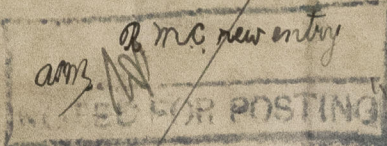


Rpt. 17.



ISIPINGO

R.M.C. No.

49106

No. 11.214

## REPORT ON REFRIGERATING MACHINERY AND APPLIANCES.

(Received at London Office 27 OCT 1933 24 JAN 1934)

Date of writing Report 27 OCT 1933 When handed in at Local Office 27 OCT 1933 Port of London  
 No. in Reg. Book. 28071 Survey held at Belfast Date: First Survey 10 May 1933 Last Survey 16 June 1933  
 (No. of visits +11)

on the Refrigerating Machinery and Appliances of the T.S.M.V. "ISIPINGO" Tons {Gross 4069 Net 4069

Vessel built at Belfast By whom built Hockman Clark Yard No. 530 When built 1933

Owners Andrew Weir & Co. Port belonging to Belfast Voyage

Refrigerating Machinery made by J. E. Hall Ltd. Machine No. 884 When made 1933

Insulation fitted by Glasgow Ice Co. Ltd. When fitted January 1934 System of Refrigeration CO<sub>2</sub> + Brine

Method of cooling Cargo Chambers Air Cooled Insulating Material used 5 lb. + granulated cork.

Number of Cargo Chambers insulated 2 Total refrigerated cargo capacity 19,500 cubic feet.

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed Main deck, port.

Refrigerating Units, No. of one Single, double, or triple Cubic feet of air delivered per hour

Total refrigeration or ice-melting capacity in tons per 24 hours 4 1/2 tons Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct or through <sup>single</sup> ~~double~~ reduction gearing. Compressors, single or double acting single No. of cylinders two

Diameter of cylinders 2 1/8" Diameter of piston rod 1" Length of stroke 6" No. of strokes per minute 400 each.

Motive Power supplied from Electric Motor direct coupled.

Steam Engines, high pressure, compound, or triple expansion, surface condensing. No. of cylinders Diameter

Length of stroke 60" Working pressure 2 1/2" Diameter of crank shaft journals and pins 3" journals, 3 1/2" pins

Breadth and thickness of crank webs 7" x 1 3/4" No. of sections in crank shaft one Revolutions of engines per minute 1400

Oil Engines, type 8" RAD 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 Enclosed ventilated No. of one Rated 25 1/2 H.P. Kilowatts

Volts at 220 at 400/265 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 cylindrical

No. of coils in each 4 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 1 - 1 1/2" centrifugal how worked electrically Gas Separators, No. of 2

Gas Evaporators, No. of one Cast iron or steel casings Steel Pressure or gravity type gravity

No. of coils in each casing two Material of coils S.D. Steel 1 1/8" x 1 1/2" o.d. Can each coil be readily shut off or disconnected yes

Direct Expansion or Brine Cooled Batteries, No. of one Are there two separate systems, so that one may be in use while the other is being

cleared of snow no No. of coils in each battery 4 Material of coils S.D. Steel 1 1/2" o.d. Can each coil be readily shut off or

disconnected yes Total cooling surface of battery coils 920 sq. ft. Is a watertight tray fitted under each battery yes

Air Circulating Fans, Total No. of one - 25" each of 13,000 cubic feet capacity, at 670 revolutions per minute

Steam or electrically driven electrically Where spare fans are supplied are these fitted in position ready for coupling up no

Brine Circulating Pumps, No. and size of, including the additional pump 2 - 2" centrifugal how worked Elec. direct coupled.

Brine Cooling System, closed or open open Are the pipes and tanks galvanised on the inside no

No. of brine sections in each chamber Air Cooled.

Can each section be readily shut off or disconnected yes Are the control valves situated in an easily accessible position yes

NOTE - THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED

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Are thermometers fitted to the outflow and to each return brine pipe yes Where the tanks are closed are they ventilated as per Rule yes  
Where the tanks are not closed is the compartment in which they are situated efficiently ventilated yes  
**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)						
GAS COMPRESSORS	6-6-33	1000 lbs	3000 lbs	1500 lbs		
SEPARATORS	7-6-33	do.	do.	do.		
CONDENSER COILS	10-5-33 15-5-33	do.	do.	do.		
EVAPORATOR COILS	31-5-33 2-6-33	do.	do.	do.		
CONDENSER HEADERS AND CONNECTIONS	7-6-33	do.	do.	do.		
CONDENSER CASINGS	16-6-33	15 lbs	30 lbs	-		
EVAPORATOR CASINGS	(open top)					
NH <sub>3</sub> CONDENSER, EVAPORATOR AND AIR COOLER COILS AFTER ERECTION IN PLACE						
BRINE PIPING AFTER ERECTION IN PLACE						

**Cooling Test.** Has the refrigerating machinery been examined under full working conditions, and found satisfactory yes  
Dates of test 17 & 18 January 1934 Density of Brine 48 by Turdell's hydrometer  
**Temperatures** (which the cargo chambers are cooled down to the required test temperatures) of air at the snow box and of the return air &  
of delivery and return air at direct expansion or brine cooled batteries 10°F & 16°F, outflow and return brine 0°F & 3°F  
atmosphere 48°F cooling water inlet and discharge 44°F & 48°F gas in condensers 72°F and evaporators -10°F  
the average temperature of the refrigerated chambers 14.75°F and the rise of temperature in these chambers upon the expiration of 72 hours  
time after the machinery and cooling appliances have been shut off 9.25°F

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 Crankshaft. 1 piston + rod for each compressor. 1 set rings for each compressor piston. 1 Spindell + impeller for brine pump. 1 do. do. water pump. 1 Spare brine pump in engine room. 2 bolts + nuts for conn. rod big end. 2 do. do. crosshead. 2 do. do. main bearings 1 set of 2 leather moulds. 1 pair main bearings 1 pair crosshead brasses. 1 pair conn. rod bearings 1 set of 2 valves, seats + springs for compr. 6 lubricator piston leathers. 2 sets copper joint rings for compr. joints 1 set do. do. do. other joints Assorted lengths brine piping + fittings. 1 set dies for screwing above. 2 sets special metal rings for each compr. gland. 2 pair CO <sub>2</sub> pipe flanges. Assorted bolts + nuts, sundry brine cocks. 1 regulator valve spindle.	12 addl. springs for compr. valves. 2 springs for water relief valve. 2 do. CO <sub>2</sub> relief valve. 1 oil pump for press. lubricator 1 CO <sub>2</sub> gauge - 1 hydrometer 2 brass cased thermometers 12 safety discs. 1 - 1/8" CO <sub>2</sub> gauge valve, 3 spare pipe 1 fitted box for compr. parts. 3 bolts + 3 sets of washers for flexible coupling on machine.

ELECTRICAL SPARES.

1 Armature 1 set of field coils 1 set of interpole coils 1 set of bearings 1 line of brush holders 1 set of carbon brushes 1 set of control spares.	Machine Motor + Each size Pump Motor	1 complete spare motor 1 line brush holders } Fan 1 set carbon brushes } Motor. 1 set control spares }
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ARTICLES REQUIRED BY RULES AND NOT YET SUPPLIED

The foregoing is a correct description of the Refrigerating Machinery.

J. & E. HALL, LTD.

Chichesters  
DIRECTOR

Manufacturer.

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## DESCRIPTION OF INSULATION.

IN LOWER HOLD CHAMBERS.						IN 'TWEEN DECK CHAMBERS.				
	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.	Air Space.	Outer Lining.	Non-conducting Material.	Thickness of ditto.	Inner Lining.
BULKHEADS.	FRAME No. (Fore Peak) A									
	FRAME No. F									
	FRAME No. A									
	FRAME No. F									
	FRAME No. A									
	FRAME No. F									
	FRAME No. A									
	FRAME No. (Boiler Room) F									
	FRAME No. (Boiler Room) A									
	FRAME No. 55 A					✓	✓	Gran. lark	11"	1" Trg.
	FRAME No. 45 F					✓	✓	do	4"	1" Trg.
	FRAME No. 45 A					✓	✓	do	4"	do
	FRAME No. 33 F					✓	✓	do	9"	do
	FRAME No. 33 A					✓	✓			
	FRAME No. F									
	FRAME No. A									
	FRAME No. (After Peak) F									
SIDES	...					✓	✓	Gran. lark	12"	1" Trg.
OVERHEADING	...					✓	✓	do	11"	do
FLOORS OF CHAMBERS	...					✓	✓	Slab. lark	182" 205"	1 1/2" Regulate
TRUNK HATCHWAYS	...					✓	✓	Slab. lark	9"	1" Trg.
THRUST RECESS, SIDES AND TOP	...									
TUNNEL SIDES AND TOP	...									
TUNNEL RECESS, FRONT AND TOP	...									

FRAMES OR REVERSE FRAMES, FACE

1/2" gran. lark &amp; 1" Trg. lining

BULKHEAD STIFFENERS, TOP

1" gran. lark &amp; 1" Trg. lining

BOTTOM

1" gran. lark &amp; 1" Trg. lining

AND FACE

3" 12" gran. lark &amp; 1" Trg.

RIBBAND ON TOP OF DECKS

SIDE STRINGERS, TOP

✓

BOTTOM

✓

AND FACE

✓

WEB FRAMES, SIDES

✓

AND FACE

✓

BRACKETS, TOP

✓

BOTTOM

✓

AND FACE

✓

INSULATED HATCHES, MAIN

✓

BILGE

✓

MANHOLE

✓

HATCHWAY COAMINGS, MAIN

✓

BILGE

✓

HOLD PILLARS

✓

MASTS

VENTILATORS

✓

Are insulated plugs fitted to provide easy access to bilge suction roses

✓

tank, air, and sounding pipes

✓

heels of pillars

✓

and manhole doors of tanks

✓

Are insulated plugs fitted to ventilators

✓

cargo ports

✓

and side lights

✓

Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected

✓

if so, how

✓

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

✓

Coal Bunker Bulkheads, and Brine Outflow and Return Pipes passing through coal bunkers. Is the insulation, so far as practicable, fireproof

✓

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' x 2" about 12" apart floors 3' x 3" about 12" apart tunnel top

✓

fixed or portable fixed on side

Are screens fitted over the brine grids at chamber sides

✓

hinged or permanently fixed

✓

Thermometer Tubes, No. and position in each chamber

1 in aft. chamber, 2 in forward chamber

diameter 2 1/2"

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

2-2 1/2" trapped Sumpers in each chamber

Where strices, scupper pipes, and drain pipes are fitted are means provided for blanking them off

Yes.

What provision is made for draining the refrigerating machinery room

2" Scupper led to Bilge

brine return room in Refrig. machy Rm

looked

2-2" trapped scupper

water circulating pump room

In Vapour Room

Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers

✓

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Sounding Pipes, No. and position in each chamber situated below the load 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

How is the expanded metal secured in place

How are the cork slabs secured to the steel structure of the vessel Bedded in bitumen.

Air Trunkways in Chambers, inside dimensions, main 2'6" x 2'0" in fore chamber and branch 2'0" x 2'0" in aft chamber

Are they permanently fixed or collapsible, or portable fixed 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 Are they galvanised externally

How are they arranged in the chambers

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers

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

W. Cunningham Builders.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery and Insulation

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 Complete

General Remarks (State quality of workmanship, opinions as to class, &c.) The refrigerating machinery has been constructed under special survey and the materials and workmanship are good.

The construction of the refrigerated space has been carried out under special survey the materials & workman ship are good.

This refrigerating machinery has been efficiently installed in the vessel and tried out under working conditions. The chambers were cooled down to an average temperature of 14.75°F. The refrigerating machinery and fans were stopped and over a period of 12 hours the average temperature rise in the Chambers was 9.25°F.

In our opinion the vessel is now eligible for notation + LLOYD'S R.M.C. 1,34 for temperature of 20°F.

J.K.W.

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.
one	2	Carl. Gubry	J. E. Hall Ltd.	1933	(1) Air. (2) Hydrochloric	780000 43000	4½	2	19800

Fee applied for, 23/1/1934  
Received by me, 21.2.1934

Wm. K. Williams, D. Gemmell, R. A. Khan  
Surveyor to Lloyd's Register

Committee's Minute

FRI. 26 JAN 1934

Assigned

+ Lloyd's R.M.C. 1.34  
In Temp. 33°F

White B/L



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