

# REPORT ON MACHINERY.

TUES. JUL 30 1901

Port of Sunderland

Received at London Office

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No. in Survey held at Sunderland Date, first Survey 21<sup>st</sup> Feb'y Last Survey 24<sup>th</sup> July 1901  
 No. of Book. 1 Number of Visits 30  
 Name of the vessel S. S. Gratia Tons { Gross 1889 Net 1174  
 Master A. T. Sko Built at Sunderland By whom built Strand Slipway Co. When built 1901  
 Engines made at Sunderland By whom made George Clark & Co. when made 1901  
 Moulders made at Sunderland By whom made George Clark & Co. when made 1901  
 Registered Horse Power \_\_\_\_\_ Owners Hucksler & Sons Port belonging to Copenhagen  
 Horse Power as per Section 28 174 Is Refrigerating Machinery fitted No Is Electric Light fitted No

ENGINES, &c.—Description of Engines Triple - Expansion No. of Cylinders 3 No. of Cranks 3  
 No. of Cylinders 19 1/2 Length of Stroke 36" Revs. per minute 70 Dia. of Screw shaft 10 1/8" as per rule 10 1/8" as fitted 11 3/8" Lgth. of stern bush 3'-10"  
 Dia. of Tunnel shaft 9 1/2" as fitted 9 7/8" Dia. of Crank shaft journals 9 1/8" as fitted 10" Dia. of Crank pin 10" Size of Crank webs 15 x 7" Dia. of thrust shaft under  
 No. of blades 4 State whether moveable No Total surface 56.5 sq ft  
 No. of Feed pumps 2 Diameter of ditto 2 3/4" Stroke 20" Can one be overhauled while the other is at work Yes  
 No. of Bilge pumps 2 Diameter of ditto 3 1/2" Stroke 20" Can one be overhauled while the other is at work Yes  
 No. of Donkey Engines 2 Sizes of Pumps 7 1/4 x 9 x 10 8 5/16 x 3 1/2 x 5 No. and size of Suctions connected to both Bilge and Donkey pumps  
 Engine Room Three of 2 1/2" dia. In Holds, &c. Two in each hold of 2 1/2" dia.  
 No. of bilge injections 1 sizes 4" Connected to condenser, or to circulating pump B.P. Is a separate donkey suction fitted in Engine room & size Yes 4"  
 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 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  
 Are all pipes carried through the bunkers None How are they protected ✓  
 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  
 Were stern tube, propeller, screw shaft, and all connections examined in dry dock New Vessel Is the screw shaft tunnel watertight Yes  
 Is it fitted with a watertight door Yes worked from Top platform

BOILERS, &c.— (Letter for record 3) Total Heating Surface of Boilers 2700 sq ft Is forced draft fitted No  
 Kind and Description of Boilers Two Single Ended Ordinary Marine Working Pressure 160 lbs Tested by hydraulic pressure to 220 lbs  
 Date of test 11-6-01 Can each boiler be worked separately Yes Area of fire grate in each boiler 39.4 sq ft No. and Description of safety valves to  
 boiler Two direct spring Area of each valve 5.9 sq in Pressure to which they are adjusted 160 lbs Are they fitted with easing gear Yes  
 Least distance between boilers or uptakes and bunkers or woodwork 18" Mean dia. of boilers 12'-3" Length 10'-0" Material of shell plates S  
 Thickness 2 3/32" Range of tensile strength 28 1/2-32 Are they welded or flanged flanged Descrip. of riveting: cir. seams D. R. long. seams J. R. D. B. S.  
 Diameter of rivet holes in long. seams 1" Pitch of rivets 6 1/16" Lap of plates on width of butt straps 1'-3 1/4"  
 Percentages of strength of longitudinal joint  
 rivets 96 plate 85 Working pressure of shell by rules 160 lbs Size of manhole in shell 16 x 13"  
 Diameter of compensating ring 8 3/4 x 7 1/8" No. and Description of Furnaces in each boiler 2 Plain Material S Outside diameter 44.5"  
 Height of plain part top 5'-9 1/4" bottom 5'-6" Thickness of plates crown 2 3/32" bottom 2 3/32" Description of longitudinal joint Welded No. of strengthening rings 1/2 on bot  
 Working pressure of furnace by the rules 160 lbs Combustion chamber plates: Material S Thickness: Sides 1/16" Back 2 1/32" Top 1/16" Bottom 1/16"  
 Diameter of stays to ditto: Sides 10" Back 10 1/4" Top 10" If stays are fitted with nuts or riveted heads Nuts Working pressure by rules 162 lbs  
 Material of stays S Diameter at smallest part 1.6" Area supported by each stay 100 sq in Working pressure by rules 196 lbs End plates in steam space:  
 Material S Thickness 1 1/16" Pitch of stays 17 7/16 x 17 7/16" How are stays secured Nuts Working pressure by rules 163 lbs Material of stays S  
 Diameter at smallest part 2.5" Area supported by each stay 309 sq in Working pressure by rules 163 lbs Material of Front plates at bottom S  
 Thickness 3/4" Material of Lower back plate S Thickness 1 1/16" Greatest pitch of stays 14" Working pressure of plate by rules 166 lbs  
 Diameter of tubes 3 1/4" Pitch of tubes 4 3/8" Material of tube plates S Thickness: Front 1 1/16" Back 2 3/32" Mean pitch of stays 8 3/4"  
 Distance across wide water spaces 14 1/4" Working pressures by rules 160 lbs Girders to Chamber tops: Material S Depth and  
 Weight of girder at centre 8 7/8 x 7/8 x 2" Length as per rule 2'-8" Distance apart 10" Number and pitch of Stays in each 2 stays 10" p.  
 Working pressure by rules 161 lbs Superheater or Steam chest; how connected to boiler None Can the superheater be shut off and the boiler worked  
 singly ✓ Diameter ✓ Length ✓ Thickness of shell plates ✓ Material ✓ Description of longitudinal joint ✓ Diam. of rivets ✓  
✓ Pitch of rivets ✓ Working pressure of shell by rules ✓ Diameter of flue ✓ Material of flue plates ✓ Thickness ✓  
✓ Rivets secured 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 ✓



