Rpt. 17.

No. 12213

Report on Refrigerating Machinery and Appliances.

Received at London Office 14 JUL 1947

Date of writing Report 8th July 1947 When handed in at Local Office ..... 19 ..... Port of Copenhagen

No. in Reg. Book. ✓ Survey held at Copenhagen Date: First Survey 9th January Last Survey 5th July 1947

(Number of Visits 25)

on the Refrigerating Machinery and Appliances of the Steel Sc. KITTERN Tons { Gross ..... Net .....

Vessel built at ..... By whom built ..... Yard No. ..... When built .....

Owners Skard, Lkr Port belonging to Larvik Voyage .....

Refrigerating Machinery made by J/S Atlas Machine Nos. 2470-2540 When made 1947

Insulation fitted by ..... When fitted ..... System of Refrigeration .....

Method of cooling Cargo Chambers direct expansion Insulating Material used .....

Number of Cargo Chambers insulated 3 Total refrigerated cargo capacity 21000 cubic feet

DESCRIPTION OF REFRIGERATING MACHINERY. Where placed .....

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

Total refrigeration or ice-melting capacity in tons per 24 hours 40 Are all the units connected to all the refrigerated chambers yes.

Compressors, driven direct ~~or through~~ ~~single~~ ~~double~~ ~~reduction gearing.~~ Compressors, single ~~or double~~ acting single If multiple effect compression ✓

Are relief valves or safety discs fitted yes No. of cylinders to each unit 2 Diameter of cylinders 170 m/m.

Diameter of piston rod ✓ Length of stroke 140 m/m. No. of revolutions per minute 510.

Motive Power supplied from 2 H 70 HP steam engines delivered by the owners

(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 ..... No. of ..... Rated ..... Kilowatts ..... Volts

at ..... revolutions per minute. Diameter of motor shafts at bearings .....

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 2 (SHELL & TUBE) ~~Cast iron or~~ steel casings Steel casing Cylindrical ~~or rectangular~~ cylindrical Are safety valves fitted to casings No No. of ~~coils~~ TUBES in each SHELL 28 Material of ~~coils~~ TUBES G.M. Steel 50/60 Can each ~~coil~~ CONDENSER be readily shut off or disconnected yes.

Water Circulating Pumps, No. and size of pumps available ..... how worked ..... **Gas Separators,** No. of 2

Gas ~~Evaporators~~ RECEIVERS, No. of 2 ~~Cast iron or~~ steel casings S.M. Steel 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~~ GRIDS, No. of 76. Are there two separate systems, so that one may be in use while the other is being cleared of snow FOREHOLD: 6 ATT. " : 3 TW DECK : 3 No. of coils in each battery FOREHOLD: 39 ATT. " 22 TW DECK 15 Material of coils S.M. Steel Can each ~~coil~~ SECTION be readily shut off or disconnected yes. Total cooling surface of battery coils 400 m² 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 ..... 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.

5c.2.46. (MADE AND PRINTED IN ENGLAND.)

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L.J. 14/7/47.

Are thermometers fitted to the outflow and to each return brine pipe .... *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 ....

Is the exhause steam led to the main and auxiliary condensers ....

HYDRAULIC AND OTHER TESTS.

Description.	Date of Test.	Working Pressure. ATM	Hydraulic Test Pressure. ATM	Air Test Pressure. ATM	Stamped.	Remarks.
~~Engine~~ COMPRESSOR Cylinders (if tested)	14.1.47 / 28.5.47	15	42 ✓	21	Lloyd's Test / —"— —"—	H 42 A 21 Atm KL 14.1.47 / —"— —"— LK 28.5.47
Gas Compressors CRANH CASES ...	14.1.47 / 28.5.47	3.	21 ✓	10.5	—"— —"— / —"— —"—	H 21 A 10.5 ATM KL 14.1.47 / —"— —"— LK 28.5.47
,, Separators	21.4.47	15	42 ✓	21	LR	H 42 A 21 ATM KL 21.4.47
,, Multiple Effect Receivers						
,, Condenser ~~Coils~~ (SHELL & TUBE)	25.4.47	1	35 ✓	17.5	Lloyd's Test	H 35 A 17.5 Atm 4 25.4.47
,, Evaporator Coils						
,, Condenser Headers and Connections						
,, Condenser Casings						
COILS FOR ROOF & SIDEGRIDS ,, ~~Evaporator Casings~~	8/4 - 9/4 - 10/4 11/4 - 47	15.	105 ✓	35	LR	105 35 Atm 4.
NH_3 Condenser, Evaporator and Air Cooler Coils after erection in place						
Brine Piping after erection in place...						

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* ....

Dates of test .... **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 batteries* .... *&* ...., *outflow and return brine* .... *&* .... *atmosphere* .... *cooling water inlet and discharge* .... *&* .... *gas in condensers* .... *and evaporators* .... *the average temperature of the refrigerated chambers* .... *and the rise of temperature in these chambers upon the expiration of* .... *hours time after the machinery and cooling appliances have been shut off* ....

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 ....

Additional Spare Gear Supplied:—

The foregoing is a correct description of the Refrigerating Machinery.

AKTIESELSKABET ATLAS .... *Manufacturer.*

pp Peter Gard pp H. Kristophersen

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										
	A										
Frame No.	F										
	A										
Frame No.	F										
	A										
Frame No. (Boiler Room)	F										
	A										
Frame No. (Engine Room)	A										
Frame No.	F										
	A										
Frame No.	F										
	A										
Frame No.	F										
	A										
Frame No. (After Peak)	F										
Sides											
Overheading ...											
Floors of Chambers ...											
Trunk Hatchways											
Thrust Recess, Sides and Top											
Tunnel Sides and Top											
Tunnel Recess, Front and Top											

Frames or Reverse Frames, Face ....

Bulkhead Stiffeners, Top .... **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 .... **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* .... *and for draining the tank top* ....

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* ....

Cargo Battens, *Dimensions and spacing, sides* .... *floors* .... *tunnel top* .... *fixed or portable* .... *Are screens fitted over the brine grids at chamber sides* .... *hinged or permanently fixed* ....

Thermometer Tubes, *No. and position in each chamber* .... *diameter* .... *are they fitted in accordance with Section 3, Clause 8* ....

Protection of Pipes. *Are all pipes, including air and sounding pipes, which pass through or into insulated chambers, well insulated* ....

Draining Arrangements. *What provision is made for draining the inside of the chambers* ....

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 .... *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 ....

N220 2/2

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 .... *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 ....

Air Trunkways in Chambers. *Are the arrangements satisfactory and in accordance with the approved plans* ....

Are they permanently fixed or collapsible, or portable ....

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* .... *Minimum thickness* .... *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.

.... *Builders.*

Plans. *Are approved Plans or Specifications forwarded herewith for the Refrigerating Machinery* (If not, state date of approval) Yes *and Insulation* –

Is the Refrigerating Machinery and Appliances duplicate of a previous case – *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 The machinery requires to be installed on board under special survey.

General Remarks (*State quality of workmanship, opinions as to class, &c.*) The refrigerating machinery has been constructed under Special Survey in accordance with the requirements of the Rules, the approved plans and specification and the Secretary's letters E dated 11/12 1946 and 5/2 1947.

The material has been tested as required by the Rules and the workmanship is good.

An interim Report issued as per copy enclosed.

Recommend the vessel to have notation, when the survey has been completed of

✠ LLOYD'S R.M.C. – with date – –4°F. frozen cargoes only. For North Sea service

in [illegible]

PARTICULARS TO BE ENTERED IN REGISTER BOOK.

Refrigerating Machines. No. of Units.	No. of Compressors.	System.	Makers.	Date of Construction.	System of (1) Refrigerating (2) Insulating the Chambers.	Ice melting capacity per 24 hours. Tons.	Is Refrigerating Machinery Electrically Driven?	Insulated Cargo Chambers. No.	Capacity. Cubic ft.
2	4	Ammonia	A/S Atlas, Copenhagen	1947	1 direct expansion	40	No	3	2100

Certificate to be sent to

Fee .... Kr. 500,00 { Fee applied for, ... 19 ....

Travelling Expenses £ : : { Received by me, ... 19 ....

L. Klausen. L. Lund.

Surveyor to Lloyd's Register.

Committee's Minute .... FRI. 14 NOV 1947

Assigned .... See minute on Lgn 3178