

No. 2165

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2032 No. in Register Book

3372

" " *KEYMOLT*
S.S. **SWIFTWATER**

KEYDON *

Makers of Engines

Blair Co (1926) Ltd.

Works No. *1940*

Makers of Main Boilers

Blair Co (1926) Ltd.

Works No. *1940*

Makers of Donkey Boiler

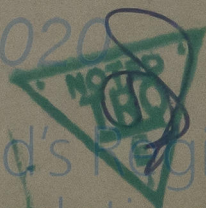
Works No. ✓

MACHINERY



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24. 28. 003275-003281 0145

No.

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

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

Official No.

Port of Registry

Registered Owners

Engines Built by

at

Main Boilers Built by

at

Donkey

at

Date of Completion

First Visit

Last Visit

Total Visits

5-27.

10-12-26

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RECIPROCATING ENGINES

Works No. 1920 No. of Sets 1 Description *Little & Hanson S.C. Berke.*

No. of Cylinders each Engine 3 No. of Cranks 3
 Diars. of Cylinders 16"-2 1/4"-44" Strokes 33"
 Cubic feet in each L.P. Cylinder 29.03

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

" " " each Receiver? *yes.*

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

No. of Crosshead Bolts (each)

" Crank Pin " "

" Main Bearings

" Bolts in each

" Holding Down Bolts, each Engine

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?

No. of Cranks 3

Strokes 33"

yes.

yes.

piston slide.

slide

Stephenson link.

Surface

Cooling Surface 900 sq. ft.
 Screwed part (bottom of thread) 3.53"

Material

Material

Material *M.P.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

Material *steel.*

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, 53 lbs., 2nd I.P.,

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.

Estimated Speed

Blair Clark & Co.

28-4-27.

17-5-27

on Whitley mts.

yes.

955

Revs. per min. *103*

53

lbs., L.P., *11* lbs., Vacuum, *25* ins.

8 1/2 knots.



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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?

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

Estimated Pressure per lineal inch

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

Estimated Pressure per lineal inch

Revs. 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 Revs. per min. S.H.P.

Turbine Spindles forged by

" Wheels forged or cast by

Reduction Gear Shafts forged by

" Wheels forged or cast by

TURBO-ELECTRIC PROPELLING MACHINERY. DESCRIPTION OF INSTALLATION.

No. of Turbo-Generating Sets Capacity of each

Type of Turbines employed

Description of Connections

No. of Motors driving Propeller Shafts

Are the Turbine 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

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion

" 2nd " Wheel

Estimated Pressure per lineal inch

Revs. per min. of Motors at Full Power

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "

" " " "



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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.

No. of Blades each Propeller

Material of Blades

Diam. of Propellers

Coefficient of Displacement of Vessel at $\frac{1}{2}$ Moulded Depth

Fitted or Solid?

Boss

Surface (each

S. ft.

Crank Shafts Forged by

" Pins "

" Webs "

Thrust Shafts "

Intermed. "

Propeller "

Crank " Finished by

Thrust " "

Intermed. "

Propeller " "

Nickers Ltd.

Material

I.S.

Blair & Co. Ltd.

"

I.

Nickers Ltd.

"

I.S.

Blair & Co. Ltd.

"

I.

STAMP MARKS ON SHAFTS.

Crank Shaft:-

B.C.
No 10801
30-3-27
J. D. S.

Thrust Shaft:-

B.C.
No 10504
1-4-27
J. D. S.

Tail Shaft:-

B.C.
No 11508
8-4-27
J. D. S.

SKETCH OF PROPELLER SHAFT.



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PUMPS, ETC.

No. of Air Pumps

1

Diar.

15"

Stroke

22"

Worked by Main or Independent Engines?

main.

No. of Circulating Pumps

1

Diar.

11"

Stroke

12"

Type of

"

Vertical duplex.

Diar. of

"

Suction from Sea

Has each Pump a Bilge Suction with Non-return Valve?

yes.

Diar.

2"

What other Pumps can circulate through Condenser?

Ballast pump

No. of Feed Pumps on Main Engine

2

Diar.

3"

Stroke

22"

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.

4"

Stroke

6"

What other Pumps can feed the Boilers?

Sea Donkey.

No. of Bilge Pumps on Main Engine

2

Diar.

3"

Stroke

22"

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

yes.

No. of Independent Bilge Pumps

-

What other Pumps can draw from the Bilges?

Ballast pump.

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?

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.

BOILERS

[Handwritten notes and signatures on the right page, including a large signature at the top and various smaller notes and dates.]

[Faint printed text from the reverse side of the page is visible through the paper.]



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BOILERS

Works No.	1970
No. of Boilers	2
Type	Cylindrical multitubular
Single or Double-ended	single
No. of Furnaces in each	2
Type of Furnaces	Diagonal
Date when Plan approved	14-1-27
Approved Working Pressure	180 lbs.
Hydraulic Test Pressure	320 "
Date of Hydraulic Test	8-4-27
" when Safety Valves set	28-4-27
Pressure at which Valves were set	185 lbs.
Date of Accumulation Test	28-4-27
Maximum Pressure under Accumulation Test	184 lbs.
System of Draught	natural.
Can Boilers be worked separately?	yes.
Makers of Plates	Oswald Sons Ltd.
" Stay Bars	Oswald Sons Ltd.
" Rivets	R. B. & Co. Ltd.
" Furnaces	Leeds Forge Co.
Greatest Internal Diam. of Boilers	12'-4 1/16"
" " Length "	10'-4 1/16"
Square Feet of Heating Surface each Boiler	1385 sq ft
" " Grate "	39.6 sq ft
No. of Safety Valves each Boiler	2
Rule Diam.	1.94"
Actual	2" Cockburn high lift.
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

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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

Diar. " " " " Approved Threads per Inch

" " " " " 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 Plates Approved

" " " " " in Boilers

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

" " " " " 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

Thickness of End Plates Approved

" " " " " in Boilers

" " " " " in Boilers

" " " " " in Boilers

Thickness of End Plates Approved

" " " " " in Boilers

" " " " " in Boilers

" " " " " in Boilers

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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 of Screwed



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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 Bottoms

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.

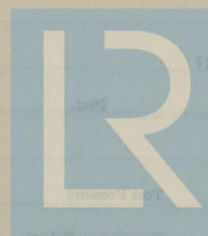
No. of Boilers
Type
Greatest Int. Diam.
Height
Height of Boiler Crown above Fire Grate
Are Boilers Crowned Flat or Rished?
External Radius of Dished Ends
Description of Stays in Boiler Crown
Diam. of Rivet Heads
Height of Rivet Crown above Fire Grate
Are Rivet Crown Rished or Rished?
External Radius of Rished Crown
No. of Lower Stays
Upper
Thickness of Plates
Bottom
No. of Water Tubes
Rish Diam.
Material of Water Tubes
Size of Manhole in Shell
Description of Compensation Piece
Location of Compensation Piece
Girth Girders

SUPERHEATERS

Description of Superheaters

Where situated?

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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 Easing Gear?

Date of Hydraulic Test

Test Pressure

Date when Safety Valves set

Pressure on Valves

MAIN STEAM PIPES



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MAIN STEAM PIPES.

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

47
 W. Iron.
 Lap welded.
 4
 1/4"
 Screwed
 } tested at maker

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure



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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	✓	" Feed Pump Valves	2	" Bilge Pump Valves	2
" H.P. Piston Rings	✓	" L.P. Piston Rings	✓	" L.P. Piston Rings	✓
" " Springs	✓	" " Springs	✓	" " Springs	✓
" Safety Valve "	✓	" Fire Bars	1 set / 1 bl.	" Feed Check Valves	✓
" 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	✓	" Propeller Blades	4
" Boiler Tubes	9	" Condenser Tubes	6	" Condenser Ferrules	50

OTHER ARTICLES OF SPARE GEAR:—

1 set Ballast pump valves.
 2 spare main & fly check valve lids.
 1 spare set of Sanitary pump valves.
 1 set of Cluds & nuts for one protected valve.



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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.

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

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ELECTRIC LIGHTING.

Installation Fitted by

No. and Description of Dynamos

Makers of Dynamos

Capacity 90 Amperes, at 110 Volts, 300 Revols. per Min.

Current Alternating or Continuous

Single or Double Wire System

Position of Dynamos

,, Main Switch Board

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

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.
----------	-------------------	---------------	-------------------------	--------------------	------------------	----------------------------	---------------------------------

Total No. of Lights

No. of Motors driving Fans, &c.

No. of Heaters

Current required for Motors and Heaters

Same as of "Purewater"

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

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 Out-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

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?

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 13-5-27

Duration of Trial

6 hours.

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



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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.

" SWIFTWATER "

as ascertained by *me* from personal examination

J. H. Phipps

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

Fees—

MAIN BOILERS.		£	s.	d.
H.S.	<i>2440</i> Sq. ft.	:	:	:
G.S.	<i>79.2</i> "	:	:	:
DONKEY BOILERS.				
H.S.	<i>✓</i> Sq. ft.	:	:	:
G.S.	<i>✓</i> "	:	:	:
		£	:	:
ENGINES.				
L.P.C.	<i>29.03</i> Cub. ft.	:	:	:
		£	:	:
Testing, &c. ...		:	:	:
		£	:	:
Expenses ...		:	:	:
Total ...		£	:	:

It is submitted that this Report be approved,

J. H. Adam
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.* on the

15th June 1907

Fees advised

Fees paid



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Secretary.

GENERAL CONSIDERATION

H.S. 20.00

H.S. 20.00

DORNEY BOWMAN

H.S. 20.00

H.S. 20.00

H.S. 20.00

H.S. 20.00

H.S. 20.00

Total

It is submitted that this Report be approved

The report made at this meeting is hereby approved

Approved by the Committee for the Class of M.E.S. on the

"SWIFTWATER"

Res. advised

Res. paid



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