

**VESSEL PARTICULARS (FORM C)**  
**LPG/C GAS PASHA**  
(Updated 15/09/2020)

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

**(A) VESSEL'S CHARACTERISTICS**

**PREAMBLE**

Name : **GAS PASHA**  
Owner : **BARONESS HOLDINGS, INC.**  
Flag : **PANAMA**  
Build : **1995**  
Date on Service : **December 1995**  
Class : **ABS**

GRT International : **2,926 T**                      Suez : **3,370.61 T**  
Panama :

NRT International : **894 T**                      Suez : **2613.36 T**  
Panama :

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

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

**HULL**

LOA : **96.00 M**  
LBP : **89.50 M**  
Breadth : **15.03 M**  
Depth : **7.00 M**  
Summer Draft : **5.329 M corresponding to Summer DWT = 2,999**  
Multiple Draft : **5.691 M corresponding to Multiple DWT = 3,201**

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

Product	Draft Fore' (m)	Draft Aft' (m)	Draft Mean (m)	Corresponding Deadweight (t)
<b>Propane (98%)</b>	4.89	5.65	5.27	2949.99
<b>Butadiene (98%)</b>	5.30	5.68	5.49	3542.16
<b>VCM (98%)</b>	5.24	5.73	5.48	3804.44

**Propeller immersion :**

At draft      Aft    **5.65 m correspond.**                      : **102.56 %**  
At draft      Aft    **5.68 m correspond.**                      : **103.19 %**  
At draft      Aft    **5.73 m correspond.**                      : **104.66 %**

**COMMUNICATION EQUIPMENT**

Call letter : 3FPP5  
 Radio Station normally watched : CH. 16 / CH. 70  
 Radio MF/HF NBDP : JRC-NDZ-227  
 Radio MF/HFTEL/DSC : JRC-NDZ-227  
 VHF : JRC – JHS - 32A  
 Satellite Communication **Inmarsat ‘C’** : 435577510 / JRC NDZ – 127C  
**Inmarsat FBB** : Tel: +870 773131260  
 : Email: [gaspasha@stealth.gr](mailto:gaspasha@stealth.gr)  
 :

**MACHINERY**

**Main Engine x 1** . Type and make : Vertical, 2 cycle, Single Acting, Direct Reversible, Cross Head Type Diesel Engine with Turbo Charger / MAKITA CORPORATION  
 . Service power : 3,270 PS (2,400kW) at 250 RPM  
 No of Cylinders : 6  
 Cyl Bore x Stroke : 260 mm x 980 mm  
 . Grade of fuel used : H.F.O 380 CST

**Auxiliaries** Type and make (Electrical) : Vertical, 4 cycle, single Acting, Trunk Piston, Type Diesel Engine with turbo Charger / YANMAR DIESEL ENGINE CO.,LTD. / S16L-HN  
 (Mechanical) : 265 KW  
 Grade of fuel used : Marine Gas Oil (DMA)  
 No off : 2 sets

**Emergency Gen** Type : STB-WE10  
 No off : 1 set

**Bow Thruster** Type : Power: NOT APPLICABLE

**Boiler** Type : Natural Circulation Vertical water Tube Boiler  
 Evaporation : 513 kg/h (at Feed Water Temperature 60C and Steam pressure 6kg/cm2.  
 Max Design Pressure : 7.0 kgf/cm2  
 Feed Water Temp : 60C  
 No off : 1 set

**Exhaust Economiser** Type : Forced Circulation Type Multitudinous Tube  
 Evaporation : 340kg/h (when M/E is running at M.C.R.)  
 No off : 1 set

**Air Compressors (Main)** Type / Capacity : MS-85  
 No off : 1 set

**Air Compressors (Emergency)** Type : Manual Type  
 No off : 1 set

<b>Fuel Oil Purifier</b>	Type	<b>SJ-16T</b>
	No off	<b>1 set</b>
	Capacity	<b>1,300 liter/hr</b>
<b>Lub Oil Purifier</b>	Type	<b>SJ-16T</b>
	No off	<b>1 set</b>
	Capacity	<b>1,500 liter/hr</b>
<b>Evaporator</b>	Type	<b>WM-10H</b>
	Capacity	<b>10 tons/day</b>
<b>Fresh Water Sterilizer</b>	Type	<b>USS-1K</b>
	Capacity	<b>1000 liters/hr</b>
<b>Fresh Water Mineraliser</b>	Type / Capacity	<b>NOT APPLICABLE</b>
<b>Waste Oil Incinerator (IMO MEPC 76 (40))</b>	Type	<b>BGW-10</b>
	Capacity	<b>10 liters/hr</b>
<b>Oily Water Separator</b>	Type	<b>USC-10</b>
	Capacity	<b>1.0 m3/hr</b>
<b>Sewage Treatment plant</b>	Type	<b>SBT-25</b>
	Capacity	<b>25 persons/day</b>
<b>Hot Water Set (Calorifier unit)</b>	No off	<b>NOT APPLICABLE</b>
<b>Steering Gear</b>	Type	<b>PT-100</b>
	Duty Capacity	<b>200 kgf/cm2</b>
	Hydraulic pump unit	<b>R21-140V / 2 sets</b>

About **10.5** knots up to Beaufort scale 4 and max significant wave height of 1.25m

Main Engine	IFO About 8.0 MT/ DAY
Auxiliary Engine	MGO About 1.0 MT / DAY
In Port Discharging	MGO About 1.7 MT / DAY DISCHARGING WITH (1) ONE PUMP
	MGO About 2.2 MT / DAY DISCHARGING WITH (2) TWO PUMPS
In Port Idle / Loading	MGO About 0.60 MT / DAY
Use IGG	MGO About 1.9 MT / DAY
Use of Boiler	MGO About 0.40 MT / DAY

All figures are about, defined as +/- 5% on consumption and speed respectively.

Notes:

1. Speed and consumption figures at sea, are best estimated basis daily weather conditions are up to Beaufort scale 4 – max.significant wave height 1.25 m, without effect of sea currents or swell, and vessel en route under a steady course, with a net sea passage duration of at least 24 hrs.

2. Consumption figures at port, are subject to port movements, port and/or harbour, terminal requirements, for the safe manoeuvring, approach, inland navigation, and port stay of the vessel throughout her call.

**PERMANENT BUNKER CAPACITY 100%**

**HSFO = 84.00 MT**

**ULSFO = 169.52 MT**

**LSMGO = 203.70 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	1,654.794	1,621.698		
NO.2 CARGO TANK	1,655.137	1,620.034		
TOTAL	3,309.931	3,243.73		
	MARVS (kg/cm <sup>2</sup> )	Ref. Temp. (deg. C.)	Density at (Ref. Temp.)	Corresponding Quantity (MT)
Propylene	18.0	45.0	0.471	1529
Propane	18.0	45.0	0.459	1489
Butane-Propane Mixtures	18.0	45.0	0.490	1590
Butane	18.0	45.0	0.549	1780
Isoprene	18.0	45.0	0.656	2128
Butadiene	18.0	45.0	0.590	1914
Butylene	18.0	45.0	0.565	1833
Vinyl Chloride	18.0	45.0	*	2475 (*)
Pentanes (all isomers)	18.0	45.0	0.600	1946
Pentene (all isomers)	18.0	45.0	0.611	1982

(\*) VCM quantity base on stability information booklet for Master

**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/cm<sup>2</sup> @ 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 : NOT APPLICABLE**

	MARVS (kg/cm <sup>2</sup> )	Ref. Temp. (°C)	Density at Ref. Temp.	Corresponding Quantity (MT)

### **3. TANKS**

- |     |                                   |   |   |
|-----|-----------------------------------|---|---|
| 3.1 | Design pressure (Vapour) – BV-IGC | : | <b>18.0 kg/cm<sup>2</sup></b>                         |
|     | - USCG                            | : | <b>7.0 kg/cm<sup>2</sup></b>                          |
| 3.2 | Valve setting                     | : | <b>18.0 kg/cm<sup>2</sup> / 7.0 kg/cm<sup>2</sup></b> |
| 3.3 | Maximum vacuum obtainable         | : | <b>0.0 kg/cm<sup>2</sup></b>                          |

- 3.5 Maximum temperature acceptable : **45 °C**  
 3.6 Minimum temperature acceptable : **0 °C**  
 3.7 Hydrostatic Test Pressure : **27.0 kg/cm2**

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

Ex-atmospheric storage with gas : 1 tank : **450 CBM/HOUR**  
 Return : 2 tanks : **790 CBM/HOUR**

Remarks:

\* Based on maximum velocity of 7.0 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** cbm 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 : **Vertical, Centrifugal, Multi-stage Electrical Motor Driven Deepwell Pump.**  
 Make : **TEIKOKU MACHINERY WORKS, LTD.**  
 How many : **2 sets**  
 Maximum specific gravity : **0.948**
- 5.2 Capacity (CMB/Hour) : **300CBM/HR x 110 m 1.c. (S.G. 0.601) or 250 CBM/HR x 120 m 1.c. (S.G. 0.948)**  
 Two speed or variable speed : **120 kW**  
 Rated kW (each)  
 Working pressure maximum : **22.0 kg/cm2**
- 5.3 Location : **One pump each cargo tank**  
 Removable : **Not Removable**
- 5.4 Booster pumps : **NOT APPLICABLE**  
 Type : **NOT APPLICABLE**  
 Maker : **NOT APPLICABLE**
- 5.5 Capacity (CMB/Hour) : **NOT APPLICABLE**  
 Working pressure : **NOT APPLICABLE**
- 5.6 Location : **NOT APPLICABLE**
- 5.7 Time to discharge a full liquid cargo using all pumps against back pressure at pump  
 1 bar : **about 10.7 hours for LPG**  
 5 bars : **about 54.07 hours for LPG**  
 10 bars : **-----**
- 5.8 Nominal back pressure when : **about 1 bar**  
 working In series corresponding : **NOT APPLICABLE**  
 head Maximum back pressure : **about 5 bar**  
 Nominal pressure at rail (propane) : **about 13 bar at 20 degree C of cargo temperature**
- 5.9 What amount of cargo remains in tanks after completion pumping before stripping:  
 - liquid : **N/A**

## 6. STRIPPING

- 6.1 Stripping system, if any : **N/A**
- 6.2 Time required to remove all traces of liquid cargo as stated in 5.9 for:  
- LPG : **N/A**

## 7. CARGO COMPRESSORS

- 7.1 Type : **Vertical, Water cooled, 1 Stage, Double Acting, Oil Less Type.**  
Make : **TANABE PNEUMATIC MACHINERY CO.,LTD.**  
How many : **2 sets**  
Piston displacement : **460 CBM/HR**  
Rated Kw : **75 kW**  
Stroke : **177.8 mm**  
Max discharge pressure : **20.0 kg/cm2 (G)**  
Pressure differential : **Maximum 7.0 kg/cm2**
- No of Revolutions : **540 rpm**
- 7.2 Are compressors oil free : **YES**
- 7.3 Can they reliquefy VCM without risk : **They can compress VCM but cannot reliquefy**
- 7.4 State time to bring full cargo of butane to atmospheric pressure from : **NOT APPLICABLE**

## 8. INERT GAS SYSTEM (N2 GENERATOR)

- 8.1 Does the vessel use inert gas? : **YES**  
If so, state utilization and quantities : **GAS FREEING / 125 Nm3/hr**  
:  
**NITROGEN GENERATOR** : **PERMEA MARITIME PROTRCTION**  
**Nitrogen Purity** : **99% Vol.(Maximum 99.5% Vol.)**  
**Discharge Capacity** : **125 NM3/Hr(At Nitrogen Purity 99% Vol).**  
**Nitrogen Discharge Pressure** : **9.0 Kg/cm2 (maximum**  
**Dew Point** : **Minus(-)65 C(at atmospheric pressure)**
- 8.2 Can the vessel produce inert gas? : **N/A (NITROGEN GENERATOR)**  
If so, state type and composition of gas produce: **Nitrogen Purity 99% Volume**
- Discharge Capacity : **9.0 kg/cm2**
- 8.3 Maximum production obtainable : **3,000 CBM/DAY**
- NOTE:- Above quantities obtained at engine room temperature 45° C
- 8.4 State if there are storage facilities for inert gas onboard: **NOT APPLICABLE**  
- Size : **NOT APPLICABLE**  
- Pressure : **NOT APPLICABLE**
- 8.5 State if any shore supply of nitrogen may be required: : **YES**  
- for what purpose : **INERTING/GAS FREEING OF CARGO TANKS**  
- what quantities : **16,500 CBM (depends on required cargo tank purity)**

**9. GAS FREEING**

- 9.1 State method used giving all details : **Nitrogen Plant / Fans**  
**1. Discharge remaining cargo in cargo tanks as much as possible**  
**2. Purge remaining cargo in the cargo tanks with Nitrogen vapour produced by nitrogen generator on board the vessel.**  
**3. After the atmosphere inside the cargo tanks being reached the area well lower than the critical dilution line, purge the atmosphere inside the cargo tanks with open air by using portable fans or cargo compressor.**
- 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: About 3-4 days**  
**Inert gas required: 16,500 cbm (depends on required tank condition)**
- 10.2 Can this operation be carried out at sea? : **YES**
- 10.3 Can the ship measure the number of ppm in vapour phase? : **NO**
- 10.4 Has vessel deck tank for changing grade/cooling operations? : **YES**
- 10.5 Deck tanks : **NOT APPLICABLE**  
Capacity : **NOT APPLICABLE**  
Purpose : **NOT APPLICABLE**
- 11. COOLING BEFORE LOADING : NOT APPLICABLE**

**12. CARGO HEATER**

- 12.1 Type : **Horizontal Shell & Tube**  
12.2 Inside Diameter **650 MM**  
12.3 Overall length **4.9 M**  
12.4 Cargo flow rate **150 CBM/HR**  
12.5 Min Inlet Temp **16 °C**  
12.6 Min Outlet Temp **5 °C**  
12.7 Required Sea water Capacity **420 CBM/HR**  
12.8 Design Pressure **20.0 KG/CM2**  
12.9 Hydrostatic Test Pressure **30.0 KG/CM2**  
12.10 Tightness Test Pressure **20.0 KG/CM2**

12.0 State discharging rate for propane to be brought from atmospheric pressure **N/A**  
Loading rate for Propane from – 45° C / to 0° C: **about 150 CBM/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**

**NOT APPLICABLE**

14.1 Is it independent of cargo? : **NOT APPLICABLE**  
Is so, state cooling agents : **NOT APPLICABLE**

14.2 What minimum temperature can be maintained : **NOT APPLICABLE**

14.3 What time required at sea to lower by 1<sup>0</sup>C the full cargo of : **NOT APPLICABLE**

**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?

1. **At optional position from bottom to top in tank: Through Slip tubes**
2. **At top in tank : Through pressure gauge connections**
3. **At Cargo manifold: Through pressure gauge connections**

Standard of fitting? : **as per 16.1**

16.2 Same question for cargo : **NOT APPLICABLE**

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) : **51.30 M**  
- distance from stem (FP) (S / P) : **44.70 M**  
- height above deck : **1.11 M**  
- distance from ship's rail : **2.50 M**  
- underside keel to manifold : **8.11 M**

17.3 Liquid line

- flange-size : **8 INCH / ANSI 300 lbs**  
- type : **Vertical Flange**

Gas line

- flange-size : **6 INCH / ANSI 300 lbs**  
- type : **Vertical Flange**

17.4 What reducers on board? :

<b>For Liquid line (low temperature)</b>	8" ( 300 ) X 6" ( 300 )
	8" ( 300 ) X 5" ( 300 )
	8" ( 300 ) X 4" ( 300 )
	8" ( 300 ) X 3" ( 300 )
	8" ( 150 ) X 6" ( 150 )
	8" ( 150 ) X 5" ( 150 )
	8" ( 150 ) X 4" ( 150 )
	8" ( 150 ) X 3" ( 150 )
	8" ( 300 ) X 8" ( 150 )
<b>For Vapor line (normal temp.)</b>	6" ( 300 ) X 5" ( 300 )
	6" ( 300 ) X 4" ( 300 )
	6" ( 300 ) X 3" ( 300 )
	6" ( 300 ) X 2" ( 300 )
	6" ( 150 ) X 5" ( 150 )
	6" ( 150 ) X 4" ( 150 )
	6" ( 150 ) X 3" ( 150 )
	6" ( 150 ) X 2" ( 150 )
	6" ( 300 ) X 6" ( 150 )

17.5	Is ship fitted with stern discharge?	<b>NO</b>
	- Liquid line - diameter	: <b>N/A</b>
	- flange – size	: <b>N/A</b>
	- type	: <b>N/A</b>

## 18. HOSES

	Are serviceable hoses available on board?	: <b>None</b>
18.1	Length	: <b>NOT APPLICABLE</b>
	Diameter	: <b>NOT APPLICABLE</b>
	Flange-size	: <b>NOT APPLICABLE</b>
	Type	: <b>NOT APPLICABLE</b>
	Bending radius	: <b>NOT APPLICABLE</b>
18.2	Minimum temperature acceptable	: <b>NOT APPLICABLE</b>
	Maximum pressure acceptable	: <b>NOT APPLICABLE</b>
18.3	For what products are hoses suitable?	: <b>NOT APPLICABLE</b>

## 19. DERRICKS

	- Hose cranes	:
	- Where situated	: <b>On upper deck near Cargo Manifold</b>
	- Lifting capacity	: <b>(Port/Stbd) S.W.L. 0.9 MT</b>
	- Working radius	: <b>25 degrees</b>

## 20. SPECIAL FACILITIES

20.1	How many grades can be segregated?	: <b>2</b>
20.2	How many cooled?	: <b>NOT APPLICABLE</b>
20.3	Can vessel sail with slack cargo tanks?	: <b>YES</b>