

No. 2289

THE BRITISH CORPORATION FOR THE SURVEY
AND
REGISTRY OF SHIPPING.

Report No. 2335 No. in Register Book 3434

MOTOR VESSEL.

S.S. "EL-HAK"

Makers of Engines Atlas Diesel Co.
Stockholm, Sweden.

Works No.

Makers of Main Boilers None.

Works No.

Makers of Donkey Boiler None.

Works No.

MACHINERY.



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011671 - 011677 - 0224

No.

THE BRITISH CORPORATION FOR THE SURVEY

AND

REGISTRY OF SHIPPING.

Report No. No. in Register Book

Received at Head Office

14th May 1930

Surveyor's Report on the New Engines, Boilers, and Auxiliary Machinery of the ~~Single Triple~~ ~~Chain Quadruple~~ Screw M/V. "EL HAK".

THE HALAL SHIPPING CO.

Official No.

Port of Registry

LONDON.

Registered Owners

The Halal Shipping Co. London.

Engines Built by

Atlas Diesel Works.

at

Stockholm, Sweden.

Main Boilers Built by

none

" at

✓

Donkey " "

none

at

Date of Completion

15th November 1929.

First Visit

19th April 1929

Last Visit

15th Nov 1929.

Total Visits

50.

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RECIPROCATING ENGINES.

Works No.

No. of Sets

Description

Atlas Diesel - Single acting, 2 cycle, Direct, reversing.

No. of Cylinders each Engine

6.

No. of Cranks

6.

Diars. of Cylinders

420 mm

Stroke

720 mm

Cubic feet in each L.P. Cylinder

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

" " each Receiver?

Type of H.P. Valves,

1st L.P. "

2nd L.P.,

L.P. "

" Valve Gear

" Condenser

Cooling Surface

sq. ft.

Diameter of Piston Rods (plain part)

Screwed part (bottom of thread)

Material "

Diar. of Connecting Rods (smallest part)

Material

" Crosshead Gudgeons

Length of Bearing

Material

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

56

Diar.

1 5/8"

No. of Metal Chocks

y/s.

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 L.P. Receiver,

lbs., 2nd L.P.,

lbs., L.P.,

lbs., Vacuum,

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.

Revolvs per min.

Estimated Speed

Brought Hd. 6'-7 1/2"
Aft 11'-0"

mean 8'-9 3/4"



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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.

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

" " 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

TURBO-ELECTRIC MACHINERY. DESCRIPTION OF INSTALLATION.

No. of Turbo-generating 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

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

Estimated Pressure per lineal inch

Diam. of 2nd Reduction Pinion } 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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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?

$8\frac{5}{16}$ " $8\frac{3}{4}$ " One
 $13\frac{1}{4}$ "
 6 $2\frac{5}{16}$ "
 $9\frac{3}{8}$ " 10 " $9\frac{1}{8}$ "
 $11\frac{1}{2}$ " & $11\frac{5}{8}$ " $3'-4"$
 Lignum Vitae
 B.R. Vicker Vita packing.
 at aft end of tube.

SKETCH OF CRANK SHAFT.

Material of Shafts
 Diameter of Propeller
 Diameter of Crank Pins
 Length of Crank Pins
 Thickness of Crank Webs
 Length of Crank Webs
 Diameter of Keys in Crank Webs
 Diameter of Dowels in Crank Pins
 No. of Bolts each Coupling
 Diameter at Mid Length
 Diameter of Pitch Circle
 Greatest Distance from Edge of Main Bearing to Crank Web
 Type of Thrust Blocks
 No. of Rings
 Diameter of Thrust Shafts at bottom of Collars
 No. of Collars
 Diameter of Intermediate Shafting by Rule
 Actual
 No. of Lengths
 No. of Bolts, each Coupling
 Diameter at Mid Length
 Diameter of Pitch Circle
 Diameter of Propeller Shafts by Rule
 Actual
 At Couplings
 Are Propeller Shafts fitted with Continuous Brass Liners?
 Diameter 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?



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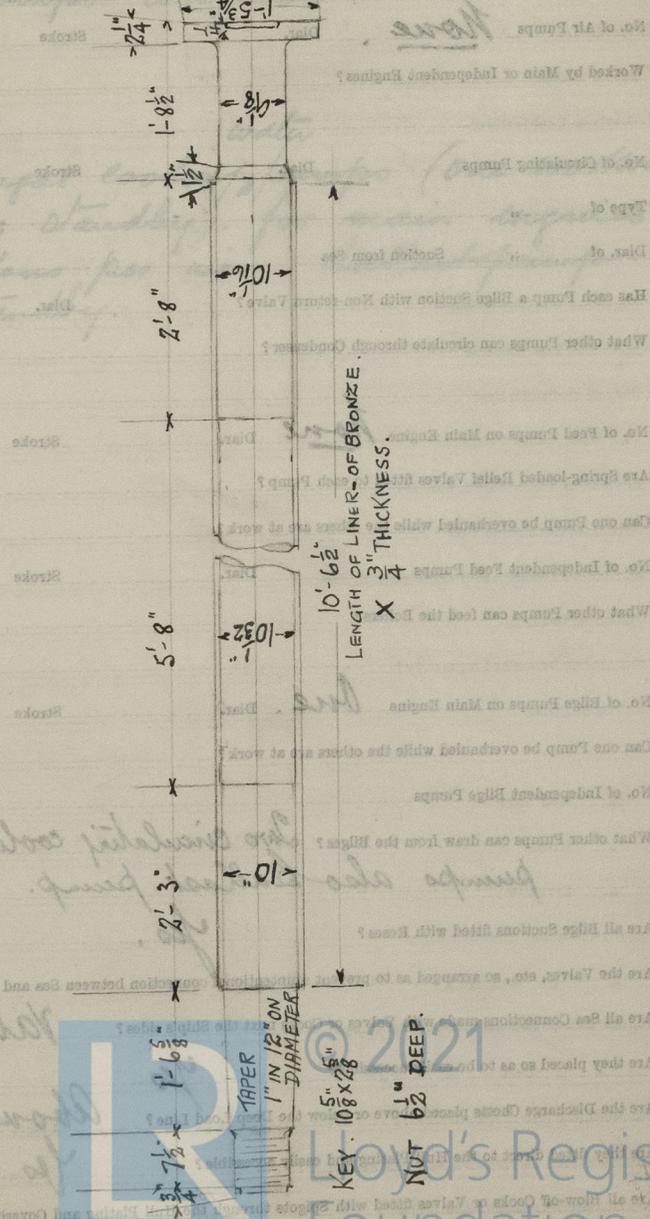
No. of Blades each Propeller *4* Fitted or Solid? *Solid.*
 Material of Blades *Manganese Bronze.* Boss *Manganese Bronze.*
 Diam. of Propellers *9'-9"* Pitch *8'-3"* Surface (each) *33 sq. S. ft.*
 Coefficient of Displacement of Vessel at $\frac{3}{4}$ Moulded Depth

Crank Shafts Forged by	Material
„ Pins „	„
„ Webs „	„
Thrust Shafts „	„
Intermed. „ „	„
Propeller „ „	<i>John Spencer Son Newbourn. „ Steel (Ingot).</i>
Crank „ Finished by	
Thrust „ „	<i>Embodied in Main Engine design.</i>
Intermed. „ „	<i>Hawthorn Leslie.</i>
Propeller „ „	<i>Hawthorn Leslie. St Peter's.</i>

STAMP MARKS ON SHAFTS.

1. Working propeller shaft. *BC 9324 J.L. 22.5.29*
 1. Spare propeller shaft. *BC 9324 J.L. 22.5.29.*
also J.L. 30.7.29 Final Exam.
1. Intermediate shaft *No 39515.B.*
BC. 28.5.29
J.L. 29.8.29.

SKETCH OF PROPELLER SHAFT. INHOT STEEL.



PUMPS, ETC.

No. of Air Pumps None Diar. Stroke

Worked by Main or Independent Engines?

No. of Circulating Pumps Diar. Stroke

Type of " "

Diar. of " Suction from Sea

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

What other Pumps can circulate through Condenser?

No. of Feed Pumps on Main Engine None 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 Diar. Stroke

What other Pumps can feed the Boilers?

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

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

No. of Independent Bilge Pumps

What other Pumps can draw from the Bilges? Two circulating cooling water pumps also 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? Valves.

Are they placed so as to be easily accessible? Yes

Are the Discharge Chests placed above or below the Deep Load Line? Above L. W. Line

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? None.

Pumps continued:—

2 centrifugal cooling ^{water} pumps (one working and one standby) for main engines 260 gallons per min. Ballast pump also standby.



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BOILERS NONE

Works No.

No. of Boilers Type

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

Pressure at which Valves were set

Date of Accumulation Test

Maximum Pressure under Accumulation Test

System of Draught

Can Boilers be worked separately?

Makers of Plates

" Stay Bars

" Rivets

" Furnaces

Greatest Internal Diam. of Boilers

" " Length "

Square Feet of Heating Surface each Boiler

" " Grate " "

No. of Safety Valves each Boiler

Rule Diam.

Actual

Are the Safety Valves fitted with Easing Gear?

No. of Pressure Gauges, each Boiler

No. of Water Gauges

" Test Cocks

" Salinometer Cocks

Are the Water Gauges fitted direct to the Boiler Shell or mounted on Headers?

Are the Water Gauge Valves fitted direct to the Boiler Shell 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 Sticks of Steel Lifting in each Boiler

" " " "

Thickness of Shell Plates Approved

" " " "

Are the Rivets Iron or Steel?

Are the Longitudinal Seams Hand or Machine Riveted?

Are the Butt Seams Single or Double?

Are the Double Butt Seams of equal width?

Thickness of outside Butt Seams

" " " "

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 Girths Circumferential Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes

No. of Rows of Rivets in Trans. Longitudinal Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes

No. of Rows of Rivets in Long. Longitudinal Seams

Are these Seams Hand or Machine Riveted?

Diam. of Rivet Holes

Diam. of Rivet Holes

Diam. of Rivet Holes



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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



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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 Tops Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Tops

Threads per Inch

Diar. " Approved

" " " in Boilers

Material "

Thickness of Combustion Chamber Backs Approved

" " " in Boilers

Pitch of Screwed Stays in C.O. Backs

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 Grids over each Wing Chamber

" " " Centre

Depth and Thickness of Grids

Material of Grids

No. of Stays in each

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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

Greatest Int. Diam. Height

Height of Boiler Crown above Fire Grate

Are Boiler Crowns Flat or Dished?

Internal Radius of Dished Boilers Thickness of Plates

Description of Beams in Boiler Crowns

Dist. of Rivet Holes Pitch Width of Overlap

Height of Firebox Crown above Fire Grate

Are Firebox Crowns Flat or Dished?

Internal Radius of Dished Crowns Thickness of Plates

No. of Crown Stays Diam. Material

External Diam. of Tubes at Top Bottom Thickness of Plates

No. of Water Tubes Ext. Diam. 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 Diam.



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Pressure on Valves

Date when Safety Valves set

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

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

No. of Lengths

Material

Brazed, Welded or Seamless

Internal Diar.

Thickness

How are Flanges secured?

Date of Hydraulic Test

Test Pressure

LIST OF EVAPORATORS.

No.	Type	Material	Working Pressure	Date of Test	Test Pressure
1	Horizontal	Steel	150 lbs		
2	Vertical	Steel	150 lbs		
3	Horizontal	Steel	150 lbs		
4	Vertical	Steel	150 lbs		
5	Horizontal	Steel	150 lbs		
6	Vertical	Steel	150 lbs		
7	Horizontal	Steel	150 lbs		
8	Vertical	Steel	150 lbs		
9	Horizontal	Steel	150 lbs		
10	Vertical	Steel	150 lbs		
11	Horizontal	Steel	150 lbs		
12	Vertical	Steel	150 lbs		
13	Horizontal	Steel	150 lbs		
14	Vertical	Steel	150 lbs		
15	Horizontal	Steel	150 lbs		
16	Vertical	Steel	150 lbs		
17	Horizontal	Steel	150 lbs		
18	Vertical	Steel	150 lbs		
19	Horizontal	Steel	150 lbs		
20	Vertical	Steel	150 lbs		
21	Horizontal	Steel	150 lbs		
22	Vertical	Steel	150 lbs		
23	Horizontal	Steel	150 lbs		
24	Vertical	Steel	150 lbs		
25	Horizontal	Steel	150 lbs		
26	Vertical	Steel	150 lbs		
27	Horizontal	Steel	150 lbs		
28	Vertical	Steel	150 lbs		
29	Horizontal	Steel	150 lbs		
30	Vertical	Steel	150 lbs		
31	Horizontal	Steel	150 lbs		
32	Vertical	Steel	150 lbs		
33	Horizontal	Steel	150 lbs		
34	Vertical	Steel	150 lbs		
35	Horizontal	Steel	150 lbs		
36	Vertical	Steel	150 lbs		
37	Horizontal	Steel	150 lbs		
38	Vertical	Steel	150 lbs		
39	Horizontal	Steel	150 lbs		
40	Vertical	Steel	150 lbs		
41	Horizontal	Steel	150 lbs		
42	Vertical	Steel	150 lbs		
43	Horizontal	Steel	150 lbs		
44	Vertical	Steel	150 lbs		
45	Horizontal	Steel	150 lbs		
46	Vertical	Steel	150 lbs		
47	Horizontal	Steel	150 lbs		
48	Vertical	Steel	150 lbs		
49	Horizontal	Steel	150 lbs		
50	Vertical	Steel	150 lbs		



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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		
Working Pressure	Test Pressure	Date of Test

FEED WATER FILTERS.

No.	Type	Size
Makers		
Working Pressure	Test Pressure	Date of Test

AUXILIARIES AND
LIST OF DONKEY PUMPS.

- Hayward Tyler Ballast pump $7\frac{1}{2} \times 7$
- " " Oil Fuel Transfer pump $3\frac{1}{2} \times 5$
- Cooling Water & Lubricating oil pumps sets
(Atlas Diesel) Cooling 260 galls per min, Oil 45 galls per min
- Weir Air Compressor 130 Cub feet per min.
- Atlas Diesel Aux Generator sets 45 KW. 300 RPM.
- Emergency generator set:—
Compensing.
Gardner oil Engine 24 BHP. @ 450 RPM.
Generator 15 KW.
Reavell air compressor about 15 cubic feet.
and 2 general service pumps. 3×4

- Fuel oil purifier (Titan) 200 galls. per min.,
- Lubricating oil purifier (Titan) 200 galls. per min.,



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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.

COMPARTMENT.	Temp. at beginning of Trial.	Temp. at end of Trial.	Time required to obtain this Result.	Rise of Temp. after hours.
MAIN DECK	28.10	28.00	1.00	0.10
SECOND DECK	28.00	27.90	1.00	0.10
THIRD DECK	28.00	27.90	1.00	0.10
FOURTH DECK	28.00	27.90	1.00	0.10
FIFTH DECK	28.00	27.90	1.00	0.10
SIXTH DECK	28.00	27.90	1.00	0.10
SEVENTH DECK	28.00	27.90	1.00	0.10
EIGHTH DECK	28.00	27.90	1.00	0.10
NINTH DECK	28.00	27.90	1.00	0.10
TENTH DECK	28.00	27.90	1.00	0.10
ELEVENTH DECK	28.00	27.90	1.00	0.10
TWELFTH DECK	28.00	27.90	1.00	0.10
THIRTEENTH DECK	28.00	27.90	1.00	0.10
FOURTEENTH DECK	28.00	27.90	1.00	0.10
FIFTEENTH DECK	28.00	27.90	1.00	0.10
SIXTEENTH DECK	28.00	27.90	1.00	0.10
SEVENTEENTH DECK	28.00	27.90	1.00	0.10
EIGHTEENTH DECK	28.00	27.90	1.00	0.10
NINETEENTH DECK	28.00	27.90	1.00	0.10
TWENTIETH DECK	28.00	27.90	1.00	0.10

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



Line or Type of Motor	Time required to start this motor	Temp. at base of shaft	Temp. of insulating material to	COMPARISON
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Continued from page 35.

MAIN BOARD.	Current.	Size of cond.	Density	Conductivity.	Resistance per mile.
15. Spare.				100%	600 MEGS.
16. Workshop.	3 BHP	$\frac{7}{079}$.0045	2810.	"	"
17. Turning - - motor.	5 BHP.	$\frac{7}{064}$.0221	970	"	"

AUXILIARY Board.

1. Wireless.	9.00	$\frac{7}{029}$.0045	2000.	"	"
2. Tween deck.	1.50	$\frac{7}{029}$.0045	322.	"	"
3. Navigation.	.73	$\frac{7}{029}$.0045	205.	"	"
4. Off. Accom.	8.30	$\frac{7}{024}$.0100	830.	"	"
5. Eng lights.	4.80	$\frac{7}{024}$.0100	480.	"	"
6. Midships.	9.00	$\frac{7}{052}$.0145	620.	"	"
7. Steering ①	24.00	$\frac{7}{052}$.0145	1650.	"	"
8. Steering ②	24.00	$\frac{7}{052}$.0145	1650.	"	"

ELECTRIC LIGHTING.

Installation Fitted by *R & W Hawthorn, Leslie & Co Ltd Hebburn.*

No. and Description of Dynamos *2. 45 KW. and 1. 15 KW. compound wound*

Makers of Dynamos *Sunderland Forge & Eng Coy.*

Capacity *① 15 KW. 68 Amperes, at 220 Volts, 300. Revols. per Min.*
② 45 KW. 204

Current Alternating or Continuous *Continuous*

Single or Double Wire System *Double wire.*

Position of Dynamos *In engine room on lower platform.*

" Main Switch Board *near dynamos.*

No. of Circuits to which Switches are provided on Main Switch Board *16 on main.
6 on auxiliary.
2 for steering gear.*

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.
MAIN BOARD.							
1. Aux ^y Compressor.	65 BHP		223	61/093	557	100%	600 MEGS
2. No 1 Crane.	1-15 3		77	19/064	642	✓	✓
3. No 2 Crane.	1-15 3		77	19/064	642	✓	✓
4. No 3 Crane.	1-15 3		77	19/064	642	✓	✓
5. No 4 Crane.	1-15 3		77	19/064	642	✓	✓
6. Windlass.	30		114	19/083	1140	✓	✓
7. Capstan	25		95	19/072	1270	✓	✓
8. No 1 Cooling.	20		77	19/064	642	✓	✓
9. No 2 Cooling.	20		77	19/064	642	✓	✓
10. P. heater (oil)	12 KW.		54	19/052	1350	✓	✓
11. S. ditto.	12 KW.		54	19/052	1350	✓	✓
12. Winch	20 OBHP		77	19/064	690	✓	✓
13. lighting Connection to Auxiliary Board				19/064	1350	✓	✓
14. Ballast pump	14		58	19/052	1450	✓	✓

continued on page 34.

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

See previous page also.

1 - 6 way Section Box (1 spare way) feeding workshop motor, fuel transfer pump (control from deck), fuel oil purifier motor, lubricator oil purifier and Refrigerator motor.

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. no Singles 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

Tubing.

Tubing.

Lead bushes & W.T. Glands.

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

is unimpaired? No jointsAre 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? NoneAre 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? .5 megohms. Ohms.Is the Installation supplied with a Voltmeter? Yes" " " an Ampere Meter Yes.Date of Trial of complete Installation 11th November 1929 Duration of Trial Six hours.Have all the requirements of Section 42 been satisfactorily carried out? Yes.

John Henderson



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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. "EL. HAK".

as ascertained by ^{US} from personal examination

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

Fees—

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

It is submitted that this Report be approved,

Chief Surveyor.

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

Fees advised

Fees paid



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Lloyd's Register
 Foundation
 Secretary.

GENERAL CONSTRUCTION

It is requested that this Report be approved.

Approved for the Committee for the Class of M.B.S. of 1921

Approved

It is requested that this Report be approved.

Approved for the Committee for the Class of M.B.S. of 1921

Approved

Approved for the Committee for the Class of M.B.S. of 1921

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