

# Report on Refrigerating Machinery and Appliances.

18 SEP 1947

Received at London Office

Date of writing Report 17/9 1947 When handed in at Local Office 19 Port of Stockholm  
 No. in 89472 Reg. Book. Survey held at Finspong and Eskilstuna Date: First Survey 26.1.45 Last Survey 23.8 1947  
 (Number of Visits 28)

on the Refrigerating Machinery and Appliances of the m.s. "VATNAJÖKULL" Tons Gross 939  
Net 466

Vessel built at Lidingö By whom built A/B Lidingöverken Yard No. 5 When built 1947

Owners H.F. Jöklar Port belonging to Reikjavik Voyage

Refrigerating Machinery made by Svenska Turbinfabriks AB Machine Nos. 15423-24 When made 1947  
Ljungström 25 Install. No. 11024

Insulation fitted by A/B Lidingöverken When fitted 1947 System of Refrigeration Freon 12

Method of cooling Cargo Chambers Direct expansion in cooling coils Insulating Material used Granulated cork

Number of Cargo Chambers insulated 1 Total refrigerated cargo capacity 40300 cubic feet

## DESCRIPTION OF REFRIGERATING MACHINERY. Where placed In engine room

Refrigerating Units, No. of 2 No. of machines 3 Is each machine independent Yes

Total refrigeration or ice-melting capacity in tons per 24 hours 37.5 Are all the units connected to all the refrigerated chambers Yes

V-belt by el. motors yes Compressors, driven direct or through reduction gearing Compressors, single or double acting SA If multiple effect compression No

Are relief valves or safety discs fitted Yes No. of cylinders to each machine 3 Diameter of cylinders 148 m/m

Diameter of piston rod Trunk type Length of stroke 148 m/m No. of revolutions per minute 320-400

Motive Power supplied from Two 60 KW electric generators driven by 2 Bolinder 90 BHP semi diesel engines.  
 (State number of boilers, oil engines or electric generators supplying the motive power.)

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

Length of stroke          Working pressure          Diameter of crank shaft journals and pins         

Breadth and thickness of crank webs          No. of sections in crank shaft          Revolutions of engines per minute         

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         

Air Receivers:—Have they been made under survey          State No. of Report or Certificate         

Is each receiver, which can be isolated, fitted with a safety valve as per Rule         

Can the internal surfaces of the receivers be examined and cleaned          Is a drain fitted at the lowest part of each receiver         

No. of Receivers          Cubic capacity of each          Internal diameter          thickness         

Seamless, lap welded or riveted longitudinal joint          Material          Range of tensile strength          Working pressure by Rules         

Electric Motors, type Compound, enclosed, No. of 3 Rated 15-19 Kilowatts 220 Volts  
ventilated.

at 1320-1650 revolutions per minute. Diameter of motor shafts at bearings 55 m/m

Reduction Gearing          Pitch circle diameter, pinion          Main wheel          Width of face         

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

Pinion shafts, diameter at bearings          Main wheel shaft, diameter at bearings         

Gas Condensers, No. of 3 Cast iron or steel casings Steel Cylindrical or rectangular Cylindrical Are safety valves fitted         

to casings Yes No. of coils in each Shell & tube Material of coils Aluminum Can each coil be readily shut off or disconnected         

Water Circulating Pumps, No. and size of pumps available 2 x 900 how worked Electrically Gas Separators, No. of 1  
lit/min.

Gas Evaporators, No. of None Cast iron or steel casings          Pressure or gravity type          If pressure type, are safety

valves fitted          No. of coils in each casing          Material of coils          Can each coil be readily shut off or disconnected         

Direct Expansion or Brine Cooled Batteries, No. of 32 Are there two separate systems, so that one may be in use while the other is being

cleared of snow Yes No. of coils in each battery          Material of coils steel Can each coil be readily shut off or

disconnected Yes Total cooling surface of battery coils 864 m<sup>2</sup> Is a watertight tray fitted under each battery         

Air Circulating Fans, Total No. of 1 each of 75 cubic feet capacity, at 2200 revolutions per minute

Steam or electrically driven Electrically 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          how worked         

Brine Cooling System, closed or open          Are the pipes and tanks galvanised on the inside         

No. of brine sections in each chamber         

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

NOTE.—THE WORDS WHICH DO NOT APPLY SHOULD BE DELETED.

(MADE AND PRINTED IN ENGLAND.)



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011603-011607-0078

direct expansion coil  
Are thermometers fitted 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.  
Are the number and capacity of the machines and the number of pumps and sea connections in accordance with Section 2, Clause 1 of the Rules. Yes  
Is the exhaust steam led to the main and auxiliary condensers.

HYDRAULIC AND OTHER TESTS.

DESCRIPTION.	Date of Test.	Working Pressure.	Hydraulic Test Pressure.	Air Test Pressure.	Stamped.	REMARKS.
Engine Cylinders (if tested)	26.1.45					
Gas Compressors	27.8.45		25 kg/cm <sup>2</sup>	15 kg/cm <sup>2</sup>	HJ & SA	with date & press.
„ Separators						
„ Multiple Effect Receivers						
Gas Condenser Coils	25.10.46		25 kg/cm <sup>2</sup>	15 kg/cm <sup>2</sup>	SA date	& press.
„ Evaporator Coils						
„ Freon receivers			25 kg/cm <sup>2</sup>	15 kg/cm <sup>2</sup>	SA date	& press.
„ Condenser Casings						
„ Cooling coils				30 kg/cm <sup>2</sup>	SSW.	
„ Evaporator Casings	6.11.46					
NH <sub>3</sub> Condenser, Evaporator and Air Cooler Coils after erection in place						
Direct expansion coils	11.7.47			Mixture air & Freon 15 kg/cm <sup>2</sup>	-	Tests by indicating lamp.

Have important steel castings and forgings been tested in accordance with the Rules. Yes  
Cooling Test. Has the refrigerating machinery been examined under full working conditions, and found satisfactory. Yes  
Dates of test 30.7.47 Density of Brine - by - hydrometer  
temperatures (when the cargo chambers are cooled down to the required test temperatures) of delivery and return air at direct expansion or brine cooled  
theries - & - freon -30°C. & -  
mosphere. 21° C. 70°F. cooling water inlet and discharge 18° C. 64.4°F. & 27° C. 80.6°F. gas in condensers + 36.5°C 98°F. and evaporators. -  
e average temperature of the refrigerated chambers -22.2°C -8°F and the rise of temperature in these chambers upon the expiration of 12 hours  
ne after the machinery and cooling appliances have been shut off 11.95° C. 21.5°F

SPARE GEAR.

Are the working parts of the machines, pumps and motors respectively, interchangeable. Yes  
Has the spare gear required by the Rules been supplied. Spare gear supplied and checked onboard.  
Additional Spare Gear Supplied:-

The foregoing is a correct description of the Refrigerating Machinery.  
SVENSKA TURBINFABRIKS  
AKTIEBOLAGET LJUNGSTRÖM  
Manufacturer.  
L. Brandin

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.
Frame No. 91 (Fore Peak)	50 m/m	25 m/m wood	Gran. cork	250 m/m	As per appr. plan					
Frame No. 61	Nil	Nil	Gran. cork	300 m/m	As per appr. plan					
Frame No.										
Frame No.										
Frame No. (Boiler Room)										
Frame No. 27 (Engine Room)	Nil	Nil	Gran. cork	250	As per appr. plan					
Frame No.										
Frame No.										
Frame No.										
Frame No. (After Peak)										
Sides	Nil	Nil	Gran. cork	275 m/m	As per appr. plan					
Overheading	Nil	Nil	Gran. cork	300 m/m	As per appr. plan					
Floors of Chambers	50 m/m	16 m/m	Gran. cork	175 m/m	As per appr. plan					
Trunk Hatchways										
Thrust Recess, Sides and Top										
Tunnel Sides and Top										
Tunnel Recess, Front and Top										
Frames or Reverse Frames, Face 1 1/2" grounds as per approved plans.										
Bulkhead Stiffeners, Top 1 1/2" grounds Bottom and Face										
Ribband on Top of Decks -										
Side Stringers, Top - Bottom - and Face -										
Web Frames, Sides - and Face -										
Brackets, Top - Bottom - and Face -										
Insulated Hatches, Main Plug hatches, 275 m/m Bilge Ditto, 175 m/m gran. Manhole Ditto, 150 m/m gran.										
Hatchway Coamings, Main Wood covered by 4 m/m Bilge Wood galv. plate										
Hold Pillars 40 m/m cork slabs and 35 m/m wood lining.										
Masts Ventilators Secured plug hatches 200 m/m gr. cork. Inner lining 30 m/m outer 13 m/m										
Are insulated plugs fitted to provide easy access to bilge suction roses. Yes tank, air, and sounding pipes. Yes heels of pillars. Yes										
and manhole doors of tanks. Yes Are insulated plugs fitted to ventilators. Yes cargo ports. - and side lights. -										
Is the insulation of the lower hold floor and tunnel top in way of the hatchways protected. Yes if so, how, hardwood 47 m/m										
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. Air pipe led to open air.										
and for draining the tank top. Insulation laid on 2" thwartship battens.										
Fireproof Insulation. Is the insulation and woodwork fireproof in way of bunkers or any surfaces exposed to excessive heat. - 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 3x2", 12" see plan floors Portable gratings Tunnel top -										
fixed or portable. fixed Are screens fitted over the bilge grids at chamber sides. Yes hinged or permanently fixed. Perm. fixed.										
Thermometer Tubes, No. and position in each chamber 8; at frames 381, 491, 711, 841 distance thermometer also fitted.										
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. What provision is made for draining the inside of the chambers. Drains to bilge through N.B. liquid sealed traps.										
Where sluices, scupper pipes, and drain pipes are fitted are means provided for blanking them off. -										
What provision is made for draining the refrigerating machinery room. Refr. machinery fitted in engine room.										
brine return room - fan room - water circulating pump room.										
Are all air spaces behind insulation arranged to drain to the bilges, bilge wells, or gutterways of the respective chambers. Yes										

Sounding Pipes, No. and position in each chamber, situated below the load water line. 2P and 2S above insulation. 2P and 2S below insulation.  
Diameter 2 1/2" Are all sounding pipes in way of inside of chambers fitted in accordance with Section 3, Clause 11 Yes  
Are all wood linings tongued and grooved Yes Are cement facings reinforced with expanded steel lattice -  
How is the expanded metal secured in place Wire round hold pillars.  
How are the cork slabs secured to the steel structure of the vessel Wire round hold pillars.  
Air Trunkways in Chambers. Are the arrangements satisfactory and in accordance with the approved plans Yes  
Are they permanently fixed or collapsible, or portable Permanently fixed.

Are insulated plugs provided for the doors Are the doors worked from -  
Cooling Pipes in Chambers, diameter 25.5 m/m Minimum thickness 4 m/m Are they galvanised externally Yes  
How are they arranged in the chambers On roof and sides.

Thawing Off, what provision is made for removing the snow from the cooling pipes in the chambers.  
Hot gas can be circulated through any section of coils.  
The foregoing is a correct description of the Insulation and Appliances.

A.-B. LIDINGÖVERKEN  
Builder.

Plans. Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery 19.7.46 and Insulation 17.9.46  
(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 Complete.

General Remarks (State quality of workmanship, opinions as to class, &c.)  
This refrigerating machinery and appliances have been built under special survey in accordance with the Rules and the approved plans.  
The material has been tested as required by the Rules and the workmanship is good.  
Makers' certificates in respect of electric motors are attached.  
The machinery and appliances have been fitted on board in accordance with the Rules and approved plans, and a cooling test carried out on the completed installation with satisfactory results.  
In our opinion, this refrigerating installation is eligible to be classed "Lloyd's RMC 8.47 for frozen cargo only" subject to a spare shunt field coil for the air circulating fan being supplied.

It is submitted that this vessel is eligible for THE RECORD.  
+ LLOYD'S RMC 8.47 for frozen cargo only.  
Subject - as recommended.  
21.19/9/47

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

REFRIGERATING MACHINES.					System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours. Tons.	Is Refrigerating Machinery Electrically Driven?	INSULATED CARGO CHAMBERS.	
No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.				No.	Capacity. Cubic ft.
2	9	Freon 12	STAL, Finspong	1947	1) Dir.exp. in cooling coils 2) Gran.cork	37.5	Yes	1	40300

Fee Kr. 350:-- (Fee applied for, 17/9 1947)  
Late Fee " 25:--  
Travelling Expenses £" :60:--  
Kr. 400:25 previously charged as per Skm. A/c 2698.  
Received by me, 1947  
H. O. Ollerbon  
Surveyor to Lloyd's Register.

Committee's Minute  
Assigned  
+ Lloyd's Rmc 8.47  
for frozen cargo only, subject  
for Temp 0° to 16° F  
CERTIFICATE WRITTEN.

