No. 1755 TRANSFERRED TO L. R. SYSTEM

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. 1941 No. in Register Book 3268

TRANSFERRED TO L. R. SYSTEM

S.S. "SHILA"

Makers of Engines Smiths Dock Co Ld.

Works No. 292.

Makers of Main Boilers Hawthorne Leslie & Co Ld.

Works No. 8981 B.

Makers of Donkey Boiler ✓

Works No. ✓

MACHINERY.

No.

THE BRITISH CORPORATION FOR THE SURVEY AND REGISTRY OF SHIPPING.

Report No. 1941 No. in Register Book 3268

Received at Head Office 20th May 1926

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the Single ~~Triple~~ ~~Twin~~ ~~Quadruple~~ Screw "Shila"

Official No. Port of Registry Leith.

Registered Owners South Georgia Coy.

Engines Built by Smiths Dock Co Ld.

at South Bank-on-Tees.

Main Boilers Built by Hawthorne Leslie & Co Ld.

at Newcastle-on-Tyne.

Donkey " " –

at –

Date of Completion 3-26

First Visit 6-11-25 Last Visit 25-3-26 Total Visits 35

RECIPROCATING ENGINES

Works No. 292 No. of Sets 1 Description Triple expansion. S.C. 3 cyls.

No. of Cylinders each Engine 3 No. of Cranks 3

Diars. of Cylinders 12¼" - 20" - 34" Stroke 24"

Cubic feet in each L.P. Cylinder 12.6

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

" " " each Receiver? yes.

Type of H.P. Valves, Piston

" 1st I.P. " Slide.

" 2nd I.P. "

" L.P. " Slide.

" Valve Gear Stephenson link.

" Condenser Surface. Cooling Surface 6492 sq. ft.

Diameter of Piston Rods (plain part) 3⅞" Screwed part (bottom of thread) 2.384

Material " Steel.

Diar. of Connecting Rods (smallest part) 3⅜" Material Iron. I.S.

" Crosshead Gudgeons 3⅝" Length of Bearing 3¾" Material Steel.

No. of Crosshead Bolts (each) 4 Diar. over Thrd. 1½" Thrds. per inch 8 Material Steel.

" Crank Pin " " 2 " 2" " " "

" Main Bearings 6 Lengths 7⅜"

" Bolts in each 2 Diar. over Thread 1⅞" Threads per inch 7 Material steel.

" Holding Down Bolts, each Engine 51 Diar. 1¼" No. of Metal Chocks 51

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?

Connecting Rods, Forged by Smiths Wallsend Forge.

Piston " " " Fife Forge Coy.

Crossheads, " Smiths Wallsend Forge.

Connecting Rods, Finished by Smiths Dock Co. Ld.

Piston " " " "

Crossheads, " " "

Date of Harbour Trial 25-3-26

" Trial Trip 25-3-26

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.? 614 Revols. per min. 134

Pressure in 1st I.P. Receiver, 68 lbs., 2nd I.P., — lbs., L.P., 11 lbs., Vacuum, 25 ins.

Speed on Trial 11½ 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. Revols. per min.

Estimated Speed

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 } Width Pitch of Teeth

" 1st " Wheel

Estimated Pressure per lineal inch

Diar. of 2nd Reduction Pinion } Width Pitch of Teeth

" 2nd " Wheel

Estimated Pressure per lineal inch

Revols. 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

DESCRIPTION OF INSTALLATION.

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

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

Estimated Pressure per lineal inch

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

Estimated Pressure per lineal inch

Revols. 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 Revols. 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? Built.

No. of Lengths in each 4 Angle of Cranks 120°

Diar. by Rule 6·6" Actual 6 7/8" In Way of Webs 6 7/8"

" of Crank Pins 6 7/8" Length between Webs 7 1/4"

Greatest Width of Crank Webs 13" Thickness 4 1/4"

Least " " 10" " 4 1/4"

Diar. of Keys in Crank Webs 1 1/4" Length 3 3/4"

" Dowels in Crank Pins 1" Length 3 1/2" Screwed or Plain plain.

No. of Bolts each Coupling 4 Diar. at Mid Length 2" Diar. of Pitch Circle 11 1/4"

Greatest Distance from Edge of Main Bearing to Crank Web 1/8"

Type of Thrust Blocks Horseshoe.

No. " Rings 4

Diar. of Thrust Shafts at bottom of Collars 6 7/8" No. of Collars 4

" " Forward Coupling 6 7/8" At Aft Coupling 6 7/8"

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 6·94" Actual 7 3/8" At Couplings 6 7/8"

Are Propeller Shafts fitted with Continuous Brass Liners? yes.

Diar. over Liners 8 7/16" Length of After Bearings 3'-3 1/2"

Of what Material are the After Bearings composed? Lignum Vitae.

Are Means provided for lubricating the After Bearings with Oil? no.

" " to prevent Sea Water entering the Stern Tubes? no.

If so, what Type is adopted?

SKETCH OF CRANK SHAFT.

Same as S/S "Shuia"

No cutout.

No. of Blades each Propeller 4 Fitted or Solid? solid

Material of Blades C.S. Boss C.S.

Diar. of Propellers 9'-0" Pitch 9'-9" Surface (each 31 S. ft.

Coefficient of Displacement of Vessel at ⅔ Moulded Depth . 535

Crank Shafts Forged by Fife Forge Co. Material I.S.

" Pins " " " "

" Webs " " " "

Thrust Shafts " " " "

Intermed. " " " "

Propeller " " " "

Crank " Finished by "

Thrust " " "

Intermed. " "

Propeller " " "

STAMP MARKS ON SHAFTS.

Crank, Thrust & Propeller Shafts:—

B.C.
No 10074
30-12-25
R.S.

SKETCH OF PROPELLER SHAFT.

Same as "Africa"

PUMPS, ETC.

No. of Air Pumps 1 Diar. 12" Stroke 12"

Worked by Main or Independent Engines? Main engines.

No. of Circulating Pumps 1 Diar. 6" Stroke

Type of " Centrifugal

Diar. of " Suction from Sea 6"

Has each Pump a Bilge Suction with Non-return Valve? yes. Diar. 4"

What other Pumps can circulate through Condenser? G.S. pump.

No. of Feed Pumps on Main Engine 2 Diar. 2½" Stroke 12"

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?

No. of Bilge Pumps on Main Engine 2 Diar. 2½" Stroke 12"

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

No. of Independent Bilge Pumps G.S. pump.

What other Pumps can draw from the Bilges? Bilge Ejector.

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.

Works No.	8981 B.
No. of Boilers / Type	Cylindrical multitubular
Single or Double-ended	single.
No. of Furnaces in each	2.
Type of Furnaces	Morison.
Date when Plan approved	
Approved Working Pressure	200 lbs
Hydraulic Test Pressure	350 "
Date of Hydraulic Test	12-1-26
" when Safety Valves set	25-3-26
Pressure at which Valves were set	206 lbs
Date of Accumulation Test	25-3-26
Maximum Pressure under Accumulation Test	210 lbs
System of Draught	Howdens C.A.
Can Boilers be worked separately?	Yes.
Makers of Plates	Clydebridge of Scotland
" Stay Bars	"
" Rivets	R. B. & J. Co Ld.
" Furnaces	John Thompson Ld.
Greatest Internal Diar. of Boilers	11' 9"
" " Length "	11' 0"
Square Feet of Heating Surface each Boiler	1509 ☐'
" " Grate " "	40 ☐'
No. of Safety Valves each Boiler 2	Rule Diar. Actual 2 3/4"
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

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

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

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

None as yet Shown

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.?

Same as Shown

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. 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.

No. of Lengths	1			
Material	copper.			
Brazed, Welded or Seamless	S. D.			
Internal Diar.	4"			
Thickness	No 5 L.S.G.			
How are Flanges secured ?	brazed.			
Date of Hydraulic Test	17-3-26			
Test Pressure	400 lbs			

No. of Lengths				
Material				
Brazed, Welded or Seamless				
Internal Diar.				
Thickness				
How are Flanges secured ?				
Date of Hydraulic Test				
Test Pressure				

No. of Lengths				
Material				
Brazed, Welded or Seamless				
Internal Diar.				
Thickness				
How are Flanges secured ?				
Date of Hydraulic Test				
Test Pressure				

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

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.

One 6" x 4¼" x 6" Duplex General Service Donkey by Thos. Lamont.

One 4½" x 6" x 6" single cylinder whale air pump. Westinghouse make.

SPARE GEAR.

No. of Top End Bolts.	2	No. of Bot. End Bolts.	2	No. of Cylinder Cover Studs	
„ Coupling Bolts	4	„ Main Bearing Bolts	2	„ Valve Chest „	
„ Junk Ring Bolts	6	„ Feed Pump Valves	4	„ Bilge Pump Valves	4
„ H.P. Piston Rings		„ I.P. Piston Rings		„ L.P. Piston Rings	
„ „ Springs		„ „ Springs		„ „ Springs	1
„ Safety Valve „	2	„ Fire Bars	1 set 1 furnace	„ Feed Check Valves	2
„ Piston Rods		„ Connecting Rods		„ Valve Spindles	
„ Air Pump Rods		„ Air Pump Buckets		„ Air Pump Valves	5
„ Cir. „		„ Cir. „		„ Cir. „	
„ Crank Shafts		„ Crank Pin Bushes		„ Crosshead Bushes	
„ Propeller Shafts	1	„ Propellers	1	„ Propeller Blades	
„ Boiler Tubes	6	„ Condenser Tubes	15	„ Condenser Ferrules	30

OTHER ARTICLES OF SPARE GEAR:—

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.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.

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

ELECTRIC LIGHTING.

Installation Fitted by R. Pickersgill & Sons.

No. and Description of Dynamos One Compound wound.

Makers of Dynamos Lundeland & Ogelbug Co.

Capacity " 50 Amperes, at 110 Volts, 340 Revols. 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.

Same as at "China"

Total No. of Lights No. of Motors driving Fans, &c. No. of Heaters

Current required for Motors and Heaters

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

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. 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 25-3-26 Duration of Trial 6 hours.

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

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. "SHILA"

as ascertained by ~~us~~ me from personal examination

J. B. Stephenson

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

Fees—

			£	s.	d.
MAIN BOILERS.					
H.S.	1509	Sq. ft.		:	:
G.S.	40	,,		:	:
DONKEY BOILERS.					
H.S.		Sq. ft.		:	:
G.S.		,,		:	:
		£		:	:
ENGINES.					
L.P.C.	12.4	Cub. ft.		:	:
		£		:	:
Testing, &c.				:	:
		£		:	:
Expenses				:	:
		Total ... £		:	:

It is submitted that this Report be approved.

J. Isaac King

Chief Surveyor.

Approved by the Committee for the Class of **M.B.S.*** on the 2nd June 1926

Fees advised

Fees paid

Secretary.