No. 1812

THE BRITISH CORPORATION FOR THE SURVEY AND REGISTRY OF SHIPPING.

Report No. 2091 No. in Register Book 3440

TRANSFERRED TO
L. R. SYSTEM

S.S. "HATSUSE"

Makers of Engines Smiths Dock Co Ld.

Works No. 302.

Makers of Main Boilers George Clark Ld.

Works No. 1154½

Makers of Donkey Boiler –

Works No. –

MACHINERY.

No.

THE BRITISH CORPORATION FOR THE SURVEY AND REGISTRY OF SHIPPING.

Report No. ..... No. in Register Book .....

Received at Head Office 23rd November 1927.

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the ~~Single~~ ~~Triple~~ ~~Twin~~ ~~Quadruple~~ Screw Tripler "Halcuse"

Official No. ..... Port of Registry Cardiff.

Registered Owners Neale & West Ld.

Engines Built by Smiths Dock Co Ld.

at South Bank-on-Tees.

Main Boilers Built by Joyce Clark Ld.

at Sunderland.

Donkey " "

at

Date of Completion 11-27

First Visit 11-7-27 Last Visit 1-11-27 Total Visits 40

RECIPROCATING ENGINES

Works No. 302 No. of Sets 1 Description Triple Expansion S.C. 3 cyls.

No. of Cylinders each Engine 3 No. of Cranks 3

Diars. of Cylinders 13¼" - 23" - 34" Stroke 27"

Cubic feet in each L.P. Cylinder 16·8

Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.? yes.

" " " each Receiver? yes.

Type of H.P. Valves, piston

" 1st I.P. " "

" 2nd I.P. " "

" L.P. " Slide

" Valve Gear Stephenson link.

" Condenser Surface. Cooling Surface 700 sq. ft.

Diameter of Piston Rods (plain part) 4" Screwed part (bottom of thread) 2.5-3"

Material " steel.

Diar. of Connecting Rods (smallest part) 3¾" Material W.I.

" Crosshead Gudgeons 3¾" Length of Bearing 2¾ Material "

No. of Crosshead Bolts (each) 4 Diar. over Thrd. 1¾ Thrds. per inch 7 Material steel.

" Crank Pin " " 2 " 2¼" " 6 " "

" Main Bearings 6 Lengths 8"

" Bolts in each 2 Diar. over Thread 2" Threads per inch 7 Material Steel.

" Holding Down Bolts, each Engine 43 Diar. 1¼" No. of Metal Chocks 43

Are the Engines bolted to the Tank Top or to a Built Seat? built seat.

Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? –

If not, how are they fitted? –

Connecting Rods, Forged by Brown Bros.

Piston " " "

Crossheads, " "

Connecting Rods, Finished by Cuttes & Co.

Piston " " "

Crossheads, " "

Date of Harbour Trial 27-10-27

" Trial Trip 3-11-27

Trials run at Between Tees & Tyne.

Were the Engines tested to full power under Sea-going conditions? yes.

If so, what was the I.H.P.? 530 Revols. per min. 102.

Pressure in 1st I.P. Receiver, 59 lbs., 2nd I.P., – lbs., L.P., 10 lbs., Vacuum, 25 ins.

Speed on Trial 10·9 knots.

If the Conditions on Trial were such that full power records were not obtained give the following estimated data:—

Builders' estimated I.H.P. Revols per min.

Estimated Speed

TURBINE ENGINES.

Works No. Type of Turbines

No. of H.P. Turbines No. of I.P. No. of L.P. No. of Astern

Are the Propeller Shafts driven direct by the Turbines or through Gearing?

Is Single or Double Reduction Gear employed?

Diar. of 1st Reduction Pinion } Width Pitch of Teeth
" 1st " Wheel

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion } Width Pitch of Teeth
" 2nd " Wheel

Estimated Pressure per lineal inch

Revols. per min. of H.P. Turbines at Full Power S.H.P.

" " I.P. " "

" " L.P. " "

" " 1st Reduction Shaft

" " 2nd "

" " Propeller Shaft

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial Knots. Propeller Revols. per min. S.H.P.

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.

TURBO-ELECTRIC PROPELLING MACHINERY.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafting

Are the Propeller Shafts driven direct by the Motors or through Gearing?

Is Single or Double Reduction Gear employed?

Description of Motors

Diar. of 1st Reduction Pinion } Width Pitch of Teeth
" 1st " Wheel }

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion } Width Pitch of Teeth
" 2nd " Wheel }

Estimated Pressure per lineal inch

Revols. per min. of Generators at Full Power

" Motors "

" " 1st Reduction Shaft

" " 2nd "

" " Propellers at Full Power

Total Shaft Horse Power

Date of Harbour Trial

" Trial Trip

Trials run at

Speed on Trial Knots. Propeller Revols. per min. S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

DESCRIPTION OF INSTALLATION.

SHAFTING.

Are the Crank Shafts Built or Solid? built.

No. of Lengths in each 4 Angle of Cranks 120°

Diar. by Rule 7.147" Actual 7 3/8" * In Way of Webs 7 3/8"

" of Crank Pins 7.375" Length between Webs 8"

Greatest Width of Crank Webs 14 1/2" Thickness 4 5/8"

Least " " 11" " 7 1/8"

Diar. of Keys in Crank Webs 1 1/4" Length 3 7/8"

" Dowels in Crank Pins 1" Length 3 1/2" Screwed or Plain plain.

No. of Bolts each Coupling 4 Diar. at Mid Length 2 1/8" Diar. of Pitch Circle 11 3/4"

Greatest Distance from Edge of Main Bearing to Crank Web 1/8"

Type of Thrust Blocks Horseshoe.

No. " Rings 4

Diar. of Thrust Shafts at bottom of Collars 7 3/8" No. of Collars 4

" " Forward Coupling 7" At Aft Coupling 7"

Diar. of Intermediate Shafting by Rule — Actual No. of Lengths

No. of Bolts, each Coupling Diar. at Mid Length Diar. of Pitch Circle

Diar. of Propeller Shafts by Rule 7.384" Actual 8" At Couplings 7"

Are Propeller Shafts fitted with Continuous Brass Liners? yes.

Diar. over Liners 9" Length of After Bearings 3'-0 1/2"

Of what Material are the After Bearings composed? Lignum Vitae.

Are Means provided for lubricating the After Bearings with Oil? no

" " to prevent Sea Water entering the Stern Tubes? no

If so, what Type is adopted? open to sea.

* JOURNALS MACHINED AT J. G. KINCAID'S TO 7.26". H.K.T.

SKETCH OF CRANK SHAFT.

No. of Blades each Propeller 4 Fitted or Solid? solid.

Material of Blades C.S. Boss C.S.

Diar. of Propellers 10'-0" Pitch 11'-6" Surface (each 39 S. ft.

Coefficient of Displacement of Vessel at ½ Moulded Depth · 54

Crank Shafts Forged by	Material	S.S.
„ Pins „	„	"
„ Webs „	„	"
Thrust Shafts „	„	"
Intermed. „ „	„	"
Propeller „ „	„	"
Crank „ Finished by		
Thrust „ „		
Intermed. „ „		
Propeller „ „		

Forged finished complete by Tile Forging Co.

STAMP MARKS ON SHAFTS.

Crank, Thrust & Tail Shafts:—

B.C.
No 10496
13-8-27
R.S.

SKETCH OF PROPELLER SHAFT.

PUMPS, ETC.

No. of Air Pumps 1 Diar. 1'-2" Stroke 1'-1½"

Worked by Main or Independent Engines? Main engines.

No. of Circulating Pumps 1 Diar. " Stroke "

Type of " Centrifugal

Diar. of " Suction from Sea 5½"

Has each Pump a Bilge Suction with Non-return Valve? yes. Diar. 4"

What other Pumps can circulate through Condenser? Ballast Donkey

No. of Feed Pumps on Main Engine 2 Diar. 2⅞" Stroke 13½"

Are Spring-loaded Relief Valves fitted to each Pump? yes.

Can one Pump be overhauled while the others are at work? yes.

No. of Independent Feed Pumps 1 Diar. 4¼" Stroke 6"

What other Pumps can feed the Boilers? Ballast Donkey.

No. of Bilge Pumps on Main Engine 2 Diar. 2⅞" Stroke 13½"

Can one Pump be overhauled while the others are at work? yes.

No. of Independent Bilge Pumps 1

What other Pumps can draw from the Bilges? Bilge ejector, Ballast Dky.

Are all Bilge Suctions fitted with Roses? yes.

Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges? yes.

Are all Sea Connections made with Valves or Cocks next the Ship's sides? yes.

Are they placed so as to be easily accessible? yes.

Are the Discharge Chests placed above or below the Deep Load Line? above.

Are they fitted direct to the Hull Plating and easily accessible? yes.

Are all Blow-off Cocks or Valves fitted with Spigots through the Hull Plating and Covering Plates or Flanges on the Outside? yes.

BOILERS.

Works No.	1154 2
No. of Boilers 1 Type	Cylindrical multitubular
Single or Double-ended	Single.
No. of Furnaces in each	3
Type of Furnaces	plain.
Date when Plan approved	
Approved Working Pressure	180 lbs.
Hydraulic Test Pressure	320 "
Date of Hydraulic Test	30-8-27
" when Safety Valves set	27-10-27
Pressure at which Valves were set	185 lbs.
Date of Accumulation Test	27-10-27
Maximum Pressure under Accumulation Test	187 lbs
System of Draught	natural.
Can Boilers be worked separately?	yes.
Makers of Plates	Colville & Sons.
" Stay Bars	" "
" Rivets	R. B. I. Jy. Co.
" Furnaces	John Thompson
Greatest Internal Diar. of Boilers	14' 0"
" " Length "	10' 9"
Square Feet of Heating Surface each Boiler	1980 ☐'
" " Grate " "	55.5 ☐'
No. of Safety Valves each Boiler 2	Rule Diar. Actual 2 3/4"
Are the Safety Valves fitted with Easing Gear?	yes.
No. of Pressure Gauges, each Boiler 2	No. of Water Gauges 1
" Test Cocks " 3	" Salinometer Cocks 1

Are the Water Gauges fitted direct to the Boiler Shells or mounted on Pillars? on pillars

Are the Water Gauge Pillars fitted direct to the Boiler Shells or connected by Pipes? direct.

Are these Pipes connected to Boilers by Cocks or Valves? –

Are Blow-off Cocks or Valves fitted on Boiler Shells? valves.

No. of Strakes of Shell Plating in each Boiler 1

" Plates in each Strake 2

Thickness of Shell Plates Approved 1 5/32"

" " in Boilers 1 5/32"

Are the Rivets Iron or Steel? steel.

Are the Longitudinal Seams Butt or Lap Joints? butt.

Are the Butt Straps Single or Double? double.

Are the Double Butt Straps of equal width? Yes.

Thickness of outside Butt Straps 1"

" inside " 7/8"

Are Longitudinal Seams Hand or Machine Riveted? machine.

Are they Single, Double, or Treble Riveted? treble.

No. of Rivets in a Pitch 5

Diar. of Rivet Holes 1 3/16" Pitch 8 1/2"

No. of Rows of Rivets in Centre Circumferential Seams –

Are these Seams Hand or Machine Riveted? –

Diar. of Rivet Holes – Pitch –

No. of Rows of Rivets in Front End Circumferential Seams 2

Are these Seams Hand or Machine riveted? hand.

Diar. of Rivet Holes 1 3/16" Pitch 3 1/2"

No. of Rows of Rivets in Back End Circumferential Seams 2

Are these Seams Hand or Machine Riveted? machine.

Diar. of Rivet Holes 1 3/16" Pitch 3 1/2"

Size of Manholes in Shell 16" × 12"

Dimensions of Compensating Rings 2'-4" × 2'-3" × 1 5/32"

Thickness of End Plates in Steam Space Approved 1 7/64"

" " " " " in Boilers 1 7/64"

Pitch of Steam Space Stays 19" × 15½"

Diar. " " " " Approved 2 7/8" Threads per Inch 6

" " " " " in Boilers 2 7/8" 6

Material of " " " steel.

How are Stays Secured? Nuts & washers.

Diar. and Thickness of Loose Washers on End Plates 6" × 1/4"

" " Riveted " " " –

Width " " Doubling Strips " –

Thickness of Middle Back End Plates Approved 1"

" " " " " in Boilers 1"

Thickness of Doublings in Wide Spaces between Fireboxes –

Pitch of Stays at " " " "

Diar. of Stays Approved Threads per Inch

" " in Boilers "

Material "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom Approved 7/8"

" " " " " in Boilers 7/8"

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " " none.

Thickness of Front End Plates at Bottom Approved 1"

" " " " " in Boilers 1"

No. of Longitudinal Stays in Spaces between Furnaces 1

Diar. of Stays Approved 2 7/8" Threads per Inch 6

" " in Boilers 2 7/8" 6

Material " steel.

Thickness of Front Tube Plates Approved 1"

" " " " in Boilers 1"

Pitch of Stay Tubes at Spaces between Stacks of Tubes 12 15/16"

Thickness of Doublings in " " " —

" Stay Tubes at " " " —

Are Stay Tubes fitted with Nuts at Front End ? yes.

Thickness of Back Tube Plates Approved 3/4"

" " " in Boilers 3/4"

Pitch of Stay Tubes in Back Tube Plates 9" x 9"

" Plain " 4 1/2" x 4 1/2"

Thickness of Stay Tubes 3/8" 5/16" 1/4"

" Plain " solid.

External Diar. of Tubes 3 1/4"

Material " Iron.

Thickness of Furnace Plates Approved 49/64"

" " " in Boilers 49/64"

Smallest outside Diar. of Furnaces 3'-5 3/4"

Length between Tube Plates 7'-3"

Width of Combustion Chambers (Front to Back) 2'-9"

Thickness of " " Tops Approved 21/32"

" " " in Boilers 21/32"

Pitch of Screwed Stays in C.C. Tops 9 1/2" x 8 1/2"

Diar. of Screwed Stays Approved 1 3/4" Threads per Inch 9

" " " in Boilers 1 3/4"

Material " " steel.

Thickness of Combustion Chamber Sides Approved 21/32"

" " " " in Boilers 21/32"

Pitch of Screwed Stays in C.C. Sides 8" × 9 3/4"

Diar. " " Approved 1 3/4" Threads per Inch 9

" " " in Boilers 1 3/4"

Material " " steel.

Thickness of Combustion Chamber Backs Approved 5/8"

" " " " in Boilers 5/8"

Pitch of Screwed Stays in C.C. Backs 9" × 9"

Diar. " " Approved 1 7/8" + 1 3/4" Threads per Inch 9

" " " in Boilers " "

Material " " steel.

Are all Screwed Stays fitted with Nuts inside C.C.? Yes.

Thickness of Combustion Chamber Bottoms 1"

No. of Girders over each Wing Chamber 4

" " " Centre " 2

Depth and Thickness of Girders 9" × 3/4"

Material of Girders steel

No. of Stays in each 2.

No. of Tubes, each Boiler 254

Size of Lower Manholes 16" × 12"

VERTICAL DONKEY BOILERS.

No. of Boilers Type

Greatest Int. Diar. Height

Height of Boiler Crown above Fire Grate

Are Boiler Crowns Flat or Dished ?

Internal Radius of Dished Ends Thickness of Plates

Description of Seams in Boiler Crowns

Diar. of Rivet Holes Pitch Width of Overlap

Height of Firebox Crowns above Fire Grate

Are Firebox Crowns Flat or Dished ?

External Radius of Dished Crowns Thickness of Plates

No. of Crown Stays Diar. Material

External Diar. of Firebox at Top Bottom Thickness of Plates

No. of Water Tubes Ext. Diar. Thickness

Material of Water Tubes

Size of Manhole in Shell

Dimensions of Compensating Ring

Heating Surface, each Boiler Grate Surface

SUPERHEATERS.

Description of Superheaters

Where situated ?

Which Boilers are connected to Superheaters?

Can Superheaters be shut off while Boilers are working ?

No. of Safety Valves on each Superheater Diar.

Are ,, ,, fitted with Easing Gear ?

Date of Hydraulic Test Test Pressure

Date when Safety Valves set Pressure on Valves

MAIN STEAM PIPES.

No. of Lengths	1			
Material	copper.			
Brazed, Welded or Seamless	S. D.			
Internal Diar.	4"			
Thickness	6 W.G.			
How are Flanges secured ?	brazed.			
Date of Hydraulic Test	24-10-27			
Test Pressure	400 lbs.			
No. of Lengths				
Material				
Brazed, Welded or Seamless				
Internal Diar.				
Thickness				
How are Flanges secured ?				
Date of Hydraulic Test				
Test Pressure				
No. of Lengths				
Material				
Brazed, Welded or Seamless				
Internal Diar.				
Thickness				
How are Flanges secured ?				
Date of Hydraulic Test				
Test Pressure				

EVAPORATORS.

No. Type Tons per Day

Makers

Working Pressure Test Pressure Date of Test

Date of Test of Safety Valves under Steam

FEED WATER HEATERS.

No. Type

Makers

Working Pressure Test Pressure Date of Test

FEED WATER FILTERS.

No. Type Size

Makers

Working Pressure Test Pressure Date of Test

LIST OF DONKEY PUMPS.

One Samonts General Service Dky 6"x4¼"x6"
" Feed Donkey 6"x4¼"x6"

SPARE GEAR.

No. of Top End Bolts.	2	No. of Bot. End Bolts.	2	No. of Cylinder Cover Studs	
„ Coupling Bolts	1 set.	„ Main Bearing Bolts	2	„ Valve Chest „	
„ Junk Ring Bolts	6	„ Feed Pump Valves	1 set.	„ Bilge Pump Valves	1 set.
„ H.P. Piston Rings		„ I.P. Piston Rings		„ L.P. Piston Rings	
„ „ Springs		„ „ Springs		„ „ Springs	
„ Safety Valve „	1	„ Fire Bars	½ set.	„ Feed Check Valves	1 main 1 Aux.
„ Piston Rods		„ Connecting Rods		„ Valve Spindles	
„ Air Pump Rods		„ Air Pump Buckets		„ Air Pump Valves	1 set.
„ Cir. „		„ Cir. „		„ Cir. „	
„ Crank Shafts		„ Crank Pin Bushes		„ Crosshead Bushes	
„ Propeller Shafts		„ Propellers	1	„ Propeller Blades	
„ Boiler Tubes	3	„ Condenser Tubes	10	„ Condenser Ferrules	20

OTHER ARTICLES OF SPARE GEAR:—

REFRIGERATORS.

No. of Machines Capacity of each

Makers

Description

No. of Steam Cylinders, each Machine No. of Compressors No. of Cranks

Particulars of Pumps in connection with Refrigerating Plant and whether worked by Refrigerating Machines or Independently

System of Refrigeration

„ Insulation

Are Brine and other Regulating Valves placed so as to be accessible without entering the Insulated Spaces ?

Are all Pipes, Air Trunks, &c., well secured and protected from risk of damage ?

Are all Bilge, Sounding, and Air Pipes in Insulated Spaces properly insulated ?

Are Thermometer Tubes so arranged that Water cannot enter and freeze in them ?

Date of Test under Working Conditions

RESULTS OF TRIALS.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.

Articles of Spare Gear for Refrigerating Plant carried on board:—

ELECTRIC LIGHTING.

Installation Fitted by R. Pickersgill & Sons.

No. and Description of Dynamos One Compound wound.

Makers of Dynamos Sunderland Forge Eng Co.

Capacity " 45 Amperes, at 100 Volts, 350 Revols. per Min.

Current Alternating or Continuous Continuous

Single or Double Wire System Double

Position of Dynamos Engine Room Starting platform

" Main Switch Board " "

No. of Circuits to which Switches are provided on Main Switch Board 4

Particulars of these Circuits:—

Circuit.	Number of Lights.	Candle Power.	Current Required. Amps.	Size of Conductor.	Current Density.	Conductivity of Conductor.	Insulation Resistance per Mile.
Eng. Room & Aft.	14	30	4·2	7/20	2146	5576	900
Navigation	6	32	7·2	7/20	"	"	"
Deck & Fo'c'd	43	30	12·6	7/18	2198	5230	"
Wireless	1/4 K.W.			7/22	1987	5283	1250

Total No. of Lights 63 No. of Motors driving Fans, &c. — No. of Heaters —

Current required for Motors and Heaters —

Positions of Auxiliary Switch Boards, with No. of Switches on each ✓

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits yes

On Aux. ,, ,, each Auxiliary Circuit yes.

Wherever a Cable is reduced in size none.

To each Lamp Circuit yes.

To both Flow and Return Wires of all Circuits when the Double-Wire System is adopted yes.

Are the Fuses of Standard Sizes? yes.

Are all Switches and Cut-outs constructed of Non-inflammable Material? yes.

Are they placed so as to be always and easily accessible? yes.

Smallest Single Wire used, No. 1/18 S.W.G., Largest No. 7/16 S.W.G.

How are Conductors in Engine and Boiler Spaces protected? lead covered/Armoured.

,, Saloons, State Rooms, &c., ,, ? " Rubber.

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp lead covered Armoured.

(2) ,, passing through Bunkers or Cargo Spaces "

(3) ,, ,, Deck Beams or Bulkheads ,,

Are all Joints in Cables properly soldered and thoroughly Insulated so that the efficiency of the Cables is unimpaired? ✓

Are all Joints in accessible positions, none being made in Bunkers or Cargo Spaces? none.

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? none.

Are the Dynamos, Motors, Main and Branch Cables, so placed that the Compasses are not injuriously affected by them? yes.

Have Tests been made to prove that this condition has been satisfactorily fulfilled? yes.

Has the Insulation Resistance over the whole system been tested? yes.

What does the Resistance amount to? 2 megohms. Ohms.

Is the Installation supplied with a Voltmeter? yes.

,, ,, ,, an Ampere Meter? yes.

Date of Trial of complete Installation 3-11-27 Duration of Trial 6 hours.

Have all the requirements of Section 42 been satisfactorily carried out? yes.

GENERAL CONSTRUCTION.

Have the Machinery and Boilers been constructed in accordance with the requirements of the Rules and the Approved Plans? Yes.

If not, give details of the points of difference, and state when these were sanctioned by the Chief Surveyor.

Are the Materials used in the Construction of Engines and Boilers, so far as could be seen, sound and trustworthy? Yes.

Is the Workmanship throughout thoroughly satisfactory? Yes.

The above correctly describes the Machinery of the S.S. "HATSUSE"

as ascertained by ~~us~~ me from personal examination

J. D. Stephenson

Engineer Surveyor to the British Corporation for the Survey and Registry of Shipping.

Fees—

			£	s.	d.
MAIN BOILERS.					
H.S.	1980	Sq. ft.		:	:
G.S.	55·4	"		:	:
DONKEY BOILERS.					
H.S.	✓	Sq. ft.		:	:
G.S.	✓	"		:	:
		£		:	:
ENGINES.					
L.P.C.	16·8	Cub. ft.		:	:
		£		:	:
Testing, &c.				:	:
		£		:	:
Expenses				:	:
Total ...		£		:	:

It is submitted that this Report be approved,

J. Foster King

Chief Surveyor.

Approved by the Committee for the Class of **M.B.S.*** on the 30th November, 1927

Fees advised

Fees paid

A. Smith

Secretary.

Fees—

		£	s.	d.
Main Boilers.				
H.S. 1480	Sq. ft.		:	:
G.S. 65.4	"		:	:
Donkey Boilers.				
H.S.	Sq. ft.		:	:
G.S.	"		:	:
		£	:	:
Engines.				
I.P.C. 16.5	Ord. ft.		:	:
		£	:	:
Testing, &c.			:	:
		£	:	:
Expenses			:	:
Total ...		£	:	:

It is submitted that this Report be approved.

Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the 30th November 1921

Fees advised

Fees paid

Chairman.