

file in L.R. System

No. 1144

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 1122 No. in Register Book 1718

Proteus *

*Lucas
Trades*

S.S. "KELBERGEN"

Makers of Engines SCOTIA ENGINE WKS.

Works No. 2102

Makers of Main Boilers SCOTIA ENGINE WKS.

Works No. 2102

Makers of Donkey Boiler ✓

Works No. ✓



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004049-004054-0029

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. *1122*, No. in Register Book *1718*.

Received at Head Office *27 JUL 1914*

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the *Steel Screw Steamer*

Kelbergen

Port of Registry

Rotterdam

Registered Owners

*Hunter Shipping & Agency
Co.*

Surveyor's District

Sunderland

Date of Completion of Engines

6.1914

" "

Main Boilers

6.1914

" "

Donkey

Trial Run at

North Sea

Date

20. 6. 14

First Visit

17. 12. 13

Last Visit

20. 6. 14

Total Number of Visits



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ENGINES.

Made by *Richardsons, Wedgwick & Co. Ld.*
 .. at *Sturminster Newton* Works No. *2102*
 Description *Triple Expansion, Surface Cond., 3 Cyl.*
 No. of Cylinders, each Engine *3* Diars. *25" 40" 68"* Stroke *48"*
 Cub. feet in each L.P. Cylr. *100.88* Revols. per Min. *77* I.H.P. *100*
 Pressure in I.P. Receiver at full Power *63 lbs.* 2nd I.P. *-* L.P. *12.5 lbs.*
 Thickness of Metal in I.P. Cylr. *1"* I.P. *1 1/4"* *1 1/4"*
 Liner *1 1/4"*
 Valve Chest *1 1/8"*
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr.? *Yes*
 each Receiver? *Yes*
 Number of ~~Studs~~ in I.P. Cylr. Cover *22* I.P. *14* 2nd I.P. *-* L.P. *34*
 Eff. Diar. *1.067"* *1.067"* *1.067"*
 Pitch *4.641"* *5.93"* *6.79"*
 Type of I.P. Valves (Piston or slide) *Piston* *Slide*
 .. Valve Gear *Stephenson's link motion*
 Diameter of Piston Rods (plain part) *6 1/4"* *4.48"*
 Makers *Remy Fisher* *Iron*
 Diameter of Connecting Rods (smallest part) *6 1/2"* *Iron*
 Makers *Remy Fisher*
 Diar. of Crosshead Gudgeons *8 1/4"* Length of Bearing *10 1/2"* Material *Iron*
 No. of Top End Bolts (each Rod) *2* Effective Diar. *3.28"* Material *Steel*
 .. Bot. *2* *3.28"*
 .. Main Bearings *6* Lengths *13 1/2"*
 .. Bolts in each *2* Effective Diar. *2.787"* Material ..

No. of Holding Down Bolts, each Engine

No. of Metal Chocks

Eff. Diar. " " "

Average Pitch

Are the Engines bolted directly to the Tank Top?

Are the Bolts tapped through the Tank Top and fitted with Nuts inside

Date of Test of Tank by Water Pressure with Holding Down Bolts in place

SKETCHES.



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TURBINE ENGINES.

Type *Vertical shaft*
 No. of H.P. Turbines *2* No. of L.P. Turbines *1*
 No. of Astern " " How arranged
 Revols. per Min. *112* Horse Power

Diam. of H.P. Turbine Drums	MATERIAL	THICKNESS OF METAL
Material of H.P. Turbine Casings		
Lengths of Blades in H.P. Turbines		<i>8-10"</i>
No. of Rows of Blades of each Length		
Pitch of " " "		

Diam. of L.P. Turbine Drums	MATERIAL	THICKNESS OF METAL
Material of L.P. Turbine Casings		
Lengths of Blades in L.P. Turbines		
No. of Rows of Blades of each Length		
Pitch of " " "		

Diam. of Astern Turbine Drums	MATERIAL	THICKNESS OF METAL
Material of Astern Turbine Casings		
Lengths of Blades in Astern Turbines		
No. of Rows of Blades of each Length		
Pitch of " " "		

Diam. of Turbine Spindles Length of Bearing
 No. of Thrust Collars on each Spindle Thickness Distance apart
 Diam. of Spindles at Bottom of Collars Diam. over Collars
 Spindles Forged by Material
 " Finished by

SKETCHES.



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PUMPS, ETC.

No. of Air Pumps *One* Diar. *23"* Stroke *27"*
 Type of *Edwards*
 Diar. of Air Pump Rod *3 1/4"* Material *h. h.*
 How are Air Pumps Worked? *By levers from main Engines*

No. of Centrifugal Circulating Pumps *-* Maker *-*
 " Reciprocating " " *One* Diar. *14"* Stroke *27"*
 Diar. of Circulating Pump Rods *2 3/4"* Material *h. h.*
 How are Circulating Pumps Worked? *By levers from main Engines*

Diar. of Circulating Pump Suction from Sea *9"*
 Has each Circulating Pump a Bilge Suction with Non-return Valve? *Yes* Diar. *6"*

No. of Feed Pumps on each Engine *2* Diar. *3 1/4"* Stroke *27"*
 Where do they pump from? *Hotwell*
 " " discharge to? *Boilers*

Are Spring-loaded Relief Valves fitted to each Pump? *Yes*
 Can one Pump be overhauled while the others are at work? *Yes*

No. of Bilge Pumps on each Engine *2* Diar. *3 3/4"* Stroke *27"*
 Where do they pump from? *Bilges*
 " " discharge to? *Overboard, on deck*

Can one Pump be overhauled while the others are at work? *Yes*

No. of Bilge Injections connected to Condensers *-* Diar. *-*
 Are all Bilge Suctions fitted with Roses? *Yes*
 Are the Valves, Cocks, and Pipes so arranged as to prevent unintentional connection between Sea and Bilges? *Yes*

Are all Sea Connections made with Valves or Cocks fitted direct to the Hull Plating? *Yes*

Are they placed so as to be easily seen and accessible? *Yes*

Are the Discharge Chests placed above the Deep Load Line? *Yes*

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*



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No. of Safety Valves, each Boiler

Diar. " " "

Area " " "

Are the Valves fitted with Easing Gear?

No. of Pressure Gauges, each Boiler

" Water " "

" Test Cocks,

" Salinometer Cocks, "

Are Water Gauge Pillars attached by Pipes to Steam and Water Spaces?

Are these Pipes connected to Boilers by Cocks or Valves?

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

No. of Strakes of Shell Plating in each Boiler

" Plates in each Strake

Thickness of Shell Plates by Rule

" " Approved

" " in Boilers

Are the Rivet Holes Punched or Drilled?

Are Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Double Butt Straps of equal width?

Thickness of outside Butt Straps

" inside "

Are Longitudinal Seams Hand or Machine Riveted?

Are they Single, Double, or Treble Riveted?

Diar. of Rivet Holes

Pitch "

Width of Overlap

Percentage of Strength in Longitudinal Seams

2
3"
14' 14" □
Yes
The
The
2
The
No
Valves

Same as P. 1. Rivet Header
Rivet Pillars 178

No. of Rows of Rivets in Cases of Circumferential Seams
Are these Seams Hand or Machine Riveted?
Diar. of Rivet Holes
Pitch
Width of Overlap
No. of Rows of Rivets in End (Circumferential Seams)
Are these Seams Hand or Machine Riveted?
Diar. of Rivet Holes
Pitch
Width of Overlap
Size of Straps in Shell
Dimensions of Corner-Connecting Rings
Thickness of End Plates in Steam Space by Rule
Approved
" " in Boilers
Pitch of Steam Space Straps
Diar. of Rivets
Approved
" " in Boilers
Pitch of " " in Boilers
How are Straps Secured?
Diar. and Thickness of Loose Washers on End Plates
Riveted
Width

Handwritten notes and signatures in the right margin, including a large signature that appears to be 'E. J. ...'.



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No. of Rows of Rivets in Centre Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes

Pitch

Width of Overlap

No. of Rows of Rivets in End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes

Pitch

Width of Overlap

Size of Manholes in Shell

Dimensions of Compensating Rings

Thickness of End Plates in Steam Space by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Steam Space Stays

Eff. Diar. " " " by Rule

" " " " " Approved

" " " " " in Boilers

Material of " " "

How are Stays Secured?

Diar. and Thickness of Loose Washers on End Plates

" " Riveted " " "

Width " " Doubling Strips " "

Thickness of Middle Back End Plate by Rule

" " " " " Approved

" " " " " in Boilers

*Same as S. S. Reinforced
Rivets 178*

Thickness of Doubling in Wide spaces between Rivets

" " " " " in Boilers

Eff. Diar. of Stays by Rule

" " " " " Approved

" " " " " in Boilers

Material of

Are stays fitted with Z nuts outside?

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stays in Wide spaces between Rivets

" " " " " Thickness of Doubling in

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long Stays in spaces between Rivets

Eff. Diar. of Stays by Rule

" " " " " Approved

" " " " " in Boilers

Material of

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Thickness of Middle Back End Plate by Rule

" " " " " Approved

" " " " " in Boilers

Handwritten notes and scribbles, including a large 'R' and 'L'.



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Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Eff. Diar. of Stays by Rule

" " " Approved

" " " in Boilers

Material "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long Stays in Spaces between Furnaces

Eff. Diar. of Stays by Rule

" " " " Approved

" " " " in Boilers

Material of "

Thickness of Front Tube Plates by Rule

" " " " Approved

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in " " "

" Stay Tubes at " " "

*Done as I.S. Ben Baker's
Revised 178*

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Eff. Diar. of Stays by Rule

" " " Approved

" " " in Boilers

Material "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom by Rule

" " " " " Approved

" " " " " in Boilers

No. of Long Stays in Spaces between Furnaces

Eff. Diar. of Stays by Rule

" " " " Approved

" " " " in Boilers

Material of "

Thickness of Front Tube Plates by Rule

" " " " Approved

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in " " "

" Stay Tubes at " " "

Handwritten notes in cursive script, including the number '178'.



Are Stay Tubes fitted with Nuts at Front End?

Thickness of Back Tube Plates by Rule

Approved
in Boilers

Pitch of Stay Tubes in Back Tube Plates

Plain

Thickness of Stay Tubes

Plain

External Diar. of Tubes

Material

Thickness of Furnace Plates by Rule

Approved
in Boilers

Smallest outside Diar. of Furnaces

Length between Tube Plates

Width of Combustion Chambers (Front to Back)

Thickness of Tops, by Rule
Approved
in Boilers

Pitch of Screwed Stays in C.C. Tops

EE, Diar. by Rule
Approved
in Boilers

Material

Thickness of Combustion Chamber Sides by Rule

*Same as L.S. Boiler headers
Pitch rules 178*

Thickness of Combustion Chamber Sides Approved
in Boilers

Pitch of screw stays in C.C. sides

EE, Diar. by Rule
Approved

in Boilers

Material

Thickness of Combustion Chamber Ends by Rule

Approved

in Boilers

Pitch of screw stays in C.C. ends

EE, Diar. by Rule

Approved

in Boilers

Material

Are all screw stays fitted with Nuts at both ends?

Thickness of Combustion Chamber Bottoms

No. of Girders over end Wing Channels

Centre

Depth and thickness of Girders

Material of Girders

No. of stays to each



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Thickness of Combustion Chamber Sides Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Sides

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs by Rule

" " " " Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Eff. Diar. " " by Rule

" " " Approved

" " " in Boilers

Material " "

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

Thickness of Combustion Chamber Bottoms

No. of Girders over each Wing Chamber

" " " Centre "

Depth and Thickness of Girders

Material of Girders

No. of Stays in each

No. of Stay Tubes, each Boiler

" " Plain " " "

Size of Lower Manholes

*Same as S.S. Superheaters.
Refractories 178*

VERTICAL DONKEY BOILERS

If the Donkey Boilers are Vertical the following particulars should be stated in addition to those on

Questions Form applicable to such Boilers.

Type of Boiler

Height of Boiler Crown above Fire Grate

Are Boiler Crown Flat or Dishd?

Internal Radius of Dishd Ends

Description of Stays in Boiler Crown

Dist. of Holes

Height of Firebox Crown above Fire Grate

Are Firebox Crown Flat or Dishd?

External Radius of Dishd Crown

No. of Crown Stays

External Dist. of Firebox at Top

No. of Water Tubes

Material of Water Tubes

No. of Screwed Nuts in Firebox Side

Are they fitted with Nuts inside?

SUPERHEATERS

Description of superheaters

Where situated

Which joints are connected to superheaters

Can superheaters be used in any other way?

No. of Safety Valves on superheaters

Dist. of Safety Valves

Date of Hydraulic Test

Particulars of Test



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MAIN STEAM PIPES.

No. of Lengths	2	3		
Material	Copper			
Brazed, Welded, or Seamless	Lotia	Drawn		
Internal Diam.	4 1/2"	4 1/2"		
Thickness	5 W.G.	5 W.G.		
How are Flanges Secured?	Brazed			
Date of Hydraulic Test	25.5.14	4.6.14		
Test Pressure	400	250		

REFRIGERATORS.

No. of Machines Makers

Description

When any part of the Vessel is to be used for the Carriage of Refrigerated Cargo the following particulars should be stated:—

Total Cubic Capacity of Refrigerated Spaces

Nature, Construction, Thickness, &c., of Insulation

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

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

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

Are Sluice Valves fitted on any of the Bulkheads of Insulated Spaces?

Are these fitted with Brass Non-return Valves?

Are they always accessible?

Are the Bilges and Bilge Rose Boxes always accessible?

Are the Steam Suctions to Bilges fitted with Non-return Valves?

Is the Machine Room effectively separated from Insulated Spaces?

" " properly Ventilated and Drained?

No. of Steam Cylinders, each Machine Diars.

" Compressors, " "

Diam. of Crank Shafts No. of Cranks

Give particulars of Pumps in connection with Refrigerating Plant, and state whether worked by Refrigerating Machines or independently

Rank	Name of Vessel	Number of Mails	Length	Number of Engines	Year of Construction	Current Capacity	Refrigerating Capacity	Insulation Thickness per Mail
1st	Fora	17	16	8 1/2	7/11			
2nd								
3rd								
4th								
5th								
6th								
7th								
8th								
9th								
10th								
11th								
12th								
13th								
14th								
15th								
16th								
17th								
18th								
19th								
20th								

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

Date of Test under Working Conditions

Fall of Temperature in Insulated Spaces

Time required to obtain this Result

Articles of Spare Gear for Refrigerating Plant carried on board



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

lamp Room 4 switches
Salon Parlor 2 switches
Wheelhouse 6 "
Engn. Mess Room 1 "
Engine Room 6 "

No. of Circuits to which switches are provided on Main Switch Board	Main Switch Board	Location of Dynamos	Current Alternation or Constant	Capacity	Makes of Dynamos	No. and Description of	Installation fitted to
---	-------------------	---------------------	---------------------------------	----------	------------------	------------------------	------------------------

Are Cut-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

On Aux. " " each Auxiliary Circuit

Wherever a Cable is reduced in size

To each Lamp Circuit

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

Are the Fuses of Standard Sizes?

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

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

Smallest Single Wire used, No. *1/18* S.W.G., Largest, No. *7/14* S.W.G.

How are Conductors in Engine and Boiler Spaces protected? *Wire Armoured & Stripped*

" " Saloons, State Rooms, &c., " ? *Lead Covered*

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

(2) " " passing through Bunkers or Cargo Spaces

(3) " " Deck Beams or Bulkheads

Iron Pipe
Avoided
W. T. Glass

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

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

Are all Hull Connections for Single-Wire Systems made with Screws of large Surface? *-*

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?

Is the Installation supplied with a Voltmeter? *Yes*

" " " an Ampere Meter? *Yes*

Date of Trial of complete Installation *20. 6. 14*

Duration of Trial

6 Hours



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EVAPORATORS.

No. *The* Type *Horison* Tons per Day *25*
 Makers *Richardsons, Westgarth & Co. Ltd.*
 Working Pressure *10 lbs.* Test Pressure *Both 50 lbs.* Date of Test *9.1.14*
Co. 400 lbs.
 Date of Test of Safety Valves under Steam

FEED WATER HEATERS.

No. Type
 Makers
 Working Pressure Test Pressure Date of Test

DONKEY

- *Ballast* -
 No. of Donkeys *the*
 Type *Horizontal*
 Makers *Watson*
 Single or Duplex *Duplex*
 „ Double-Acting *D.A.*
 Diar. of Steam Cylinders *9"*
 „ Pumps *11"*
 Stroke of „ *10"*
 Where do they pump from? *Sea, Tanks, Bilge, Bilge direct.*

Where do they discharge to? *Overboard, thro' main Condenser & Cascade filter.*

Capacity, Tons per Hour of Ballast Donkey

150

Diar. of Pipe required by Rule for

FEED WATER FILTERS.

No. *The* Type *Cascade, Gravity* Size *No 3*
 Makers *Richardsons, Westgarth & Co. Ltd.*
 Working Pressure Test Pressure Date of Test

FORCED DRAUGHT FANS.

No. of Fans. Diar. Revols. per min.
 How are fans driven?

PUMPS.

- *Feed* -
 No. of Pumps *the*
 Type *Horizontal*
 Makers *Watson*
 Single or Duplex *Duplex*
 „ Double-Acting *D.A.*
 Diar. of Steam Cylinders *7 1/2"*
 „ Pumps *5"*
 Stroke of „ *6"*
 Where do they pump from? *Sea, Holdwell, Tanks, Boilers*

Boilers, *to deck, overboard*

largest Ballast Tank

5 1/2"

Velocity of Water in Pipe

530 ft. per min

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SPARE GEAR.

No. of Top End Bolts	2	No. of Bot. End Bolts	2
" Main Bearing Bolts	2	" Coupling Bolts	1 set
" Cylr. Cover ^{Plate} Studs	6	" Valve Chest Cover ^{Plate} Studs	6
" Feed Pump Valves	1 set	" Bilge Pump Valves	1 set
" Safety Valve Springs	1	" Fire Bars	50
" Piston Rings	1 set for H.P.	" Junk Ring ^{Bolts} Studs	6
" Piston Rods		" Connecting Rods	
" Valve Spindles		" Air Pump "	
" Air Pump Valves	1/2 set	" " " Buckets	
" Crank Pin Bushes		" Crosshead Bushes	
" Crank Shafts		" Propeller Shafts	1
" Propellers	1	" " Blades	3
" Boiler Tubes	6	" Condenser Tubes	3

OTHER ARTICLES OF SPARE GEAR:—

6 Piston Valve Bolts
 1/2 set Cir. Pump Valves
 1 set Feed Check Valves
 50 Condenser Ferrules
 Bolts & Nuts Assorted
 Plate & Bar Iron

GENERAL CONSTRUCTION.

Have all the Requirements under Sections 31 and 32 of the Rules been complied with? *Yes*
 If not, give details of the points of difference, and state when these were sanctioned by the Chief Surveyor.

Are the Steam Pumping Arrangements in accordance with the approved Plan? *Yes*
 If not, state in what respects they differ and when such differences 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?

Is the Workmanship throughout thoroughly satisfactory? *Yes*
 The above correctly describes the Machinery of the S.S. "KELBERGEN"
 as ascertained by me from personal examination

Lloyd's Register
 Engineer Surveyor to the British Corporation for the Survey and Registry of Shipping.

Fees—

GENERAL CONSTRUCTION

MAIN BOILERS.

H.S. 65/6 Sq. ft. 21 : 0 : 0

G.S. 165 " : : 6

DONKEY BOILERS.

H.S. - Sq. ft. : : 50

G.S. - " : : 8

ENGINES.

L.P.C. 100.88 Cub. ft. 21 : 0 : 0

Testing, &c. : : :

Expenses : : :

Total ... £ 42 : 0 : 0

It is submitted that this Report be approved,

Thomas King
Chief Surveyor.

Approved by the Committee, for the class of M.B.S.*

24/7/14,

Fees applied for 15/6/14

Fees paid 10/7/14

Robert Manning
Secretary.



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Page: FOLIO 1000 11000000

MAIN NUMBER

6576 21 0 0

U.S. 165

EXACT NUMBER

U.S. 165

G.S. 165

EXACT

10077 21 0 0

EXACT NO. 10077 21 0 0

EXACT

142 0 0

It is submitted that this Report be approved.

Christie King
Chief Accountant

Approved for the Corporation, for the Chairman of MBS*

20/1/14

Transmitted on 15/6/14

Time sent 10/2/14

Robert Manning



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