

Rpt. 17.

REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

Date of writing Report 21 JUN 1937

When handed in at Local Office

(Received at London Office)

No. in

Reg. Book. Survey held at London.

Date: First Survey 6 November 36

Last Survey 12 June 1937

(No. of Visits) EEEVEN

on the Refrigerating Machinery and Appliances of the S.S. FALCON

Tons { Gross 1025
Net 433

Vessel built at Iron.

By whom built Chas S. B. Cold

Yard No.

When built 1927-11

Owners General Steam Navigation Co Port belonging to London

Voyage

Refrigerating Machinery made by J. S. Hall Ltd.

Machine No. 4399

When made 1928

Insulation fitted by Messrs Bell & Binnie Ltd.

When fitted May/June 1937

System of Refrigeration CO₂ + Brine

Method of cooling Cargo Chambers Brine grids

Insulating Material used

Number of Cargo Chambers insulated one

Total refrigerated cargo capacity 14,000 cubic feet.

DESCRIPTION OF REFRIGERATING MACHINERY.

Where placed Main E.R. Starboard side

Refrigerating Units, No. of one No. of Machs one

Cubic feet of air delivered per hour

Total refrigeration or ice-melting capacity in tons per 24 hours 6 1/2

Are all the units connected to all the refrigerated chambers yes

Compressors, driven direct or through single or double reduction gearing

Compressors, single or double acting double acting No. of cylinders one

Diameter of cylinders 2 13/16"

Diameter of piston rod 1 1/4"

Length of stroke 8"

No. of strokes per minute 300

Motive Power supplied from

Steam engine thro' two throw crankshaft

Steam Engines, high pressure, compound, or triple expansion, surface condensing

No. of cylinders one

Diameter 10"

Length of stroke 8"

Working pressure

Diameter of crank shaft journals and pins 4 1/2"

Breadth and thickness of crank webs 6 1/2 x 2 1/8"

No. of sections in crank shaft one

Revolutions of CO₂ mach per minute 150

Oil Engines, type

2 or 4 stroke cycle

Single or double acting

B.H.P.

No. of cylinders

Diameter

Length of stroke

Span of bearings as per Rule

Maximum pressure in cylinders

Diameter of crank shaft journals and pins

Breadth and thickness of crank webs

No. of sections in crank shaft

Revolutions of engine per minute

Electric Motors, type

No. of

Rated

Kilowatts

Volts at

revolutions per minute

Diameter of motor shafts at bearings

Reduction Gearing, maximum shaft horse power at 1st pinion

Revolutions per minute at full power at 1st pinion

2nd pinion

1st reduction wheel

main shaft

Pitch circle diameter, 1st pinion

2nd pinion

1st reduction wheel

Main wheel

Width of face, 1st reduction wheel

Main wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings, 1st pinion

2nd pinion

1st reduction wheel

Main wheel

Flexible pinion shafts, diameter 1st

2nd

Pinion shafts, diameter at bearings, External, 1st

2nd

Internal, 1st

2nd

Diameter at bottom of teeth of pinion, 1st

2nd

Wheel shafts, diameter at bearings, 1st

Main

Diameter at wheel shroud, 1st

Main

Gas Condensers, No. of one

Cast iron or steel casings cast iron

Cylindrical or rectangular rectangular

No. of coils in each 3

Material of coils S.D. copper 3/4" x 1" o.d.

Can each coil be readily shut off or disconnected yes

Water Circulating Pumps, No. and size of one 6" x 4 1/2" stroke S.A.

how worked

off crankshaft Gas Separators, No. of 2

Gas Evaporators, No. of one

Cast iron or steel casings cast iron

Pressure or gravity type gravity

No. of coils in each casing 2

Material of coils S.D. Steel 1 1/2" x 1 5/8" o.d.

Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of

✓

Are there two separate systems, so that one may be in use while the other is being

cleared of snow

✓

No. of coils in each battery

✓

Material of coils

✓

Can each coil be readily shut off or

disconnected

Total cooling surface of battery coils

✓

Is a watertight tray fitted under each battery

✓

Air Circulating Fans, Total No. of

✓

each of

✓

cubic feet capacity, at

✓

revolutions per minute

✓

Steam or electrically driven

✓

Where spare fans are supplied are these fitted in position ready for coupling up

✓

Brine Circulating Pumps, No. and size of, including the additional pump 2 - 4 1/2" x 5" x 6" V.D.

how worked

Steam direct

Brine Cooling System, closed or open

open

Are the pipes and tanks galvanised on the inside

no

No. of brine sections in each chamber

5

Can each section be readily shut off or disconnected

yes

Are the control valves situated in an easily accessible position

yes

Common
Are thermometers fitted to the outflow and to each return brine pipe yes Where the tanks are closed are they ventilated as per Rule
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated
Steam Condensing Plant. State what provision is made for condensing steam, in terms of Section 4, Clauses 13 and 14

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
ENGINE CYLINDERS (IF TESTED)	10-11-36		350lb/sq			
GAS COMPRESSORS	11-11-36	1000lb/sq	3000lb/sq	1500lb/sq	St.	
SEPARATORS	10-11-36	do.	do.	do.	St.	
CONDENSER COILS	6-11-36	do.	do.	do.	St.	
EVAPORATOR COILS		do.	do.	do.	St.	
CONDENSER HEADERS AND CONNECTIONS	11-11-36	do.	do.	do.	St.	
CONDENSER CASINGS	6-11-36	5 to 10 lb/sq	20 lb/sq		St.	
EVAPORATOR CASINGS		open top.				
NH ₃ CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE	9-6-37	15 lb/sq approx.	50 lb/sq	✓	✓	all tight + satisfactory.

Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory Yes.

Dates of test 10th, 11th, 12th Density of Brine 54 by Twaddell hydrometer

Temperatures (when the cargo chambers are cooled down to the required test temperatures) of air at the snow box and of the return air ✓ & ✓
or, delivery and return air at direct expansion or brine cooled batteries ✓ & ✓, outflow and return brine -11° & -9°
atmosphere 68° cooling water inlet and discharge 71° & 77° gas in condensers 88° and evaporators -14°
the average temperature of the refrigerated chambers 7.3° and the rise of temperature in these chambers upon the expiration of 12 hours
time after the machinery and cooling appliances have been shut off 22°

SPARE GEAR.

Are the machines in accordance with Section 4, Clause 2 of the Rules

Are the working parts of the machines, pumps and motors respectively, interchangeable

ARTICLES SUPPLIED AS PER RULE.

ADDITIONAL SPARE GEAR SUPPLIED.

1 piston & rod for compressor with rings
1 set steam piston rings for engine
2 bolts & nuts for main bearings
2 do. do. connecting rod big end
2 do. do. engine crosshead
2 do. do. compressor do.
1 set piston rings for brine pump
1 additional brine pump in engine room
6 lubricator piston leathers
6 do. glands do.
1 set valves for water pump
1 set valves for brine pump
1 set 2 leather moulds
3 lengths each $1\frac{1}{2}$ & $1\frac{1}{2}$ r.r. piping
3 bends each do. do.
12 sockets & backnuts each size
1 set hatchet screwing dies for $1\frac{1}{4}$ & $1\frac{1}{2}$ pipe
2 sets copper joint rings for comp. joints
1 set do. do. for other joints
2 sets special metal rings for comp. gland.

1 set of 4 valves & springs for comp.
8 add. springs for compressor
1 spare spring each type fitted
1 set springs for brine pump valve
1 pump for lubricator
1 hydrometer
2 brass cased thermometer
6 safety diodes
1 $\frac{1}{8}$ CO₂ valve complete
1 CO₂ gauge
3 spare pipes for CO₂ valve
1 fitted box for comp. parts.

ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

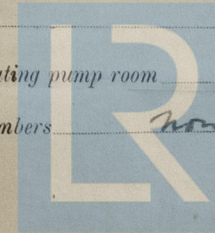
J. & E. HALL, LTD

Manufacturer.

Cliveholton
DIRECTOR

DESCRIPTION OF INSULATION.

AFTER IN HOLD						IN 'TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of disto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of disto.	Inner Lining.
FRAME No. (Fore Peak)	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No. 32 (Boiler Room)	F	none	$3\frac{1}{2}$ " T+G + steel plate	cork	10"	none				
FRAME No. 24 (Engine Room)	A	none	$3\frac{1}{2}$ " T+G	cork	3 $\frac{1}{2}$ "	none				
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No.	A									
FRAME No.	F									
FRAME No. 6 (After Peak)	F	none	$3\frac{1}{2}$ " T+G	cork	7"	none				
SIDES		none	ditto.	ditto	ditto					
OVERHEADING		ditto	ditto.	ditto.	8"	ditto.				
FLOORS OF CHAMBERS		ditto.	$3\frac{1}{2}$ " T+G	cork	$10\frac{1}{2}$ " in ER) with steel plate					
TRUNK HATCHWAYS		none								
THRUST RECESS, SIDES AND TOP		in E.R.								
TUNNEL SIDES AND TOP		Tunnel top is floor of chamber								
TUNNEL RECESS, FRONT AND TOP		none								
FRAMES OR REVERSE FRAMES, FACE		$2\frac{1}{2}$ " minimum of cork covered with $1\frac{1}{4}$ " T+G boards								
BULKHEAD STIFFENERS, TOP		in ER. $5\frac{1}{2}$ " cork + $1\frac{1}{4}$ " T+G								
BULKHEAD STIFFENERS, BOTTOM		as for top.								
RIBBAND ON TOP OF DECK										
SIDE STRINGERS, TOP		$4\frac{1}{2}$ " cork + $1\frac{1}{4}$ " T+G								
SIDE STRINGERS, BOTTOM										
WEB FRAMES, SIDES		$2\frac{1}{2}$ " cork + $1\frac{1}{4}$ " T+G								
BRACKETS, TOP		insured in ship's side insulation								
BRACKETS, BOTTOM										
INSULATED HATCHES, MAIN		$4\frac{1}{2}$ " p.p. $6\frac{1}{2}$ " cork								
INSULATED HATCHES, BILGE										
HATCHWAY COAMINGS, MAIN		$1\frac{1}{2}$ " p.p. sheathed $\frac{1}{8}$ " steel								
HATCHWAY COAMINGS, BILGE										
HOLD PILLARS										
MASTS		none								
VENTILATORS										
Are insulated plugs fitted to provide easy access to bilge suction roses		none								
Are insulated plugs fitted to ventilators		Yes.								
Are insulated plugs fitted to cargo ports		Yes.								
Are insulated plugs fitted to side lights		none								
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected		Yes								
Oil Storage Tanks, where adjacent to the insulated chambers, state what provision has been made for ventilating the air space between the insulation and the bulkhead plating		none								
Coal Bunker Bulkheads, and Brine Outflow and Return Pipes passing through coal bunkers. Is the insulation, so far as practicable, fireproof		none								
Where Cooling Pipes pass through watertight bulkheads or deck plating, are the fittings and packing of the stuffing boxes both watertight and fireproof		yes								
Cargo Battens, Dimensions and spacing, sides		$2\frac{1}{2}$ " p.p. 12" apart								
Cargo Battens, floors		$2\frac{1}{2}$ " x 2" portable								
fixed or portable		fixed								
Are screens fitted over the brine grids at chamber sides		yes								
hinged or permanently fixed		portable								
Thermometer Tubes, No. and position in each chamber		3.								
1st mid chamber port side										
1st mid chamber aft.										
diameter		2" internal diameter.								
are they fitted in accordance with Section 3, Clause 8		yes.								
Protection of Pipes. Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated		yes.								
Draining Arrangements. Where the chambers are situated below the load water line, what provision is made for draining the inside of the chambers										
Liquid sealed N.R. valves. Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off		secured plugs fitted								
What provision is made for draining the refrigerating machinery room		in E.R.								
brine return room		in E.R.								
fan room		none								
water circulating pump room		in E.R.								
Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers		none								



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Sounding Pipes, No. and position in each chamber situated below the load water line *chamber not below water line*
Diameter ☒ Are all sounding pipes in way of insulated chambers fitted in accordance with Section 3, Clause 11 ☒
Are all wood linings tongued and grooved *yes.* Are cement facings reinforced with expanded steel lattice *none*
How is the expanded metal secured in place ☒
How are the cork slabs secured to the steel structure of the vessel *5" cork slab set in pitch & covered asphalt*
Air Trunkways in Chambers, inside dimensions, main *none* and branch *none*
Are they permanently fixed or collapsible, or portable ☒ State position in chambers ☒
Where air trunkways pass through watertight bulkheads, are they fitted with watertight doors ☒ Are the door frames efficiently insulated ☒
Are insulated plugs supplied for the doorways ☒ Where are the doors worked from ☒
Cooling Pipes in Chambers, diameter *1 1/2" 1/2* Are they galvanised externally *no*
How are they arranged in the chambers *5 circuits*
Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers *none*

The foregoing is a correct description of the Insulation and Appliances.

Bell & Burnie Ltd per R.P. McGeorge Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation *yes*
(If not, state date of approval)
Is the Refrigerating Machinery and Appliances duplicate of a previous case *no*. If so, state name of vessel ☒
If the survey is not complete, state what arrangements have been made for its completion and what remains to be done ☒

General Remarks (State quality of workmanship, opinions as to class, &c.) *The refrigerating machinery was removed from the S.S. Gelyon Bul Bul and has been completely overhauled examined and the parts tested at the Makers Works, and it will be eligible for the notation Lloyds R.M.C. (with date) when the installation and testing have been satisfactorily completed.*
See Secretary's letter to Owners dated 29th October 1936.

The insulation of this vessel has been examined during construction, material and workmanship found sound, satisfactory and according to approved plans; in my opinion the installation is eligible to have record of LLOYDS R.M.C. 6.27.
In view of the somewhat rapid rise in temperature after the cooling down test it was considered prudent to drill test the insulation for fullness. This was done with satisfactory results. *J.H. Mutton*

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	POWER.		INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.		Cubic feet of air delivered per hour.	Ice melting capacity per 24 hours. Tons.	No.	Capacity. Cubic ft.
1	1	Cableway	J. E. Hall Ltd	1936	Borris		6 1/2	1	14,000

Fee £ 6 : - : - { Fee applied for, **21 JUN 1937**
Travelling Expenses £ : : { Received by me, *9. 19. 37*

Committee's Minute **FRI 25 JUN 1937**

Assigned

Lloyds Rmc 6.27

D. Gemmell.
Surveyor to Lloyd's Register.

CERTIFICATE WRITTEN
24.6.37



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