

COMMUNICATION EQUIPMENT

Call letter	:	V7LL5
Radio Station normally watched	:	GMDSS
Radio MF/HF NBDP	:	FS-2575 include
Radio MF/HFTEL/DSC	:	FS-2575 include
VHF	:	FM-8900S 2sets
Satellite Communication	Inmarsat 'C'	: 453841639 EGLX X
	Inmarsat 'FBB'	: (Voice) 870 773213545
		: (Fax) 870 783231178
		: (E-mail) ecogalaxy@stealth.gr

MACHINERY

Main Engine x 1	Type and make	: MAN B&W 6L35MC6.1
	Service power	: 3,510 Kw (4,772ps) x 203 rpm (90%MCO)
	No of Cylinders	6
	Cyl Bore x Stroke	350 mm x 1050 mm
	Grade of fuel used	: HFO having a viscosity of not more than 380cst @ 50°C
Auxiliaries	Type and make (Electrical)	Yanmar 6NY16L-EW
	(Mechanical)	rated 400 Kw x 450V x 3 phase x 60 Hz
	Grade of fuel used	4 stroke x 441 Kw x 1,200 rpm
	No off	Diesel Oil - 3,6 cSt – 14 cSt
		2
Emergency Gen	Type	STX Engine NT855DMGE – 200Kw, AC 450V, 3 phase, 60 Hz
	No off	1
Boiler	Type	Alfa Laval KK (Aalborg OC) Fully automatic smoke-tube composite boiler
	Evaporation	500 Kg/Hr (Exhaust gas)
	Max Design Pressure	0.69 Mpa Saturated
	Feed Water Temp	60°C
	No off	1
Exhaust Economiser	Type	Composite Boiler
	Evaporation	750Kg/Hr (Oil fired)
	No off	1
Air Compressors (Main)	Type / Capacity	Matsubara (MH-120K) - Vertical, 2-stage, F.W cooled type / 85.0m³ / Hr
	No off	2
Air Compressors (Emergency)	Type	TBA
	No off	1

Fuel Oil Purifier	Type No off Capacity	Mitsubishi SJ20G – Centrifugal 2 1150 Ltrs / Hr, 700mm²/s at 50°C
Lub Oil Purifier	Type No off Capacity	Mitsubishi SJ20G – Centrifugal 1 1950 Ltrs / Hr, 100/150mm²/s at 40°C
Evaporator	Type Capacity	Sasakura Engineering Co. Ltd. (KE-10) – Waste heat recovery 1 x 10 t/day
Fresh Water Sterilizer	Type Capacity	Nippon Control's Co.,Ltd. – Electric Germicidal lamp with filter 1 x1,000 litre/h
Ballast Treatment Mineralized Water	Maker Model Capacity Ballasting Capacity DeBallast Filtration degree 50 working principle	PANASIA GloEn-P250 250m³/hr, 250m³/hr 50 micron UV –model No : SUV 20.2 Y2C/ZIG-1
Waste Oil Incinerator (IMO MEPC 76 (40))	Type Capacity	Sunflame Co. Ltd. (OSV-360SAI) – Rotary cup system Oil @ 38 lit/h & Solids @ 30 Kg/h
Oily Water Separator	Type Capacity	Heishin Pump Works Co., Ltd. 1 x 1.0 m³/h
Sewage Treatment plant	Type Capacity	Taiko Kikai Industries Co, Ltd (SBH-25)- Activated sludge aeration (Biological) – USCG certified 1 x 25 persons per day
Hot Water Set (Calorifier unit)	No off	Toyo Dennetsu Kogyo Co., Ltd. (TTS-400) 400L with 1 x 1.1m² steam heater / 1 set
Steering Gear	Type Duty Capacity Hydraulic pump unit	Kawasaki Heavy Industries, Ltd. Electro-Hydraulic system (RV21-022) with 2-pump units (dual system) – (one pump to be able to supply full power) 22.4 t-m Electric motor driven, 2 x 5.5 Kw

Speed

About 14.0 knots, Basis up to weather Beaufort scale 4 and max significant wave height of 1.25m
Figures given are “about” defined as 0.5knot less and +/- 5% on consumption respectively

CONSUMPTION/ DAY

At Sea

Main Engine HFO About 11.0 MT/Day Laden/Ballast

Auxiliary Engine MGO About 0.96 MT/Day

In Port IDLE MGO About 0.96 MT/Day

In Port Discharging MGO About 2.2 MT/Day

Using N2 Generator MGO About 2.2 MT/Day

Permanent bunker
capacity (100%)

HFO	:	492.64 m ³ (<i>Fuel oil bunker tanks are DH</i>)
Diesel	:	69.28 m ³ (<i>Diesel oil bunker tanks are DH</i>)
Fresh Water	:	193.06 m ³

(B) CARGO INSTALLATIONS

1. Transportable products and respective quantities, calculated in accordance with IMO – maximum filling formula. (Tonnes)

	100% (CBM)	98% (CBM)		
NO.1 CARGO TANK	3606.39	3534.26		
NO.2 CARGO TANK	3606.31	3534.18		
T O T A L	7212.70	7068.44		
	SPSV (bar g)	Ref. Temp. (deg. C.)	Density at (Ref. Temp.)	Corresponding Quantity (MT)
Propane	17.65	45.0	0.459	3244.21
Propylene	17.65	45.0	0.470	3321.96
B/P Mixture	17.65	45.0	0.487	3442.12
I-Butane	17.65	45.0	0.526	3717.77
N-Butane	17.65	45.0	0.548	3873.26
Butylene	17.65	45.0	0.565	3993.42
Butadiene	17.65	45.0	0.588	4155.98
V.C.M. 65% CGO TANKS CAPACITIES	17.65	45.0	0.965	4552.00*
Isoprene	17.65	45.0	0.656	4636.61
Pentane	17.65	45.0	0.600	4240.80
Pentene	17.65	45.0	0.611	4318.55
B/P Mixtures	12.75	45.0	0.487	3442.11
N-Butane	12.75	45.0	0.548	3873.26
I-Butane	12.75	45.0	0.526	3717.77
Butadiene	12.75	45.0	0.588	4155.40
Butylene	12.75	45.0	0.565	3993.42
V.C.M. 65% CGO TANKS CAPACITIES	12.75	45.0	0.965	4552.00*
Isoprene	12.75	45.0	0.656	4636.61
Pentane	12.75	45.0	0.600	4240.80
Pentene	12.75	45.0	0.611	4318.55

Note(1): In case of there is no request by USCG, setting pressure of safety valve may use 17.65 bar g. Propylene, Propane and Butane/Propane Mixtures are to be carried. In case of there is request by USCG, propylene, propane and Butane/Propane mixtures are not to be carried except the vapour pressure of Butane/Propane mixtures is not more than 12.75 bar g, 13.0 kg/cm² @ 45 °C

Note(2): On and after, the pressure value in parentheses is shown as a conversion value

Mixing ratio of above mentioned B/P mixtures is as follows:

Butane 35 wt% and propane 65 wt%

Note (3): Figures are preliminary Subject to change according to displacement

***Note (4):** The VCM Quantity as per Stability Booklet and Loading Manual.

2. Other transportable products N/A

	SPSV	Ref. Temp. (°C.)	Density at Ref. Temp.	Corresponding Quantity (MT)
Raffinate 1	-	-	-	-
Raffinate 2	-	-	-	-
C4	-	-	-	-

3. TANKS

- 3.1 Design pressure (Vapour) – BV-IGC : 17.65 bar g (1.765 MPag)
 - USCG : 12.75 bar g (1.275 MPag)

- 3.2 Valve setting : **17.65 bar g (1.765 MPag) / 12.75 bar g (1.275 MPag)**
- 3.3 Maximum vacuum obtainable : **Atmospheric**
- 3.5 Maximum temperature acceptable : **45 °C**
- 3.6 Minimum temperature acceptable : **-10 °C**
- 3.7 Hydrostatic Test Pressure : **TBA**

4. LOADING RATE (TONS/HOUR) – For Full Cargo Parcels

- Ex-atmospheric storage with gas : 1 tank : **about 730 m³ per hour for LPG**
 Return : **about 560 m³ per hour for VCM**
- 2 tanks : **about 1130 m³ per hour for LPG**
about 870 m³ per hour for VCM

Remarks:

- * If cargo temperature is less than -10 °C, shore heater to be used. If ship heater used, max rate is **550 m³** per hour.
- * Based on maximum velocity of 6.5 metres/sec except VCM, and 5.0 meters/sec for VCM in the liquid piping.
- * Loading by shore pump only, proper size gas return line to be connected
- * Subject to both ship and shore tanks being under favourable conditions

5. CARGO PUMPS

- 5.1 Type : **Deepwell type of vertical centrifugal multistage design**
 - Make : **WARTSILA SVANEH ϕ J A/S**
 - How many : **1 set per tank (2 sets)**
 - Maximum specific gravity : **0.601(LPG) / 0.965 (VCM)**
- 5.2 Capacity (CMB/Hour) : **400 m³/hr at 110 m (SG 0.601)**
200 m³/hr at 140 m (SG 0.965)
 - Two speed or variable speed : **Single Speed**
 - Rated kW (each) : **150 kW**
 - Working pressure maximum : **20 bar g**
- 5.3 Location : **At each cargo tank**
 Removable : **Not removable**
- 5.4 Booster pumps : **1 set**
 - Type : **Horizontal**
 - Maker : **WARTSILA SVANEH ϕ J A/S**
- 5.5 Capacity (CMB/Hour) : **400m³/h**
 Working pressure : **22 bar g**
- 5.6 Location : **Platform near the manifold**
- 5.7 Time to discharge a full liquid cargo using all pumps against back pressure at pump
 - 1 bar : **about 21 hours for LPG**
 - 5 bars : **about 60 hours for LPG**
 - 10 bars : **-----**
- 5.8 Nominal back pressure when working : **about 1 bar**
 - In series corresponding head : **220 ml.c.**
 - Maximum back pressure : **about 10 bar**

- 8.5 State if any shore supply of nitrogen may be required: : **N/A**
 - for what purpose : **N/A**
 - what quantities : **N/A**

9. GAS FREEING

- 9.1 State method used giving all details : **Nitrogen Plant / Fans**
 9.2 State time required including stripping : **TBA**

10. CHANGING GRADE

- 10.1 From completion discharge of cargo Propane, time required in hours and inert gas in CBM required to reach a tank and gas installation atmosphere of less than 100 ppm of Propane in Vapour phase.

Time required: TBA

- 10.2 Can this operation be carried out at sea? : **Yes**
 10.3 Can the ship measure the number of ppm in vapour phase? : **Yes**
 10.4 Has vessel deck tank for changing grade/cooling operations? : **No**
 10.5 Deck tanks : **NIL**
 Capacity :
 Purpose :

11. COOLING BEFORE LOADING :

12. CARGO HEATER

- 12.1 Type : **Shell and Tube**
 12.2 Inside Diameter **850 mm**
 12.3 Overall length **7000 mm**
 12.4 Cargo flow rate **550 m3/h (Propane)**
 12.5 Min Inlet Temp **-48 °C**
 12.6 Min Outlet Temp **-10 °C**
 12.7 Required Sea water Capacity **600 m3/h (Min 18°C)**
 12.8 Design Pressure **20 bar g**
 12.9 Hydrostatic Test Pressure **30 bar g**
 12.10 Tightness Test Pressure **20 bar g**

- 12.0 State discharging rate for propane to be brought from atmospheric pressure **NA**
 Loading rate for Propane – **minus 42 ° C / minus10 ° C: about 300 Mt/hr**

13. CARGO VAPORIZER

In case vapour gas is needed to feed compressors, can vessel produce its own if no shore available:

No

14. REFRIGERATING APPARATUS **NA**

- 14.1 Is it independent of cargo? : **NA**
 Is so, state cooling agents : **NA**
 14.2 What minimum temperature can be maintained : **NA**
 14.3 What time required at sea to lower by 1°C the full cargo of : **NA**

15. MEASURING APPARATUS

What gauges on board?

Type : **Float type level gauge**
Location : **1set each tank beside tank dome**
1set each tank at tank dome

16. SAMPLES

16.1 State how tank atmosphere samples can be taken and where from?

Sample points at tank bottom, mid and top

Standard of fitting? : **JIS PT1/4 thread**

16.2 Same question for cargo : **Sampling connection at outlet of each cargo Pump (JIS PT1/4 thread)**

16.3 Are sample bottles available on board? : **No**

17. CARGO LINES

17.1 Is ship fitted with a port and starboard cargo manifold? : **Yes**

17.2 Position of cargo manifold

- distance from stern (AP) (S / P) : **59.3 M**
- distance from stem (FP) (S / P) : **50.7 M**
- height above deck : **1.295 m for Liquid manifold**
- distance from ship's rail : **2.40 M**
- underside keel to manifold : **10.509 M**

17.3 Liquid line

- flange-size : **10 in.**
- type : **10" ANSI 300LB**

Gas line

- flange-size : **6 in.**
- type : **6" ANSI 300LB**

17.4 What reducers on board? : **Carbon steel pieces supplied**

For Liquid line (low temperature)

10" ANSI 300LB to

**12" ANSI 300LB, 8" ANSI 300LB, 6" ANSI 300LB
5" ANSI 300LB, 4" ANSI 300LB, 3" ANSI 300LB
10" ANSI 150LB, 8" ANSI 150LB, 6" ANSI 150LB
5" ANSI 150LB**

For Vapor line (normal temp.)

6" ANSI 300LB to

**8" ANSI 300LB, 5" ANSI 300LB, 4" ANSI 300LB,
3" ANSI 300LB, 2" ANSI 300LB
8" ANSI 150LB, 6" ANSI 150LB, 5" ANSI 150LB,
4" ANSI 150LB, 3" ANSI 150LB**

17.5 Is ship fitted with stern discharge? **No**

- Liquid line - diameter : **N/A**
- flange - size : **N/A**
- type : **N/A**

18. HOSES

- Are serviceable hoses available on board? : **None**
- 18.1 Two pieces, each : **TBA – Owners**
Length : **TBA – Owners**
Diameter : **TBA – Owners**
Flange-size : **TBA – Owners**
Type : **TBA – Owners**
Bending radius : **TBA – Owners**
- 18.2 Minimum temperature acceptable : **TBA – Owners**
Maximum pressure acceptable : **TBA – Owners**
- 18.3 For what products are hoses suitable? : **TBA - Owners**

19. DERRICKS

- Hose cranes : **1 set**
- Where situated : **Mid-ship(center)**
- Lifting capacity : **5.0 tons @ 10m/min**
- Working radius : **14.1m**

20. SPECIAL FACILITIES

- 20.1 How many grades can be segregated? : **Single Grade**
- 20.2 How many cooled? : **N/A**
- 20.3 Can vessel sail with slack cargo tanks? : **Yes**