

No. 2339

1929

SE

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

'BALLENA'

Report No. 2316 No. in Register Book 3709

" Vestfold " NIMBUS

S.S. CHR. CASTBERG

Makers of Engines Smiths Dock Co. Ltd.

Works No. 373

Makers of Main Boilers Hawthorn Leslie & Co. Ltd.

Works No. 9320

Makers of Donkey Boiler ✓

Works No. ✓

MACHINERY.



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2

3/1929

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013329-013338-6075

No.

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

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

Received at Head Office 19th March 1930

Surveyor's Report on the New Engines, Boilers, and Auxiliary  
Machinery of the ~~Single Screw~~ Double ~~Whaler~~ Whaler

"Chr. Castberg"

Official No.

Port of Registry

Sandefjord

Registered Owners

Hvalfangeraktieselskabet "Vestfold"

Engines Built by

Clyde Dock Co. Ltd.

at

South Bank-on-Sea.

Main Boilers Built by

R & W Hawthorn Leslie Works Ltd.

at

St Peters, Newcastle-on-Tyne.

Donkey .. ..

at

Date of Completion

9-29

First Visit

8-4-29

Last Visit

20-9-29

Total Visits

35



RECIPROCATING ENGINES.

Works No. 373 No. of Sets 1 Description Triple Expansion  
373 ONE C.C. 3 Cyls.

No. of Cylinders each Engine 3 No. of Cranks 3  
Diars of Cylinders 16" - 26 1/4" - 44 1/2" Stroke 26  
Cubic feet in each L.P. Cylinder 25.4

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

Type of H.P. Valves piston.  
1st L.P. " "

2nd L.P. " "  
L.P. " Slide  
Valve Gear Stephenson links.

Condenser Surface Cooling Surface 1675 sq. ft.  
Diameter of Piston Rods (plain part) 4 1/2" Screwed part (bottom of thread) 3 3/16"  
Material " " "

Diar. of Connecting Rods (smallest part) 4 1/4" Material " "  
Crosshead Gudgeons 4 3/4" Length of Bearing 11 1/8" Material " "

No. of Crosshead Bolts (each) 4 Diar. over Thrd. 2 1/8" Threads per inch 8 Material " "  
Crank Pin " 2 " 2 5/8" " 6 " "

Main Bearings 6 Lengths 11 3/8"  
Bolts in each 2 Diar. over Thread 2 3/8" Threads per inch 6 Material " "  
Holding Down Bolts, each Engine 20 Diar. 1 3/8" No. of Metal Chocks 20

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? no.

If not, how are they fitted? ✓

AND F. 50 273. UNDES. X. C. PLATE

Connecting Rods, Forged by Brown Bros.  
Piston " " " " " "

Crossheads, " " " " " "  
Connecting Rods, Finished by Cunliffe, Danks & Co. Ltd.  
Piston " " " " " "

Crossheads, " " " " " "  
Date of Harbour Trial 19-9-29  
" Trial Trip 20-9-29

Trials run at In North Sea.  
Were the Engines tested to full power under Sea-going conditions? yes.

If so, what was the I.H.P.? 1576 Revols. per min. 176

Pressure in 1st L.P. Receiver, 3/4 lbs., 2nd L.P., 11.5 lbs., Vacuum, 26 ins.  
Speed on Trial 13.8 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. " " " " " "  
Estimated Speed " " " " " "



TURBINE ENGINES.

Works No. Type of Turbines

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

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

Is Single or Double Reduction Gear employed?

Diar. of 1st Reduction Pinion

1st Wheel Width Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion

2nd Wheel Width Pitch of Teeth

Estimated Pressure per lineal inch

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

I.P. L.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

DESCRIPTION OF INSTALLATION

No. of Turbo-Generator Sets Capacity of each

Type of Turbines employed

Description of Generators

No. of Motors driving Propeller Shafts

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

Is Single or Double Reduction Gear employed?

Description of Motors

DESCRIPTION OF INSTALLATION

Diar. of 1st Reduction Pinion

1st Wheel Width Pitch of Teeth

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion

2nd Wheel Width Pitch of Teeth

Estimated Pressure per lineal inch

Revs. per min. of Generators 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.

Turbine Spindles forged by

Wheels forged or cast by

Reduction Gear Shafts forged by

Wheels forged or cast by



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No. of Blades each Propeller

Fitted or Solid?

*solid*

Material of Blades

Boss

Diam. of Propellers

Pitch

Surface (each

S. ft.)

*4*  
*91-9"* Pitch *91-6"*

*4-1*

Coefficient of Displacement of Vessel at  $\frac{3}{4}$  Moulded Depth

Crank Shafts Forged by

*Darlington Forge Co.*

Material

*2-1/2*

.. Pins ..

.. Webs ..

Thrust Shafts ..

Intermed. ..

Propeller ..

Crank .. Finished by

Thrust ..

Intermed. ..

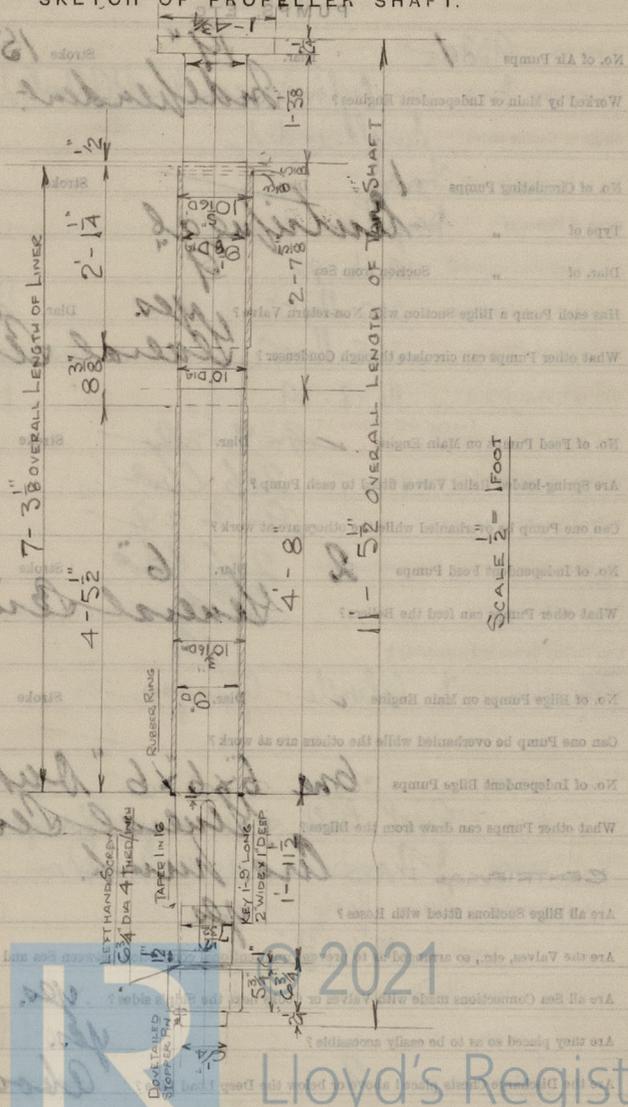
Propeller ..

STAMP MARKS ON SHAFTS.

*Crank, Thrust,  
Intermediate,  
1 Sail Shafts:-*

*BC  
No 884  
13-8-29  
G. H. B.*

SKETCH OF PROPELLER SHAFT.



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## PUMPS, ETC.

No. of Air Pumps 1 Diar. 19" Stroke 15"

Worked by Main or Independent Engines?

Independent.

No. of Circulating Pumps 1 Diar. Stroke

Type of " Centrifugal

Diar. of " Suction from Sea 9

Has each Pump a Bilge Suction with Non-return Valve? Yes Diar. 6"

What other Pumps can circulate through Condenser?

General Services.

No. of Feed Pumps on Main Engine ✓ Diar. Stroke

Are Spring-loaded Relief Valves fitted to each Pump?

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

No. of Independent Feed Pumps 2 Diar. 6" Stroke 18"

What other Pumps can feed the Boilers?

General Services.

No. of Bilge Pumps on Main Engine ✓ Diar. Stroke

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

No. of Independent Bilge Pumps

One 6x6x6" Doublet

What other Pumps can draw from the Bilges?

General Services +  
Air. numb.

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

No. of Boilers 2

Type of Boilers

Single or Double-ended

No. of Furnaces in each

Type of Furnaces

Date when Plan approved

Approved Working Pressure

Hydraulic Test Pressure

Date of Hydraulic Test

" when Safety Valves set

Furnaces at which Valves were set

Date of Accumulation Test

Maximum Pressure under Accumulation Test

System of Drafting

Can Boilers be worked separately?

Makers of Plates

" "

" "

" "

" "

Greatest Internal Diam. of Boilers

" "

" "

" "

" "

Are the Boilers fitted with Heating Coils?

No. of Heating Coils

" "

BC TEST
NO. 4815
WP 210
300 lb
9.7
10.8.20



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## BOILERS

Works No. 9370.

No. of Boilers One. Type Cylindrical Multitubular.

Single or Double-ended Single-ended.

No. of Furnaces in each Four.

Type of Furnaces Dighton.

Date when Plan approved 19. 6. 29.

Approved Working Pressure 210 lbs. □.

Hydraulic Test Pressure 365 lbs. □.

Date of Hydraulic Test 16. 8. 29.

„ when Safety Valves set 19-9-29.

Pressure at which Valves were set 216 lbs.

Date of Accumulation Test 19-9-29.

Maximum Pressure under Accumulation Test 216 lbs.

System of Draught C.A.

Can Boilers be worked separately? Yes.

Makers of Plates D. Colville Glasgow.

„ Stay Bars „

„ Rivets Rivel Bolt & Nut Coy. Glasgow.

„ Furnaces J. Thompson, Walthampton.

Greatest Internal Diam. of Boilers 16'-6"

„ „ Length „ 12'-4<sup>25</sup>/<sub>32</sub>"

Square Feet of Heating Surface each Boiler 3624 sq ft

„ „ Grate „ „

No. of Safety Valves each Boiler 2 Rule Diam. Actual 2<sup>3</sup>/<sub>4</sub>"

Are the Safety Valves fitted with Easing Gear? Yes.

No. of Pressure Gauges, each Boiler 2 No. of Water Gauges 2

„ Test Cocks „ „ Salinometer Cocks 1

BC. TEST.  
No 4812.  
365 lbs. □.  
WP. 210 □.  
J. L.  
16. 8. 29.

Are the Water Gauges fitted direct to the boiler shells or mounted on Flans?

Are the Water Gauge Flans fitted direct to the boiler shells or connected by Flans?

Are there pipes connected to boilers by Cocks or Valves?

Are there any Cocks or Valves fitted on boiler shells?

No. of Stakes of Shell Laying in each boiler

„ Plates in each Stake

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

„ „

Are longitudinal seams hand or Machine Riveted?

Are they Single Double or Triple Riveted?

No. of Rivets in a Pitch

Diam. of Rivet Holes

No. of Rows of Rivets in Centre Circumferential seams

Are these seams hand or Machine Riveted?

Diam. of Rivet Holes

No. of Rows of Rivets in Front and Circumferential seams

Are these seams hand or Machine Riveted?

Diam. of Rivet Holes

No. of Rows of Rivets in Neck and Circumferential seams

Are these seams hand or Machine Riveted?

Diam. of Rivet Holes

No. of Rows of Rivets in Neck and Circumferential seams

Are these seams hand or Machine Riveted?

Diam. of Rivet Holes

Size of Rivets in Flans

Dimensions of Circumferential Flans

374

2

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Diar. of Stays Approved  $2\frac{3}{4}$  Threads per Inch 6.  
 " " in Boilers  $2\frac{3}{4}$   
 Material " Steel.

Thickness of Front Tube Plates Approved  $\frac{29}{32}$   
 " " " " in Boilers  $\frac{29}{32}$   
 Pitch of Stay Tubes at Spaces between Stacks of Tubes  $13\frac{1}{2}'' \times 7\frac{1}{2}''$   
 Thickness of Doublings in " " " none.  
 " Stay Tubes at " " "  $\frac{3}{8}$   
 Are Stay Tubes fitted with Nuts at Front End Yes.

Thickness of Back Tube Plates Approved  $\frac{3}{4}$   
 " " " in Boilers  $\frac{3}{4}$  full.  
 Pitch of Stay Tubes in Back Tube Plates  $7\frac{1}{2}'' \times 7\frac{1}{2}''$   
 " Plain "  $7\frac{1}{2}'' \times 7\frac{1}{2}''$   
 Thickness of Stay Tubes 14 @  $\frac{7}{16}$ , 82 @  $\frac{3}{8}$  + 62 @  $\frac{5}{16}$ .  
 " Plain " 8 W.G.  
 External Diar. of Tubes  $2\frac{1}{2}$   
 Material " Iron.

Thickness of Furnace Plates Approved  $\frac{5}{8}$   
 " " " in Boilers  $\frac{5}{8}$   
 Smallest outside Diar. of Furnaces  $3'-5\frac{1}{4}''$   
 Length between Tube Plates  $8'-5\frac{19}{32}$  none

Width of Combustion Chambers (Front to Back)  $3'-3''$  mean.  
 Thickness of " " Tops Approved  $\frac{23}{32}$   
 " " " in Boilers  $\frac{23}{32}$   
 Pitch of Screwed Stays in C.O. Tops  $8\frac{3}{4}'' \times 9\frac{3}{4}''$

P. Diar. of Stays Approved  
 " " 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.O. Tops

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## MAIN STEAM PIPES.

No. of Lengths

2

Material

Copper.

Brazed, Welded or Seamless

S. P.

Internal Diam.

5"

Thickness

3 W.P.

How are Flanges secured?

braced.

Date of Hydraulic Test

12-9-29.

Test Pressure

420 lbs.

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

## EVAPORATORS

10  
 General level  
 20 lbs.  
 Date of Test  
 12-9-29  
 9" water  
 3 x 4 x 6  
 210 lbs.

## FEED WATER FILTERS

210 lbs.



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## EVAPORATORS.

No. 1 Type *Wells* 10 Tons per Day 10  
 Makers *M. J. Wells*  
 Working Pressure *15 lbs.* Test Pressure *50 lbs.* Date of Test  
 Date of Test of Safety Valves under Steam *19-9-29.*

## FEED WATER HEATERS.

No. 1 Type *Exchange Steam Surface Heater.*  
 Makers *Caird & Raynor.*  
 Working Pressure *20 lbs.* Test Pressure Date of Test

## FEED WATER FILTERS.

No. *One* Type *Gravitation type.* Size  
 Makers *Smiths & Co.*  
 Working Pressure Test Pressure Date of Test

## LIST OF DONKEY PUMPS.

*Bilge pump. Lamonts 6" x 6" x 6"*  
*General Service, Lamonts 6" x 4 1/4" x 6"*  
*Feed pumps, 2 Wells, 6" x 8 1/2" x 18"*  
*Air pump. Wells, 19" x 13" x 15"*  
*Fire pump. H. Watson 9" Centrifugal*  
*oil fuel pumps Wells 3" x 4 1/2" x 6"*  
*oil fuel pump. pump. Nichols 6" x 4" x 6"*



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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, &amp;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.

No. and COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.
16	318	318	10	12
19	480	480		
19				

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



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Total No. of Tons

Power required for Engines and Pumps

REFRIGERATORS  
MILK TO STURSH

## ELECTRIC LIGHTING.

Installation Fitted by

R. Pickersgill, Lond.

No. and Description of Dynamos

1 compound wound

Makers of Dynamos

Lunduland Forge and Co. Ltd.

Capacity

55

Amperes, at

110

Volts, 350

Revs. per Min.

Current Alternating or Continuous

Continuous

Single or Double Wire System

Double.

Position of Dynamos

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.
Navigation	16	318	3.18	1/22	110	12	5.387
Midship Accommodation	19	480	4.8	"	"	"	"
Engine Room	19	"	"	"	"	"	"
Search Light.	1	12	2	1/16	"	25	1.106

Total No. of Lights

64

No. of Motors driving Fans, &amp;c.

No. of Heaters

Current required for Motors and Heaters

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

Engine Room 5 Switches  
 Forward 4  
 After Accommodation 4  
 Navigation 6  
 Saloon 3

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

yes

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. 1/0.44 S.W.G., Largest, No. 7/0.29 S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

Had covered / Armoured.

" " Saloons, State Rooms, &amp;c., " ?

Had covered.

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

Had covered / Armoured.

(2) " " passing through Bunkers or Cargo Spaces

Had bushes.

(3) " " Deck Beams or Bulkheads

Are all Joints in Cables properly soldered and thoroughly insulated so that the efficiency of the Cables

is unimpaired? yes.

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

yes.

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

yes.

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?

4.5 MEG.

Ohms.

Is the Installation supplied with a Voltmeter?

yes.

" " " an Ampere Meter

yes.

Date of Trial of complete Installation 20-9-29

Duration of Trial

6 hrs

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.

*Saloon*

*yes*

*yes*

*yes*

*yes*

*yes*

*yes*

*yes*

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.*

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

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

**CHR. CASTBERG**

as ascertained by <sup>us</sup> from personal examination

*J. O. Clifton*  
*John Lundgren*

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

Fees—

MAIN BOILERS.		£	s.	d.
H.S.	3624 Sq. ft.	:	:	:
G.S.	"	:	:	:
DONKEY BOILERS.		£	s.	d.
H.S.	✓ Sq. ft.	:	:	:
G.S.	✓ "	:	:	:
ENGINES.		£	s.	d.
L.P.C.	23.4 Cub. ft.	:	:	:
Testing, &c.	... ..	:	:	:
Expenses	... ..	:	:	:
Total	... £	:	:	:

It is submitted that this Report be approved,

*J. O. Clifton*  
Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the 2nd April 1930.



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Fees advised

Fees paid

*John Lundgren*  
Secretary.

GENERAL CONSTRUCTION

Foot

all the ...

H.S.	Sp. U.	3624	
H.S.	Sp. U.	7	
H.S.	Sp. U.	7	

BOOKS

L.T.C.	Cap. U.	23.4	
Testing, etc. ...			
Expenses ...			
Total ...			

It is submitted that this Report be approved.

and have ...

Approved by the Committee for the Class of M.B.S. on the 3rd of June 1950.

CHR CASTBERG

For advised ...



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