

No. 2221

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

Report No. 2234 No. in Register Book 3620

N/N SOREDOC.

S.S. EX PHENICIA.

Makers of Engines MACCOLL & POLLOCK.

Works No. 366

Makers of Main Boilers MACCOLL & POLLOCK.

Works No. 366

Makers of Donkey Boiler NONE.

Works No. ✓

MACHINERY.



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004512-004519-0189

No.

THE BRITISH CORPORATION FOR THE SURVEY  
AND  
REGISTRY OF SHIPPING.

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

Received at Head Office

*A. June 1929.*

Surveyor's Report on the Two Engines, Boilers, and Auxiliary  
Machinery of the Single Screw STEAMER

"PHENICIA"

Official No. *149498* Port of Registry *Newcastle*

Registered Owners

*Inland Steamship Coy Ltd.  
Winnipeg, Canada.*

Engines Built by

*MacCall & Pollock,*

at

*Sunderland.*

Main Boilers Built by

*MacCall & Pollock,*

at

*Sunderland.*

Donkey .. ..

*None.*

at

Date of Completion

*28.3.29*

First Visit

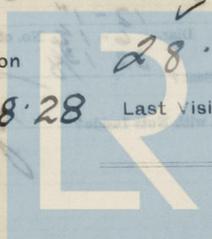
*10.8.28*

Last Visit

*28.3.29*

Total Visits

*28*



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## RECIPROCATING ENGINES.

Works No. *366* No. of Sets / Description *Triple expansion*  
*Surface Condensing*

No. of Cylinders each Engine *3* No. of Cranks *3*  
 Diars of Cylinders *15", 25", 40"* Stroke *33*  
 Cubic feet in each L.P. Cylinder *24*  
 Are Spring-loaded Relief Valves fitted to Top and Bottom of each Cylr? *yes*  
 " " " each Receiver?  
 Type of H.P. Valves, *Piston Valve.*  
 1st I.P. " *D. Slide Valve.*  
 2nd I.P. " *— — —*  
 L.P. " *D. Slide Valve.*  
 " Valve Gear *Stephenson's Link*  
 " Condenser *Surface* Cooling Surface *703* sq. ft.  
 Diameter of Piston Rods (plain part) *4"* Screwed part (bottom of thread) *2.03*  
 Material " *Rolled Steel bar.*  
 Diar. of Connecting Rods (smallest part) *3 7/8* Material *Iron.*  
 " Crosshead Gudgeons *4 1/8* Length of Bearing *2.3 3/8"* Material *Steel*  
 No. of Crosshead Bolts (each) *4* Diar. over Thrd. *1 3/4* Thrds. per inch *6* Material *steel*  
 " Crank Pin " " *2* " *2 1/4"* " *6* "  
 " Main Bearings *6* Lengths *7 7/8"*  
 " Bolts in each *2* Diar. over Thread *2 1/8"* Threads per inch *6* Material *Steel*  
 " Holding Down Bolts, each Engine *50* Diar. *1 1/4"* No. of Metal Chocks *50*  
 Are the Engines bolted to the Tank Top or to a Built Seat? *32 1 3/8 Tank Top.*  
 Are the Bolts tapped through the Tank Top and fitted with Nuts Inside? *yes*  
 If not, how are they fitted? *✓*

Connecting Rods, Forged by

Piston " "

Crossheads " "

Connecting Rods, Finished by

Piston " "

Crossheads, " "

Date of Harbour Trial *13.2.29*" Trial Trip *28.3.29*Trials run at *Whitley Mile*Were the Engines tested to full power under Sea-going conditions? *yes.*If so, what was the I.H.P.? *750*Revs. per min. *105*Pressure in 1st I.P. Receiver, *180* lbs., 2nd I.P., *48* lbs., L.P., *5 1/2* lbs., Vacuum, *26 3/4* ins.Speed on Trial *8.57 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.

Revs. per min.

Estimated Speed

H.P. Cylinder Tested 2-10-28

Be. 3394. J.L. 240420



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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? \_\_\_\_\_

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. " " \_\_\_\_\_

" " 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 \_\_\_\_\_

## TURBO-ELECTRIC INSTALLATION

Engine stop valves plugged at base  
 with  $\frac{3}{8}$ " gas brass plug securely fitted.

Tested C. S. Water gauge mounting 4.11.78.

" 3 main boiler stop valves ~~15.11.78~~

" 2 whistle valves

" Condenser.

" 2 main + 2 donkey check valves. 15.11.78.



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## BOILERS.

Works No. **366**

No. of Boilers **Two** Type **Cylindrical Multitubular**

Single or Double-ended **Single**

No. of Furnaces in each **Two**

Type of Furnaces **Deighton Section**

Date when Plan approved **25.7.28 & 11.8.28**

Approved Working Pressure **180 lbs□"**

Hydraulic Test Pressure **320 lbs□"**

Date of Hydraulic Test **7.11.28.**

„ when Safety Valves set **13.2.29.**

Pressure at which Valves were set **180 lbs□"**

Date of Accumulation Test **13.2.29.**

Maximum Pressure under Accumulation Test **187 lbs.**

System of Draught **Howden Forced. closed ashpits**

Can Boilers be worked separately? **Yes.**

Makers of Plates **James Dumble Glasgow**  
*with Resonance tested*

„ Stay Bars **"**

„ Rivets **"**

„ Furnaces **"**

Greatest Internal Diar. of Boilers **Rivet Bolt & Nut Coy. Deighton Section @**  
**10.1<sup>3</sup>/<sub>16</sub>.**

„ „ Length „ **10.9<sup>15</sup>/<sub>16</sub>**

Square Feet of Heating Surface each Boiler **1068.43**

„ „ Grate „ „ **32.34**

No. of Safety Valves each Boiler **2** Rule Diar. Actual **2<sup>1</sup>/<sub>2</sub>"**

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**

B.C. TEST.

N <sup>o</sup> 4631
T.P. 320
W.P. 180
JL
7.11.28

Boiler Test Mark,  
on both boilers



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

*Pillars direct*

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?

*Yes. Valves with double shut Saws as 3/5 Lachins doc 3/5 Hamildoc 3/5 Wellen doc.*

*off S. L. Vess additional*

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

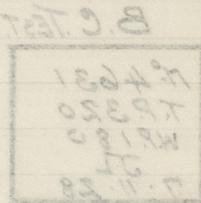
No. of Rows of Rivets in Back End Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diar. of Rivet Holes Pitch

Size of Manholes in Shell

Dimensions of Compensating Rings



*Same as "Lachins doc"*



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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

*Bellevue direct*  
*Law 10 7/8 inch dia*  
*75 Handbol*  
*75 Wellen do*



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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.O. Tops

Threads per Inch

Diar. of Screwed Stays Approved

.. .. in Boilers

Material

Thickness of Combustion Chamber Stays Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Stays

Threads per Inch

Diar. .. Approved

.. .. in Boilers

Material

Thickness of Combustion Chamber Heads Approved

.. .. in Boilers

Pitch of Screwed Stays in C.O. Heads

Threads per Inch

Diar. .. Approved

.. .. 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 ..

Material of Girders

No. of Stays in each Wing Chamber

No. of Stays ..

No. of Lower Members



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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.O. Sides

Diar. " " Approved Threads per Inch

" " " in Boilers

Material " "

Thickness of Combustion Chamber Backs Approved

" " " " in Boilers

Pitch of Screwed Stays in C.O. Backs

Diar. " " 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
Quantity for Diar.	Height
Height of Boiler Crown above Fire Grate	Are Boiler Crown Flat or Dished?
Internal Radius of Dished Ends	Thickness of Plates
Description of Beams in Boiler Crown	Width of Girders
Diar. of Inlet Holes	Pitch
Height of Firebox Crown above Fire Grate	Are Firebox Crown Flat or Dished?
External Radius of Dished Crown	Thickness of Plates
No. of Crown Stays	Diar.
External Diar. of Firebox at Top	Thickness of Plates
No. of Water Tubes	Material
Material of Water Tubes	Size of Manholes in Shell
Dimensions of Compressing Ring	Heating Surface, each Boiler

SUPERHEATERS



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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			
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.



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## MAIN STEAM PIPES.

No. of Lengths

4

Material

Copper.

Brazed, Welded or Seamless

S. D.

Internal Diam.

3 1/2"

Thickness

7 W.G.

How are Flanges secured?

Brazed.

Date of Hydraulic Test

14.11.28

Test Pressure

360.

J. L.

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

## SUPERHEATERS

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

## STEAM EVAPORATORS

Bassett-Douglas 11 x 11 1/2 x 11 1/2 ft. 200 lbs. pressure

G.S. 6" x 4" x 0.25"

Sintered 200 lbs. pressure

Fresh Water 200 lbs. pressure

Circulating 200 lbs. pressure

Superheated 200 lbs. pressure

Cylindrical FEED WATER HEATERS

C.W. Type No. 8

Horse &amp; Lister No. 10

Date of Test

Test Pressure

Working Pressure

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diam.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

Working 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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## EVAPORATORS.

No. *None.* Type *None.* Tons per Day  
 Makers  
 Working Pressure Test Pressure Date of Test  
 Date of Test of Safety Valves under Steam

*Exhaust* FEED WATER HEATERS.

No. Type *C. W. Type No 8.* *@.*  
 Makers *Holden & Brooke Ltd.*  
 Working Pressure  Test Pressure  Date of Test

## FEED WATER FILTERS.

No. *One.* Type *High Pressure.* Size *@.*  
 Makers *MacCall & Pollock.*  
 Working Pressure *180 lbs.* Test Pressure *450 lbs.* Date of Test *18/1/29 J.L.*

## LIST OF DONKEY PUMPS.

*Ballast Donkey 9 1/2" x 11 1/2" x 11" MacCall & Pollock*  
*G.S. 6" x 4" x 6" do*  
*Sanitary 3 1/2" - 3 1/2" - 4" Wmford.*  
*Fresh Water do*  
*Circulating 9" x 10" x 10" MacCall & Pollock.*  
*Injector 1 1/2" x 9" Graham & Carter.*



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## ELECTRIC LIGHTING.

Installation Fitted by *Swan Hunter & W. R. L<sup>td</sup>*  
 No. and Description of Dynamos *One Compound Wound.*  
 Makers of Dynamos *Sunderland Forge & Eng Coy L<sup>td</sup>*  
 Capacity „ *91* Amperes, at *110* Volts, *380* Revols. per Min.  
 Current Alternating or Continuous *Continuous*  
 Single or Double Wire System *Double.*  
 Position of Dynamos *In engine room on lower platform*  
 „ Main Switch Board *Near dynamo*  
 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.
<i>Navigation</i>	<i>4</i>	<i>60</i>	<i>3</i>	<i>7/029</i>	<i>Rule.</i>	<i>98%</i>	<i>600</i>
	<i>2</i>	<i>30</i>		<i>7/029</i>	<i>"</i>	<i>"</i>	<i>"</i>
<i>For<sup>d</sup> accom.</i>	<i>19</i>	<i>30</i>	<i>14</i>	<i>7/044</i>	<i>"</i>	<i>"</i>	<i>"</i>
	<i>13</i>	<i>16 C.P.</i>					
<i>aft. accom</i>	<i>19</i>	<i>30 W</i>	<i>19</i>	<i>7.044</i>	<i>"</i>	<i>"</i>	<i>"</i>
	<i>26</i>	<i>16 C.P.</i>					
<i>Eng &amp; Blk Rooms</i>	<i>13</i>	<i>30 W</i>	<i>5</i>	<i>7/029</i>	<i>"</i>	<i>"</i>	<i>"</i>
	<i>3</i>	<i>16 C.P.</i>					

Total No. of Lights *99* No. of Motors driving Fans, &c. *None* No. of Heaters *None*

Current required for Motors and Heaters *None*

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

None

Are Out-outs fitted as follows?—

On Main Switch Board, to Cables of Main Circuits

yes

On Aux. " " each Auxiliary Circuit

None

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 Out-outs constructed of Non-inflammable Material?

yes

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

yes

Smallest Single Wire used, No. 3.029 S.W.G., Largest, No. 19.072 S.W.G.

How are Conductors in Engine and Boiler Spaces protected?

Lead covered &amp; braided

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

Lead covered clipped to structure

What special protection is provided in the following cases?—

(1) Conductors exposed to Heat or Damp

Lead covered &amp; braided

(2) " " passing through Bunkers or Cargo Spaces

Lead covered in Telegraph Casing

(3) " " Deck Beams or Bulkheads

Rubber bushes &amp; W.T. Glands

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

is unimpaired?

None

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?

100,000 ohms.

Ohms.

Is the Installation supplied with a Voltmeter?

yes

" " " an Amperemeter

yes

Date of Trial of complete Installation

28.3.29

Duration of Trial

8 hours.

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

yes.

John Laurie



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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.

*[Handwritten notes and signatures in pencil, including 'yes' and 'no' responses to various questions.]*

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.

*PHENICIA*

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

*[Signature]*

*[Signature]*  
 Engineer Surveyor to the British Corporation for the  
 Survey and Registry of Shipping.

Fees—

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

It is submitted that this Report be approved,

*[Signature]*  
 Chief Surveyor.

Approved by the Committee for the Class of M.B.S.\* on the 12<sup>th</sup> June 1929

Fees advised

Fees paid



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 Foundation  
*[Signature]*  
 Secretary.

GENERAL CONSTRUCTION

Approved 2000	Yes	H.S.	20.0
Approved 2001		H.S.	50.0
Approved 2002		H.S.	
Approved 2003		H.S.	
Approved 2004		H.S.	
Approved 2005		H.S.	
Approved 2006		H.S.	
Approved 2007		H.S.	
Approved 2008		H.S.	
Approved 2009		H.S.	
Approved 2010		H.S.	
Approved 2011		H.S.	
Approved 2012		H.S.	
Approved 2013		H.S.	
Approved 2014		H.S.	
Approved 2015		H.S.	
Approved 2016		H.S.	
Approved 2017		H.S.	
Approved 2018		H.S.	
Approved 2019		H.S.	
Approved 2020		H.S.	
Total		H.S.	120.0

It is submitted that this Report be approved.

*[Signature]*  
Chief Engineer

*[Signature]*  
Approved by the Committee for the Class of M.B.S. on the 17 June 1979

PHENICIA

Form advised  
Form paid

*[Signature]*  
*[Signature]*



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