

**VESSEL PARTICULARS (FORM C)
LPG/C GAS PRODIGY
(last updated 14/07/2014)**

Specifications of the vessel and the gas installation which are representations by the Owners.

(A) VESSEL'S CHARACTERISTICS

PREAMBLE

Name : **LPG/C GAS PRODIGY**

Owner : **Energetic Peninsula Limited**

Flag : **Monrovia, Liberia**

Build : **Zhejiang Shipyard, Ningbo**

Date on Service : **30 April 2003**

Class : **LR+100 A1 (Liquefied Gas Carrier) MO type II PG
Maximum pressure 176kg/cm²; Temperature 0°C**

GRT International : **4508** Suez : **4891.02**
Panama :

NRT International : **1352** Suez : **3586.79**
Panama : **2848**

Is vessel build according to
USCG regulations? : **NO**
RINA regulations? : **NO**
Japanese regulation? : **NO**

Has vessel received
USCG approval? : **NO**
RINA approval? : **NO**

HULL

LOA : **99.79 M**

LBP : **92.94 M**

Breadth : **18.18 M**

Depth : **7.79 M**

Summer Draft : **5.60 M corresponding to Summer DWT = 3633.1**

Lightweight Draft **2.79 M**

M corr

Estimated draft with full cargo and full bunkers are as follows.

Product	Draft Fore' (m)	Draft Aft' (m)	Draft Mean (m)	Corresponding Deadweight (t)
Propane (98%)	4.91	5.68	5.296	3223
Butadiene (98%)	5.28	5.75	5.511	3510
VCM (98%)	5.358	5.838	5.600	3633

Propeller immersion :

At draft	At 5.55 m correspond.	: 100 %
At draft	At 2.77 m correspond.	: 58 %
At draft	At m correspond.	: %

COMMUNICATION EQUIPMENT

Call letter	:	D5GI3
Radio Station normally watched	:	POR / AOW
Radio MF/HF NBDP	:	347739114
Radio MF/HFTEL/DSC	:	
VHF	:	16 / 70
Satellite Communication	Inmarsat 'C'	: 463716538
	Inmarsat 'FBB'	: +870 773 213 796
	FAX	: +870 783 232 945
	:	

MACHINERY

Main Engine x 1	Type and make	:	MAN B&W 5S 35 MC
	Service power	:	3330 kw @ 90% MCR
	No of Cylinders	:	5
	Cyl Bore x Stroke	:	350mm x 1400mm
	Grade of fuel used	:	380 cst @ 50deg C , RME 25 or RMG 35 ISO 8217/86

Auxiliaries	Type and make (Electrical)	:	Cummins Model KTA 19-D (M)
	(Mechanical)	:	
	Grade of fuel used	:	Marine Gas Oil DMA 8217/96
	No off	:	

Emergency Gen	Type	:	MAN NUTZFAHRZEUG AG DO226MLE
	No off	:	1

Bow Thruster		:	1
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Boiler	Type	:	Composite boiler L YF 1.0/0.35-0.6
	Evaporation	:	1 Ton / hr
	Max Design Pressure	:	8 Tons
	Feed Water Temp	:	60 deg cel.
	No off	:	1
		:	

Exhaust Economiser	Type	: N/A
	Evaporation	:
	No off	:
Air Compressors (Main)	Type / Capacity	: SPERREHL2/105 INDUSTRI AS/ 47 Cu.M/Hr
	No off	: 2
Air Compressors (Emergency)	Type	: SPERREHL2/105 INDUSTRI AS/ 47 Cu.M/Hr
	No off	: Include in Main unit no. 2- use as emergency
Fuel Oil Purifier	Type	: Alfa Laval MOPX 205T6T -24
	No off	: 2
	Capacity	: 6900L/Hr
Lub Oil Purifier	Type	: Alfa Laval MMPX 43 SGP-11
	No off	: 1
	Capacity	: 3500L/Hr
Evaporator	Type	: Alfa Laval Copenhagen A/S JWP-26-c 80
	Capacity	: 10 Cu. M/Hr
Fresh Water Sterilizer	Type	: UVK J UV Disinfection plant
	Capacity	: 6.4 Cu. m/Hr
Fresh Water Mineraliser	Type / Capacity	: N/A
Waste Oil Incinerator (IMO MEPC 76 (40))	Type	: OG 120C TEAMTEC MARINE PRODUCTS
	Capacity	: 180.0Kcal/H – 22LH Sludge
Oily Water Separator	Type	: SKIT S I.U
	Capacity	: 1.0 m3/Hr
Sewage Treatment plant	Type	: ST-2 Marine Sewage Treatment
	Capacity	: 1.6 m3/Day
Hot Water Set (Calorifier unit)	No off	: 1
Steering Gear	Type	: Rolls Royce Marine AS
	Duty Capacity	: 125 bar
	Hydraulic pump unit	: TENFJORD PU45

Speed

Up to Beaufort scale 4 Douglas Sea State 3

About: 12.5 Knots

CONSUMPTION/ DAY

Main Engine HFO **HS IFO 38**
Auxiliary Engine DO **HS MGO**

**About 12,0 MT/DAY +/- 5%
LOAD 1.10 MT/DAY
DISCH 2.50 MT/DAY
@SEA 1.0 MT/DAY
IGS 1,7 MT/DAY**

Permanent bunker
capacity (100%)

HFO : **540.176 m3 (98%)**
Diesel : **98.686 m3 (98%)**
Fresh Water : **273.50 MT**

(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	2514.88	2464.58		
NO.2 CARGO TANK	2515.87	2455.52		
TOTAL	5030.75	4930.13		
	SPSV (bar g)	Ref. Temp. (deg. C.)	Density at (Ref. Temp.)	Corresponding Quantity (MT)
Propane	17.65	45.0	0.459	2262.93
Propylene	17.65	45.0	0.470	2317.161
B/P Mixture	17.65	45.0	0.487	2400.973
I-Butane	17.65	45.0	0.526	2593.248
N-Butane	17.65	45.0	0.548	2701.711
Butylene	17.65	45.0	0.565	2785.523
Butadiene	17.65	45.0	0.588	2898.916
V.C.M.	17.65	45.0	0.872	4299.073
Isoprene	17.65	45.0	0.656	3234.165
Pentane	17.65	45.0	0.600	2958.078
Pentene	17.65	45.0	0.611	3012.309

Note(1): In case of USCG, propylene, propane and B/P mixtures are not to be carried except the vapour pressure of B/P 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%

2. Other transportable products N/A

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

3. TANKS

- 3.1 Design pressure (Vapour) – BV-IGC : **17.65 bar g (1.765 MPag)**
 - USCG : **12.40 bar g (1.200 MPag)**
- 3.2 Valve setting : **17.65 bar g (1.765 MPag) / 12.40 bar g (1.200 MPag) / 7.0 bar g**
- 3.3 Maximum vacuum obtainable : **0.5 Bar Approx.**

- 3.5 Maximum temperature acceptable : **45 °C**
 3.6 Minimum temperature acceptable : **0 °C**
 3.7 Hydrostatic Test Pressure : **26.48 bar g (2.648 MPag)**

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

- Ex-atmospheric storage with gas : 1 tank : **300 m3/hour Max.**
 Return : 2 tanks : **600 m3/hour max.**

Remarks:

- * Based on maximum velocity of 6.5 metres/sec except VCM, and 4.0 meters/sec for VCM in the liquid piping.
- * If cargo temperature is less than 0 °C, shore heater to be used. If ship heater used, max rate is **250 m³** per hour.
- * 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 : **Deswell 150 - 4 - 1**
 Make : **DESMI**
 How many : **2**
 Maximum specific gravity : **0.948**
- 5.2 Capacity (CMB/Hour) : **300 m3/hour Max (EACH)**
 Two speed or variable speed : **Fixed One Speed**
 Rated kW (each) : **130KW**
 Working pressure maximum : **12 bar**
- 5.3 Location : **Cargo Tank after dome**
 Removable : **No**
- 5.4 Booster pumps : **NO**
 Type :
 Maker :
- 5.5 Capacity (CMB/Hour) : **N/A**
 Working pressure :
- 5.6 Location : **N/A**
- 5.7 Time to discharge a full liquid cargo using all pumps against back pressure at pump
 1 bar : **about 8 hours for LPG**
 5 bars : **about 12 hours for LPG**
 10 bars : **about 18 hours for LPG**
- 5.8 Nominal back pressure when working : **Cannot in series**
 In series corresponding head : **N/A**
 Maximum back pressure : **N/A**
 Nominal pressure at rail (propane) : **N/A**
- 5.9 What amount of cargo remains in tanks after completion pumping before stripping:
 - liquid : **About 1.0 m3 per one tank**
 - vapour : **Depends on Vapour pressure**

6. STRIPPING

- 6.1 Stripping system, if any : **NIL**
- 6.2 Time required to remove all traces of liquid cargo as stated in 5.9 for:
- LPG : **about 3 hours**

7. CARGO COMPRESSORS

- 7.1 Type : **TINE 5.12 / 6.1 / 0**
Make : **Kohler & Horter**
How many : **2**
Piston displacement : **N/A**
Rated Kw : **110 KW**
Stroke : **150mm**
Max discharge pressure : **19.5 bar**
Pressure differential : **4.0 bar**
Rate : **550 m3 / Hr (Approx)**
No of Revolutions :
- 7.2 Are compressors oil free : **YES**
- 7.3 Can they reliquefy VCM without risk : **NO**
- 7.4 State time to bring full cargo of butane to atmospheric pressure from : **N/A**

8. INERT GAS SYSTEM

- 8.1 Does the vessel use inert gas? : **YES (NITROGEN SYSTEM)**
If so, state utilization and quantities : **For Inerting**
- 8.2 Can the vessel produce inert gas? : **YES**
If so, state type and composition of gas produce: **Nitrogen 99.5% Oxygen 0.5%**
- Discharge Capacity : **250 m3**
- 8.3 Maximum production obtainable : **220 m3**

NOTE:- Above quantities obtained at engine room temperature 45° C

- 8.4 State if there are storage facilities for inert gas onboard: **N/A**
- Size : **N/A**
- Pressure : **N/A**
- 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 / Compressors**
- 9.2 State time required including stripping : **60 hours**

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 : N/A

12. CARGO HEATER

12.1 Type : **Shell & Tube Heat Exchanger**
12.2 Inside Diameter : **856 mm**
12.3 Overall length : **8100 mm**
12.4 Cargo flow rate : **214 t/hr (Propylene)**
12.5 Min Inlet Temp : **-48 deg cel.**
12.6 Min Outlet Temp : **0 deg cel.**
12.7 Required Sea water Capacity : **600 m3**
12.8 Design Pressure : **15 bar (Working Pressure)**
12.9 Hydrostatic Test Pressure : **37.5 bar**
12.10 Tightness Test Pressure :

12.0 State discharging rate for propane to be brought from atmospheric pressure
Loading rate for Propane – 48 ° C / 0° C: **about 214 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 : **At each cargo tank dome**

16. SAMPLES

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

Standard of fitting? : **Standard threaded fitting**

16.2 Same question for cargo : **Standard threaded fitting**

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) : **55.2 M**
- distance from stem (FP) (S / P) : **44.6 M**
- height above deck : **1.5 m for Liquid manifold**
- distance from ship's rail : **2.5 M**
- underside keel to manifold : **9.29 M**

17.3 Liquid line

- flange-size : **8 in.**
- type : **ASA 300**

Gas line

- flange-size : **4 in.**
- type : **ASA 300**

17.4 What reducers on board? :

For Liquid line (low temperature)

**8"/3001bsx10"/300lbs
8"/3001bsx10"/1501bs
8"/3001bs x 8"/1501bs
8"/3001bs x 6"/3001bs**

For Vapor line (normal temp.)

**4"/3001bsx6"/3001bs
4"/3001bs x 6"/1501bs
4"/3001bs x 4"/1501bs
4"/3001bs x 3"/3001bs**

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 : **N/A**

Length : **N/A**

Diameter : **N/A**

	Flange-size	:	N/A
	Type	:	N/A
	Bending radius	:	N/A
18.2	Minimum temperature acceptable	:	N/A
	Maximum pressure acceptable	:	N/A
18.3	For what products are hoses suitable?	:	N/A
19. DERRICKS			
	- Hose cranes	:	One
	- Where situated	:	Midship near manifold
	- Lifting capacity	:	4 tonnes
	- Working radius	:	360 deg
20. SPECIAL FACILITIES			
20.1	How many grades can be segregated?	:	NONE
20.2	How many cooled?	:	N/A
20.3	Can vessel sail with slack cargo tanks?	:	YES (But needs to be more than 60% Full)