

No. 2237

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2244 No. in Register Book 3662

S.S. K O S IV

Makers of Engines Smith & Co Ltd

Works No. 332

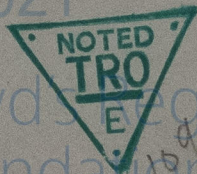
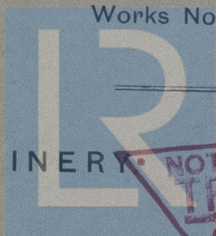
Makers of Main Boilers Blair & Co (1926) Ltd

Works No. C. 190

Makers of Donkey Boiler ✓

Works No. ✓

MACHINERY



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No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

18th December 1929

Surveyor's Report on the New Engines, Boilers, and Auxiliary
Machinery of the ^{Single Triple} ~~Twin Quadruple~~ Screw Whaler

"K O S. IV"

Official No.

Port of Registry

Sandefjord

Registered Owners

Hvalfangerselskabet KOSMOS AS

Engines Built by

Smyth's Works & Co. Ltd.

at

South Bank on Lee

Main Boilers Built by

Blair & Co. (1929) Ltd.

at

Stockton-on-Tees

Donkey

at

Date of Completion

5-29

First Visit

25-2-29

Last Visit

28-5-29

Total Visits

30

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RECIPROCATING ENGINES.

Works No. *332* No. of Sets *1* Description *Triple Expansion
S.C. 3 crks.*

No. of Cylinders each Engine *3* No. of Cranks *3*
Diars. of Cylinders *14" - 23" - 39"* Stroke *24"*
Cubic feet in each L.P. Cylinder *16.6*

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

" " " each Receiver?

Type of H.P. Valves,

1st I.P. "

2nd I.P.,

L.P. "

" Valve Gear

" Condenser

Diameter of Piston Rods (plain part)

Material "

Diar. of Connecting Rods (smallest part)

" Crosshead Gudgeons

Length of Bearing

No. of Crosshead Bolts (each)

Diar. over Thrd.

Thrds. per inch

Material

" Crank Pin "

"

"

"

" Main Bearings

Lengths

" Bolts in each

Diar. over Thread

Threads per inch

Material

" Holding Down Bolts, each Engine

Diar.

No. of Metal Chocks

Are the Engines bolted to the Tank Top or to a 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

Piston " "

Crossheads " "

Connecting Rods, Finished by

Piston " "

Crossheads, " "

Date of Harbour Trial

" Trial Trip

Trials run at

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

If so, what was the I.H.P.?

Pressure in 1st I.P. Receiver,

lbs., 2nd I.P.,

lbs., L.P., Vacuum, 24 ins.

Speed on Trial

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

data:—

Builders' estimated I.H.P.

Revol. per min.

Estimated Speed



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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

Diam. of 1st Reduction Pinion

" 1st " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Width

Pitch of Teeth

Estimated Pressure per lineal inch

Revs. 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 Revs. per min.

S.H.P.

Makers of Turbines

" Generators

" Motors

" Reduction Gear

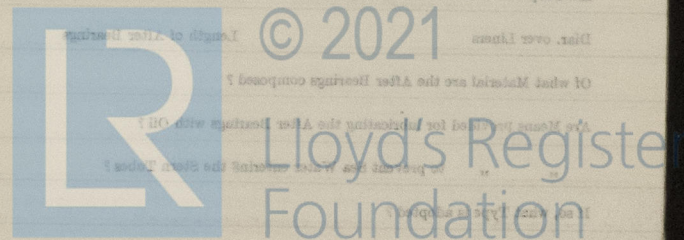
Turbine Spindles forged by

" 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?

No. of Lengths in each

Angle of Cranks

Diar. by Rule

Actual

In Way of Webs

" of Crank Pins

Length between Webs

Greatest Width of Crank Webs

Thickness

Least

Diar. of Keys in Crank Webs

Length

" Dowels in Crank Pins

Length

Screwed or Plain

No. of Bolts each Coupling

Diar. at Mid Length

Diar. of Pitch Circle

Greatest Distance from Edge of Main Bearing to Crank Web

Type of Thrust Blocks

No. " Rings

Diar. of Thrust Shafts at bottom of Collars

No. of Collars

" " Forward Coupling

At Aft Coupling

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

Actual

At Couplings

Are Propeller Shafts fitted with Continuous Brass Liners?

Diar. over Liners

Length of After Bearings

Of what Material are the After Bearings composed?

Are Means provided for lubricating the After Bearings with Oil?

" " to prevent Sea Water entering the Stern Tubes?

If so, what Type is adopted?

SKETCH OF CRANK SHAFT.

Material

Crank Shafts Forged by

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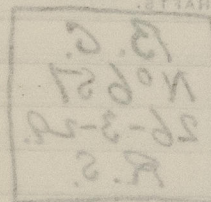
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No. of Blades each Propeller *SKETCH OF PROPELLER SHAFT* Fitted or Solid? *"K.O.S.I."*
 Material of Blades *Same as* Boss *"K.O.S.I."*
 Diam. of Propellers *Pitch* Surface (each S. It.)
 Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth
 Crank Shafts Forged by *Yip Yee Co.* Material *L.S.*
 " Pins " " " "
 " Webs " " " "
 Thrust Shafts " " " "
 Intermed. " " " "
 Propeller " " " "
 Crank " Finished by " "
 Thrust " " " "
 Intermed. " " " "
 Propeller " " " "

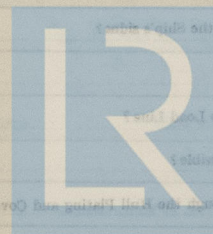
STAMP MARKS ON SHAFTS.

*Crank, Thrust
 & Tail Shafts:—*

*B. C.
 N°657
 26-3-29.
 R. S.*

SKETCH OF PROPELLER SHAFT.

No. of Air Pumps
 Worked by Main or Independent Engines?
 No. of Circulating Pumps
 Type of
 Diam. of
 Section from Sea
 Has each Pump a High Section with Non-return Valve?
 What other Pumps can circulate through Condenser?
 No. of Feed Pumps on Main Engines
 Are Spring-loaded Ball Valves fitted to each Pump?
 Can one Pump be overhauled while the others are at work?
 No. of Independent Feed Pumps
 What other Pumps can feed the boilers?
 No. of High Pumps on Main Engines
 Can one Pump be overhauled while the others are at work?
 No. of Independent High Pumps
 What other Pumps can draw from the bilges?
 Are all High Sections fitted with Non-return Valves?
 Are the Valves, etc., so arranged as to prevent unintentional connection between Sea and Bilges?
 Are all Sea Connections made with Valves or Rams next the Ship's side?
 Are they placed so as to be easily accessible?
 Are the Discharge Pipes placed above or below the Deep Load Line?
 Are they fitted with Rams or other means to prevent leakage?
 Are all High or Low Connections fitted with Rams or other means to prevent leakage?
 Are all High or Low Connections fitted with Rams or other means to prevent leakage?



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BOILERS.

Works No.	6. 190.
No. of Boilers	1
Type	Cylindrical multitubular
Single or Double-ended	single
No. of Furnaces in each	3
Type of Furnaces	Sightless
Date when Plan approved	20-11-28
Approved Working Pressure	200 lbs.
Hydraulic Test Pressure	350 "
Date of Hydraulic Test	13-5-29.
" when Safety Valves set	27-5-29.
Pressure at which Valves were set	206 lbs.
Date of Accumulation Test	27-5-29.
Maximum Pressure under Accumulation Test	206 lbs.
System of Draught	C.A.
Can Boilers be worked separately?	yfs.
Makers of Plates	James Dunlop & Co. Ltd.
" Stay Bars	J. Colville & Sons Ltd.
" Rivets	Blairston Co.
" Furnaces	Blairmore Co.
Greatest Internal Diam. of Boilers	14' 0"
" " Length "	11' 6"
Square Feet of Heating Surface each Boiler	2292 sq ft
" " Grate " "	55.7 sq ft
No. of Safety Valves each Boiler	2
Rule Dia.	
Actual	2 1/2
Are the Safety Valves fitted with Lifting Gear?	yfs.
No. of Pressure Gauges, each Boiler	2
No. of Water Gauges	1
" Test Cocks	3
" Salinometer Cocks	1

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

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

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 Approved

in Boilers

Are the Rivets Iron or Steel?

Are the Longitudinal Seams Butt or Lap Joints?

Are the Butt Straps Single or Double?

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?

No. of Rivets in a Pitch

Diar. of Rivet Holes

Pitch

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

Are these Seams Hand or Machine riveted?

Diar. of Rivet Holes

Pitch

No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes

Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings



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Thickness of End Plates in Steam Space Approved

" " " " " in Boilers

Pitch of Steam Space Stays

Diam. " " " " Approved Threads per Inch

" " " " " in Boilers "

Material of " " "

How are Stays Secured?

Diam. and Thickness of Loose Washers on End Plates

" " Riveted " "

Width " " Doubling Strips "

Thickness of Middle Back End Plates Approved

" " " " " in Boilers

Thickness of Doublings in Wide Spaces between Fireboxes

Pitch of Stays at " " " "

Diam. of Stays Approved Threads per Inch

" " in Boilers

Material "

Are Stays fitted with Nuts outside?

Thickness of Back End Plates at Bottom Approved

" " " " " in Boilers

Pitch of Stays at Wide Spaces between Fireboxes

Thickness of Doublings in " "

Thickness of Front End Plates at Bottom Approved

" " " " " in Boilers

No. of Longitudinal Stays in Spaces between Furnaces



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Diar. of Stays Approved Threads per Inch

" " in Boilers

Material "

Thickness of Front Tube Plates Approved

" " " " in Boilers

Pitch of Stay Tubes at Spaces between Stacks of Tubes

Thickness of Doublings in " " " "

" Stay Tubes at " " "

Are Stay Tubes fitted with Nuts at Front End?

Thickness of Back Tube Plates 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 Approved

" " " in Boilers

Smallest outside Diar. of Furnaces

Length between Tube Plates

Width of Combustion Chambers (Front to Back)

Thickness of " " Tops Approved

" " " " in Boilers

Pitch of Screwed Stays in C.C. Tops

Same as "H.O.S.I."

Diar. of Screwed Stays Approved Threads per Inch

" " " in Boilers

Material "

Thickness of Combustion Chamber Sides Approved

" " " in Boilers

Pitch of Screwed Stays in C.C. Sides

Diar. " Approved Threads per Inch

" " " in Boilers

Material "

Thickness of Combustion Chamber Backs Approved

" " " in Boilers

Pitch of Screwed Stays in C.C. Backs

Diar. " Approved Threads per Inch

" " " in Boilers

Material "

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

Thickness of Combustion Chamber Heads

No. of Girders over each Wing Chamber

" " " Centres

Depth and Thickness of Girders

Material of Girders

No. of Stays in each

No. of Stays in each

Size of Lower Members



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Diam. of Screwed Stays Approved Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Sides Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Sides

Diam. " " Approved Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Backs

Diam. " " Approved Threads per Inch

" " " in Boilers

Material " "

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

Thickness of Combustion Chamber Bottom

No. of Girders over each Wing Chamber

" " " Centre "

Depth and Thickness of Girders

Material of Girders

No. of Stays in each

No. of Tubes, each Boiler

Size of Lower Manholes

VERTICAL DONKEY BOILERS

No. of Boilers
Type
Height
Greatest Int. Diam.
Height of Boiler Crown above Fire Grate
Int. Boiler Crown Flat or Dished?
Internal Radius of Dished Ends
Description of Seams in Boiler Crown
Diam. of Water Holes
Pitch
Height of Firebox Crown above Fire Grate
Int. Firebox Crown Flat or Dished?
Internal Radius of Dished Crown
Thickness of Plates
No. of Crown Stays
Material
Internal Diam. of Firebox at Top
Bottom
Thickness of Plates
No. of Water Tubes
Int. Diam.
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?
On superheaters in front of which Boilers are working?
No. at Safety Valve on each superheater
Date when safety valves set
Pressure on Valve



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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		
Diarr. 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	Diarr.	Material
External Diarr. of Firebox at Top	Bottom	Thickness of Plates
No. of Water Tubes	Ext. Diarr.	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

Diarr.

Are " " fitted with Basing Gear?

Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

MAIN STEAM PIPES.

No. of Pipes	
Material	
Heads, Welded or Seamed?	
Internal Diarr.	
Thickness	
How are Joints secured?	
Date of Hydraulic Test	
Test Pressure	
No. of Pipes	
Material	
Heads, Welded or Seamed?	
Internal Diarr.	
Thickness	
How are Joints secured?	
Date of Hydraulic Test	
Test Pressure	
No. of Pipes	
Material	
Heads, Welded or Seamed?	
Internal Diarr.	
Thickness	
How are Joints secured?	
Date of Hydraulic Test	
Test Pressure	



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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	<i>as</i>	
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.

1	Condenser Tubes	1	Condenser Tubes
2	Propeller Shaft	2	Propeller Shaft
3	Crank Pin Bushes	3	Crank Pin Bushes
4	Crank Shafts	4	Crank Shafts
5	Cir.	5	Cir.
6	Air Pump Holes	6	Air Pump Holes
7	Condenser Holes	7	Condenser Holes
8	Water Valves	8	Water Valves
9	Spring	9	Spring
10	I.P. Piston Rings	10	I.P. Piston Rings
11	Lead Ring Bolts	11	Lead Ring Bolts
12	Coupling Bolts	12	Coupling Bolts
13	No. of Key Bolt Holes	13	No. of Key Bolt Holes

Same as

No. of Top End Bolts.	No. of Bot. End Bolts.	No. of Cylinder Cover Studs.
" Coupling Bolts	" Main Bearing Bolts	" Valve Chest "
" Junk Ring Bolts	" Feed Pump Valves	" Bilge Pump Valves
" H.P. Piston Rings	" I.P. Piston Rings	" L.P. Piston Rings
" " Springs	" " Springs	" " Springs
" Safety Valve "	" Fire Bars	" Feed Check Valves
" Piston Rods	" Connecting Rods	" Valve Spindles
" Air Pump Rods	" Air Pump Buckets	" Air Pump Valves
" Ctr. "	" Ctr. "	" Ctr. "
" Crank Shafts	" Crank Pin Bushes	" Crosshead Bushes
" Propeller Shafts	" Propellers	" Propeller Blades
" Boiler Tubes	" Condenser Tubes	" Condenser Ferrules

OTHER ARTICLES OF SPARE GEAR:—

REFRIGERATORS.

No. of Machines	Capacity of each	No. of Cranks
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.

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

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Are Out-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.

S.W.G., Largest, No.

S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

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

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

is unimpaired?

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?

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

Has the Insulation Resistance over the whole system been tested?

What does the Resistance amount to?

Ohms.

Is the Installation supplied with a Voltmeter?

" " " an Ampere Meter

Date of Trial of complete Installation 28-5-29, Duration of Trial

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

420

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.

as ascertained by ^{me} from personal examination

KOS IV

J.D. Stevenson

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

Fees—

MAIN BOILERS.

		£	s.	d.
H.S.	<i>2292</i> Sq. ft.	:	:	:
G.S.	<i>55.7</i> "	:	:	:

DONKEY BOILERS.

H.S.	Sq. ft.	:	:	:
G.S.	"	:	:	:
		£	:	:

ENGINES.

L.P.C.	<i>16.6</i> Cub. ft.	:	:	:
		£	:	:

Testing, &c. ...	:	:	:
	£	:	:

Expenses ...	:	:	:
Total ...	£	:	:

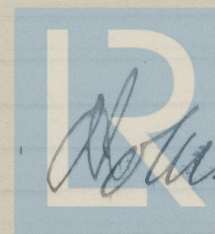
It is submitted that this Report be approved,

Joe Barr *for* Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the *23rd* December 1929

Fees advised

Fees paid



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Secretary.

GENERAL CONSTRUCTION

MAINTENANCE	
H.S.	22.22
G.S.	22.22
DOCKERY BOWERS	
H.S.	22.22
G.S.	22.22
REPAIRS	
L.P.C.	15.6
G.S.	15.6
Testing, etc.	
H.S.	15.6
G.S.	15.6
Expenses	
H.S.	15.6
G.S.	15.6
Total	
H.S.	15.6
G.S.	15.6

It is submitted that this Report be approved.

Approved by the Committee for the Class of M.B.S. on the 22nd November 1922.

KOS IV

From advised

From paid



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