.  
26/6/16

Committee's Minute TUE JUN. 27. 1916  
Assigned *+ LMC 6, 16*

MACHINERY CERTIFICATE WRITTEN.

