PARADISE
GAS CARRIERS

FORM C GAS

PGC PATREAS

MODEL

Form C gas

Index

PARADISE
GAS CARRIERS

SECTION
A

GENERAL INFORMATION

A1 PRINCIPAL SHIP PARTICULARS

1.1	Name of Ship	PGC PATREAS
1.2	Previous Name(s)	N/A
1.3	Builder	Kyokuyo, Japan
1.4	Date of delivery	22nd May 2017
1.5	Classification Society	BV
1.6	Gross Registered Tonnage	6,248
1.7	Net registered Tonnage	2,095
1.8	Suez Tonnage Gross/Net	
1.9	Panama tonn. Total Volume m3/Net	
1.10	Registered Owner	PATREAS MARITIME LTD
	Address	Ajeltake Road, Ajeltake Island Majuro, Marshall Islands
	Telephone	
	Telex/fax	
1.11	Manager or Operator	Paradise Navigation SA
	Address	4-6 Solomou Str. N. Psychiko Greece
	Telephone	+30 210 6912010
	Telex/fax	+30 2106912272
1.12	Flag	Malta
1.13	Port of registry	Valletta
1.14	Official No.	9796169
1.15	Call Sign	9HA4579
1.16	Immarsat No.	424825310
1.17	LR/IMO No.	9796169
1.18	Was the ship built in accordance with the following regulations	
	IMO	YES
	USCG	YES
1.19	IMO Certification	
	Certificate of Fitness IGC	YES
	Letter of Compliance	YES
1.20	Date questionnaire compiled	19/05/2017

A2 HULL DIMENSIONS

2.1	Length overall	117.02 m
2.2	Length between perpendiculars	110.00 m
2.3	Extreme breadth	19.20 m
2.4	Extreme depth	9.5 m
2.5	Summer draught	6.8135 m
2.6	Corresponding deadweight	6,861 Tonnes
2.7	Load displacement	
2.8	Load displacement (summer)	10,830.89 Tonnes
2.9	Cargo tank cubic capacity (100%)	7,543.427 m^3
2.10	Distance from keel to top antenna	36.15 m
2.11	Air draught (with normal ballast)	31.62 m

A3 BALLAST PARTICULARS

3.1	Permanent Ballast		N/A
3.2	Ballast quantity		911.0 Tonnes
3.3	Bunkers, stores, etc.		504.0 Tonnes
3.4	Draught	- Forward	2.356 m
		- Aft	5.507 m
		- Mean	3.932 m

A4 IMMERSION

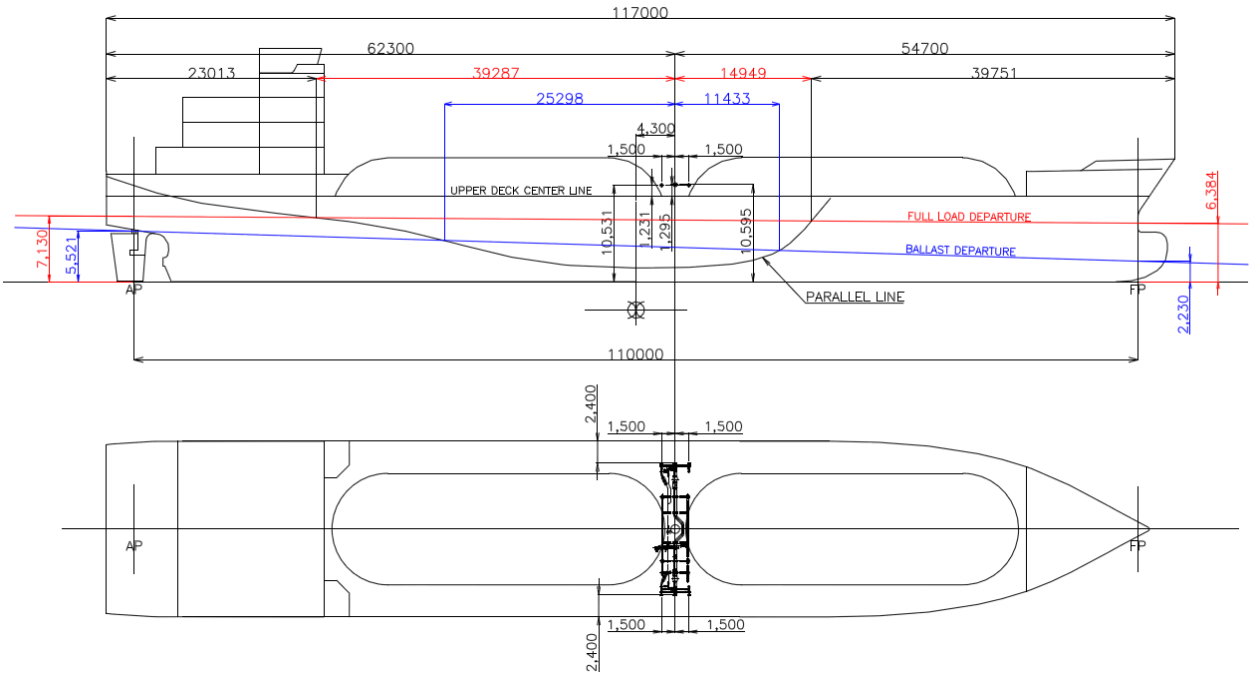
4.1	TPC at normal draught	18.69 Tonnes at 5.80 m mean draught
4.2	TPC at loaded draught	19.66 Tonnes at 6.80 m mean draught

A5 LOADED PARTICULARS

			Butane	Propane	C4 (Butylene)	VCM
5.1	Cargo					
5.2	Density		0.607	0.539	0.627	0.966
5.3	Cargo	tons	4461.4	3,961.6	4608.4	5,433.7
5.4	Bunkers	IFO	434.5	434.5	434.5	434.5
5.5	GASOIL		-	-	-	-
5.6	Fresh water		204.6	204.6	204.6	204.6
5.7	Stores/spares		-	-	-	-
5.8	Lub oil		-	-	-	-
5.9	Ballast		250.3	250.3	250.3	709.4
5.10	Deadweight		5499.5	4,999.7	5646.5	6,930.9
5.11	Draught	- Forward	5.076	4.619	5.210	6.219
		- Aft	6.875	6.777	6.904	7.282
		- Mean	5.976	5.698	6.057	6.751

			Mix: 50/50	Mix: 30/70 - C3/C4	Mix:70/30 - C3/C4	
5.1	Cargo					
5.2	Density					
5.3	Cargo	tons	3,993	4,088	3,898	
5.4	Bunkers	IFO				
5.5	GASOIL					
5.6	Fresh water					
5.7	Stores/spares					
5.8	Lub oil					
5.9	Ballast					
5.10	Deadweight					
5.11	Draught	- Forward				
		- Aft				
		- Mean	5.73	5.87	5.74	

A6 PARALLEL MID-BODY DIMENSIONS



A7 BUNKER CAPACITIES

7.1	M.E. Fuel Oil	Grade	IFO 380 (δ : 0,980)
		Capacity 98%	499.91 Tonnes
7.2	Diesel Oil	Grade	(δ : 0,840)
		Capacity 98%	80.23 Tonnes

A8 SPEED & FUEL CONSUMPTION DETAILS

8.1	At sea, laden speed 12.50 kts / ballast speed 13.30 kts	FO	7.6 ton/day
	At sea, laden speed 13.20 kts / ballast speed 14.20 kts	FO	9.1 ton/day
	At sea, laden speed 13.90 kts / ballast speed 15.10 kts	FO	11.0 ton/day
	At sea	GO	1.2 ton/day
8.2	At sea (normal service speed) while conditioning cargo	N/A	
8.3	In port, loading	FO	ton/day
		GO	3.4 ton/day
8.4	In port, discharging	FO	ton/day
		GO	3.4 ton/day
8.5	In port, idle	FO	ton/day
		GO	ton/day

A9 MAIN ENGINE PARTICULARS

9.1	Main engine make and type	Makita Corporation / MAN B&W 6L35MC6.1 (De-rated)
9.2	No. of units	1
9.3	Maximum continuous rating (MCR) per engine	178.0 rpm
9.4	Total available power	2,640 kW
9.5	Normal service power (ECR)	2,376 kW at 171.9 rpm

A10 AUXILIARY PLANT

10.1	Make and type of auxiliary generators	Taiyo Electric Co., Ltd. FE 540L-6
10.2	No. of units	2
10.3	Maximum generator output per unit	480 kW
10.4	Shaft generator	N/A
10.5	Emergency generator	96 kW
10.6	Total available power	960 kW

A11 POWER/SPEED INFORMATION

11.1	Trial data	BHP	2,528 kW
		MCR	
		Speed	15.67 kts
		Draught	3.850 m
11.2	Normal service speed	BHP	2,376 kW
		MCR	
		Speed	Abt 13.6 kts
		Draught	5.814 m

A12 THRUSTERS

12.1	Make and type	KAWASAKI KT-43B1
12.2	No. Installed	1
12.3	Location and rated bollard pull	FORE (Fr. 149) – 5 Ton Nominal Thrust

A13 FRESH WATER

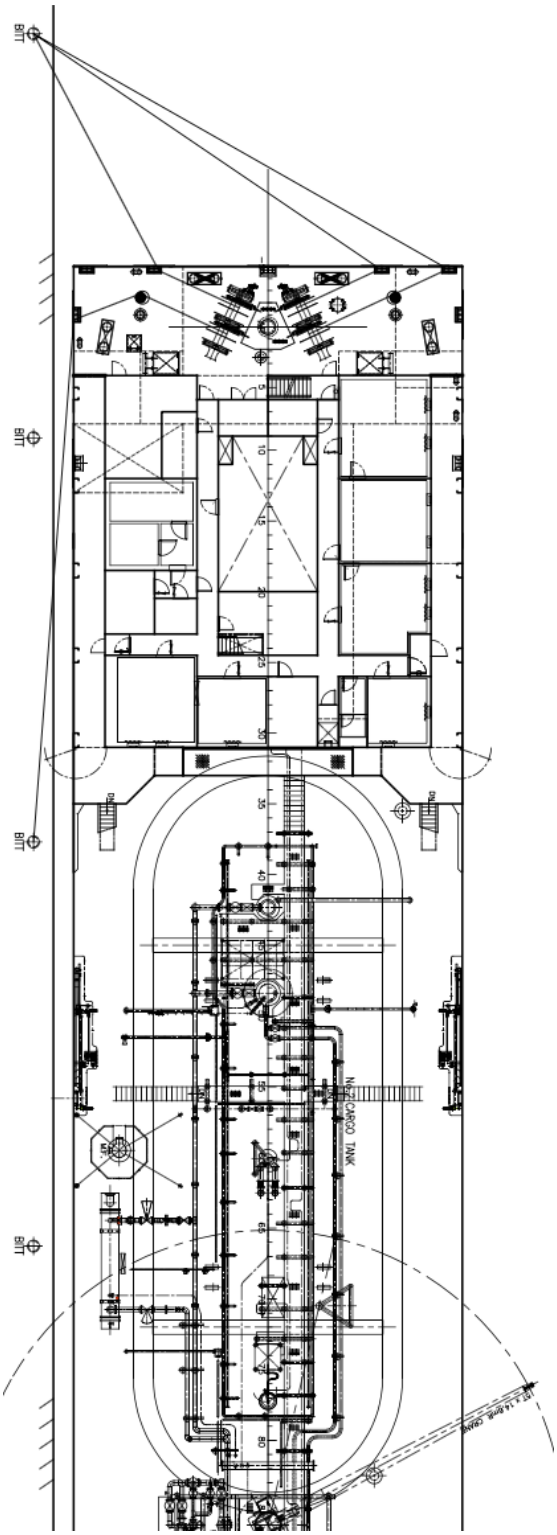
13.1	Capacity of distilled tanks	100.40 m^3
13.2	Capacity of domestic tanks	104.85 m^3
13.3	Daily consumption distilled	
	domestic	
13.4	Daily evaporator production	Abt. 9 tonnes/day

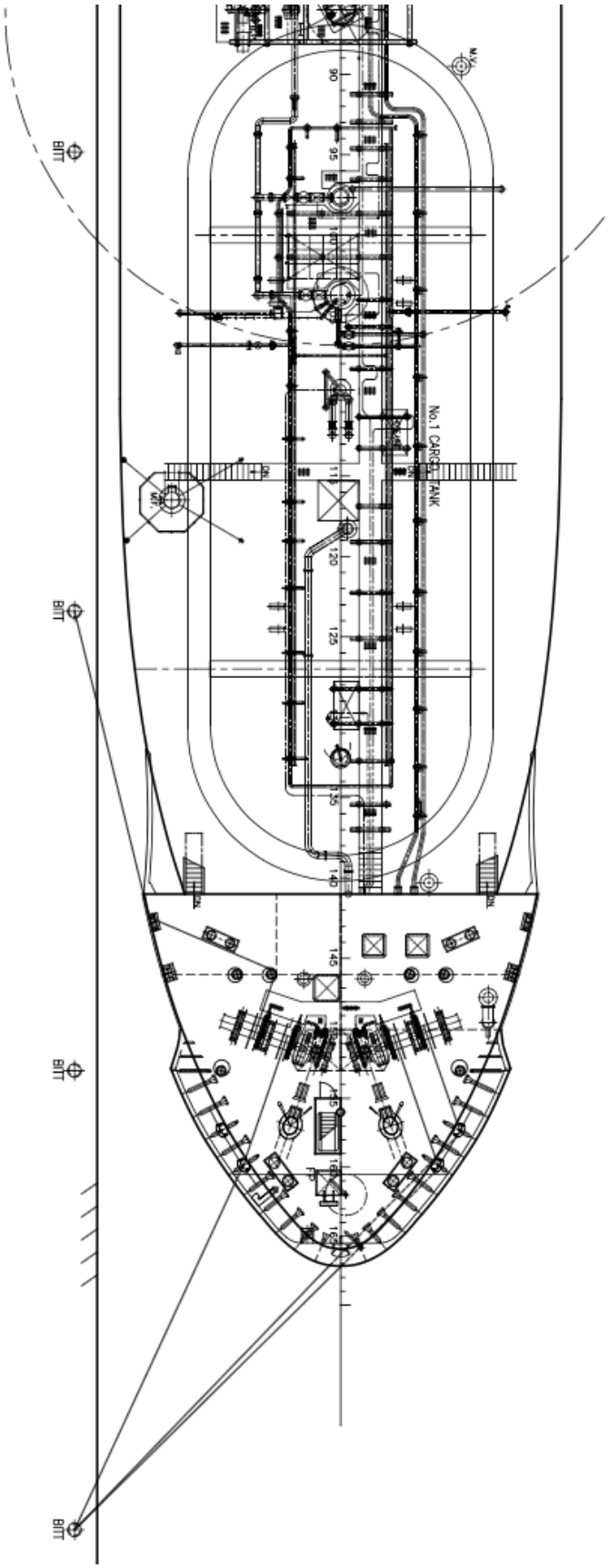
A14 BALLAST CAPACITIES AND PUMPS

Fill the following table		
	Tank	**Capacity (m³)**
14.1	Fore peak	118.73
14.2	Wing or side tanks	1,724.28
14.3	Double bottoms	-
14.4	Aft peak	226.74
14.5	Other	-
14.6	Total	2,071.75
14.7 Ballast pump make and type	Centrifugal - TAIKO KIKAI EMCN 200MD	
14.8 No. of Pumps	2	
14.9 Total capacity	500 m³/h (2 x 250m³/h)	
14.10 Location	Engine Room Lower Floor (FR.29 – 30)	
14.11 Control Location	Engine Control Room and Cargo Monitoring Room	

A15 MOORING EQUIPMENT

15.1 Ropes and Wires.
On the diagram below indicate the position of winch mounted wires(W) and ropes (R) together with open (O) and closed (C) fairleads.




BITT
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No.1 CARGO TANK
90
95
120
125
135
140
145

Mooring Winches					
	No	**Motive power (steam,hydraul)**	**Heaving power**	**Brake Capacity**	**Hauling speed**
Forecastle	2	hydraulic	74.5 kN	245 kN	15 m/min
Poop	2	hydraulic	74.5 kN	245 kN	15 m/min

15.3	Anchors and Windlasses	
	Windlass motive Power (steam, hydraulic)	hydraulic
	Hauling power	Tonnes 124.5 kN
	Brake holding capacity	Tonnes 716 kN
	Date of last test	
	Anchor type	Stockless AC14 Type
	Weight	Each anchor 2.840 tonnes
	Is spare carried	NO
	Cable diameter	54 mm
	No of shackles port	9
	No of shackles starboard	10
15.4	Windage	
	Windage on ballast draught	m^2
	Windage full loaded	m^2

A16 NAVIGATIONAL EQUIPMENT

Is the following equipment fitted :		YES	NO
16.1	Magnetic compass	x	
16.2	Gyro compass and repeaters	x	
16.3	Radars	x	
16.4	Radar plotting equipment	x	
16.5	Arpa	x	
16.6	Echo sounder	x	
16.7	Speed/Distance indicator	x	
16.8	Doppler log	x	
16.9	Rudder angle, RPM, controllable pitch and Thrusters indicators	x	
16.10	Rate of turn indicator		x
16.11	Radio D.F.		x
16.12	Navtex receivers	x	
16.13	Satellite navigator	x	
16.14	Decca navigator		x
16.15	Loran C		x
16.16	Sextants		x
16.17	Signal lamp (aldis)	x	
16.18	Course recorder	x	
16.19	Engine order printer		x
16.20	What chart outfit coverage is provided if limited, indicate areas covered	No limitation	
16.21	Formal chart correction system in use	Chartco	

A17 COMMUNICATION EQUIPMENT

Is the following equipment fitted :			
		YES	NO
17.1	Is ship with GMDSS	x	
17.2	Radio telegraph main transmitter including facility to transmit on radio telephone distress frequency		x
17.3	Radio telegraph main receiver including facility to receive on radio telephone distress frequency		x
17.4	Radio telephone distress frequency watch receiver	x	
17.5	Main radio antenna	x	
17.6	Radio telegraph reserve transmitter		x
17.7	Radio telegraph reserve receiver		x
17.8	Reserve radio antenna		x
17.9	Are the main and reserve installation electrically separate and electrically independent of each other		x
17.10	Radio telegraph auto alarm		x
17.11	2182 KHZ bridge watch receiver	x	
17.12	Alarm signal generating device	x	
17.13	VHF radio	x	
17.14	Inmarsat satellite communications system	x	
	if yes, state identification number		
17.15	Telephone		
	if yes, state identification number		
17.16	Telephone		
	if yes, state identification number		
17.17	Weather fax	x	
17.18	Epirbs		x
17.19	At least three survival craft two-way radio telephone apparatus	x	
17.20	Emergency lifeboat transmitter		x
17.21	Full set of publications	x	
17.22	Satellite Epirb	x	
17.23	VHF Epirb		x
17.24	Radio transponder for survival craft	x	

PARADISE GAS CARRIERS

CARGO SYSTEMS

SECTION B

B1 CARGO - GENERAL INFORMATION

1.1	List products which the ship is certified to carry	344
1.2	Minimum allowable tank temp.	-10 °C
1.3	Maximum permissible tank pressure	17.7 Bar (1.77 Mpa)
1.4	List grades which can be transported simultaneously	2
1.5	List grades which can be loaded or discharged simultaneously	1
1.6	State natural tank segregation. (N.B. separation obtained by the removal of spools or by insertion of blind flange)	By blind flange
1.7	Number of products, (gas) that can be conditioned by reliquefaction simultaneously.	N/A

B2 CARGO TANKS

2.1	No. and type of cargo tanks	2 Tanks - Type C
2.2	Maximum allowable relief valve setting	17.3 Bar Gauge
2.3	Safety valve set pressure - if variable give range for pilot valve	N/A
2.4	Maximum vacuum	0.344 Mpa
2.5	Maximum cargo density	0.966 Ton/m³ (VCM)
2.6	Maximum rate of cool-down	°C/hr
2.7	State any limitations regarding partially filled tanks	No limitations
2.8	State allowable combinations of filled and empty tanks	No Restriction

B3 CARGO TANK CAPACITIES (including tank dome)

Complete the following table

TANK	Capacity CBM 100%	Capacity CBM 98%	PROPANE Tonnes -42.8°C	AMMONIA Tonnes -33°C	BUTANE Tonnes -0.5°C	VCM Tonnes -10°C
1	3,772.7	3,697.2	1,687.2		2,032.6	3,205.2
2	3,773.1	3,697.6	1,687.4		2,032.6	3,205.6
TOTALS	**7,545.8**	**7,394.8**	**3,374.6**		**4,065.4**	**6,410.8**

B4 LOADING RATES

		PRODUCT	RATE (Tonnes/hr) With vapour return	Without return
4.1	From refrigerated storage			
4.2		BUTANE		
4.3		PROPANE		
4.4		AMMONIA		
4.5				
4.6				
4.7				

		PRODUCT	RATE (Tonnes/hr) With vapour return	Without return
4.8	From pressure storage			
4.9		BUTANE 0-30°C	480	
4.10		PROPANE 0°C	420	
4.11		10° C		
4.12		20° C		
4.13		30° C		

B5 DISCHARGING - GENERAL

Cargo pumps		
5.1	Type of pumps	Elect. Motor Driven Vertical Turbine (deep well pump)
5.2	Number per tank	1
5.3	Rate (per pump)	LPG 400 m^3/h, VCM 200 m^3/h
5.4	Delivery head	LPG 110 m , VCM 148 m
5.5	Maximum density	0.949
	Booster pumps	
5.6	Type of pump	Elect. motor driven NMB 150C
5.7	Number	1
5.8	Rate (per pump)	300 m^3/h
5.9	Delivery head	110 m
5.10	Maximum density	0.657

B6 DISCHARGE PERFORMANCES

Full cargo discharge times (using all main pumps)

		MANIFOLD BACK PRESSURE	Hours With vapour return	Hours Without return
6.1	From refrigerated			
6.2		1 bar (with 2 deepwell)		
6.3		2 bar (with 2 deepwell)		
6.4		3 bar (with 2 deepwell)		

		MANIFOLD BACK PRESSURE	Hours With vapour return	Hours Without return
6.5	Pressurized			
6.6		1 bar (with 2 deepwell)		
6.7		2 bar (with 2 deepwell)		
6.8		3 bar (with 2 deepwell)		

B7 UMPUMPABLES

	TANK NO.	1	2	3	4	5	6	TOTAL TONNES
7.1	Vapour							
7.2	Liquid	0.5 m3	0.5 m3					**1.0 m3**
7.3						**Total quantity**		

B8 VAPORISING UNPUMPABLES

8.1 Process used

Time to vaporise liquid unpumpables remaining after full cargo discharge :

8.2 - Propane

8.3 - Butane

8.4 - Ammonia

8.5 - Propylene

8.6 -

8.7 -

B9 RELIQUEFACTION PLANT N/A

9.1	Plant design conditions	Air temperature °C	
		Sea temperature ° C	
	Plant type :		
9.2	Single stage/direct	☐	☐
9.3	Two stage/direct	☐	☐
9.4	Simple cascade	☐	☐
9.5	Coolant type		
	Compressors		
9.6	Type		
9.7	Number		
9.8	Capacity (per unit)		
9.9	Are they oil-free		

B10 COOLING CAPACITY

State cooling capacity (in Kcal/hr) for :

10.1	Propane	@ °C
10.2		@ °C
10.3		@ °C
10.4	Butane	@ °C
10.5		@ °C
10.6		@ °C

B11 CARGO TEMPERATURE LOWERING CAPABILITY (AT SEA)

Time taken to lower the temperature of:

11.1	Propane from	°C to °C
11.2		°C to °C
11.3		°C to °C
11.4		°C to °C
11.5		°C to °C
11.6	Butane from	°C to °C
11.7		°C to °C
11.8		°C to °C

B12 INERT GAS

Main inert gas and nitrogen plant		
12.1	Type of system	PSA type Nitrogen Gas Generating Equipment
12.2	Capacity	400 m^3/h
12.3	Composition of inert gas	99.9%
12.4	Dew point	
12.5	Used for	Cargo Tank
	Nitrogen	
12.6	No of bottles	N/A
12.7	Capacity (each one)	N/A
12.8	Used for	
Main inert gas and nitrogen		Nitrogen

B13 CARGO TANK INERTING/DE-INERTING

13.1 Time taken from fresh air to under 5% 02 at -25°C dewpoint
Time taken from cargo vapour to fully inert at -25°C dewpoint

13.2 When : Inert gas density less than product
Inert gas density greater than product

B14 GAS FREEING TO FRESH AIR

14.1	Plant used	N2 Generating System
14.2	Time taken from fully inerted condition to fully breathable fresh air	10.2 hrs

B15 CHANGING CARGO GRADES

In this table write down time to change products (in hrs). Write also consumption of nitrogen.

From To	PROPANE TIME/CONS.	BUTANE TIME/CONS.	PROPYLENE TIME/CONS.	AMMONIA TIME/CONS.	VCM TIME/CONS.
PROPANE					
BUTANE					
PROPYLENE					
AMMONIA					
VCM					

B16 DECK TANK CAPACITY

16.1	Propane capacity	Cbm	NA
16.2	Butane capacity	Cbm	NA
16.3	Ammonia capacity	Cbm	NA
16.4	Nitrogen capacity	Ncm	NA

B17 PRE-LOADING COOLDOWN

In the table below, show time and quantity of coolant required to cooldown cargo tanks from ambient temperature and fully gassed up state sufficient to allow loading to commence.

			TIME	
	PRODUCT	**QUANTITY REQUIRED**	**With return line**	
17.1				
17.2	PROPANE			
17.3	BUTANE			
17.4	AMMONIA			
17.5	VINYL			

B18 VAPORISER

18.1	Type of vaporiser	N.A.
18.2	Number fitted	
18.3	Capacity (per unit)	cbm/hr vapour
18.4	Liquid supply rate	cbm/hr liquid
18.5	Delivery temperature	°C

B19 BLOWER

19.1	Type of blower	
19.2	Rated capacity	
19.3	Delivery pressure	

B20 CARGO RE-HEATER

20.1	Type of re-heater	Horizontal Shell and Tube
20.2	Number fitted	1
20.3	Heating medium	Sea Water
	Discharge rates with sea water at 18°C to raise product temperature:	
20.4	for propane from -48°C to -10°C	550m³/h
20.5	for ammonia from -°C to °C	

B21 HYDRATE CONTROL

21.1	Freezing point temperature of Depressant	
21.2	Quantity of Depressant carried	
21.3	Means of injection	

B22 CARGO MEASUREMENT

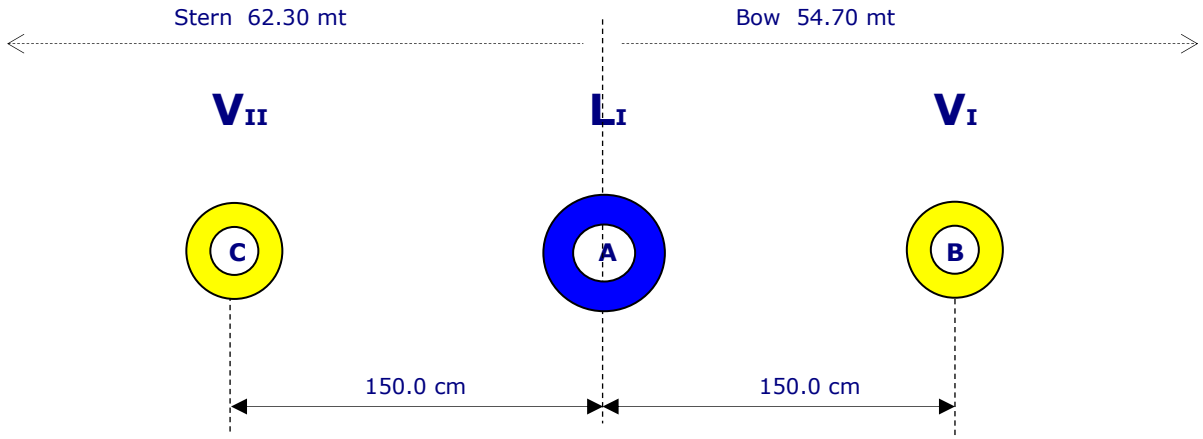
	LEVEL GAUGES		
21.1	Are level gauges local or remote		Remote
21.2	Manufacturer	MUSASINO CO., LTD.	
21.3	Type	Magnetic Float Type	
21.4	Rated accuracy	±10mm	
21.5	Certifying authority	BV	
	TEMPERATURE GAUGES		
22.6	Manufacturer	HYODA INSTRUMENTS CORP.	
22.7	Type	Drip-proof type	
22.8	Rated accuracy	±2°C	
22.9	Certifying authority		
	PRESSURE GAUGES		
22.10	Manufacturer	NAGANO KEIKI CO.,LTD	
22.11	Type	Weather proof type	
22.12	Rated accuracy	±1.6% F.S.	
22.13	Certifying authority		
	OXYGEN ANALYSER		
22.14	Manufacturer		
22.15	Type		
	FIXED GAS DETECTOR		
22.16	Manufacturer		
22.17	Type		
22.18	No of points detected		
	PORTABLE GAS DETECTOR		
22.19	Number		
22.20	Manufacturer		
22.21	Type		
	TOXIC GAS INDICATOR		
22.22	Number		
22.23	Type		
	TOXIC GAS INDICATOR TUBES		
22.24	Number		
22.25	Products		
22.26	Exp.dates		
	TANKSCOPE		
22.27	Type		

B23 CARGO SAMPLING

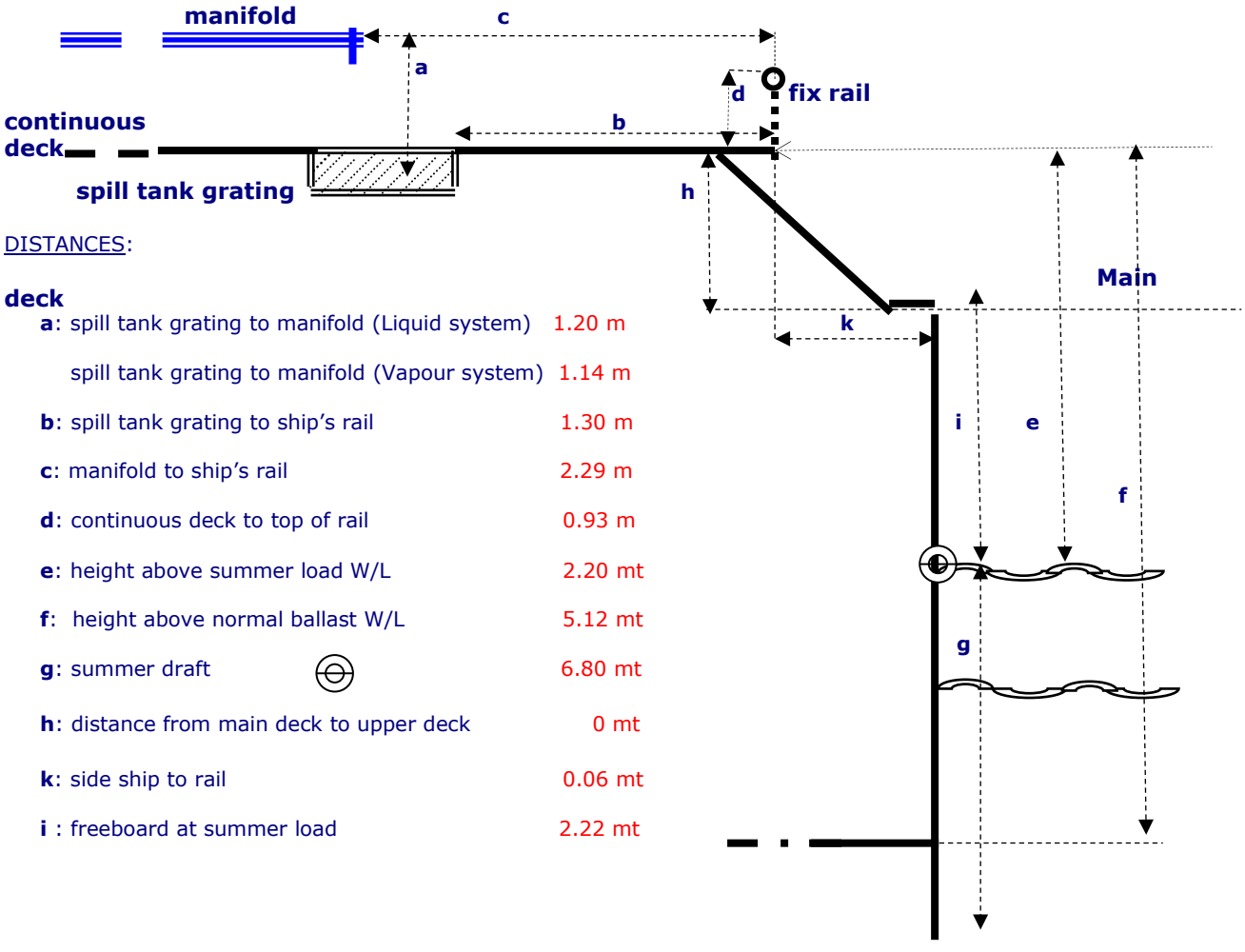
23.1 Fill the following table			
CARGO TANKS	CARGO TANKS	CARGO TANKS	CARGO TANKS
1	1	1	1
2	2	2	2
23.2 Can sample be drawn from:			
- Tank vapour outlet	- Tank vapour outlet	- Tank vapour outlet	
- Manifold liquid line	- Manifold liquid line	- Manifold liquid line	
- Manifold vapour line	- Manifold vapour line	- Manifold vapour line	
- Pump discharge line	- Pump discharge line	- Pump discharge line	
23.3 State connection type and size	SCREW – 10.5 millimetres	23.3 State connection type and size	

B24 CARGO MANIFOLD ARRANGEMENTS

CARGO MANIFOLD



Pipe Flange	Duty	Rating	Size	Raised (R) or Flat (F) face
A	Liquid system I	Ansi **300**	**10"**	R
B	Vapour " I	Ansi **300**	**6"**	R
C	Vapour " II	Ansi **300**	**6"**	R



DISTANCES:

deck

a: spill tank grating to manifold (Liquid system) 1.20 m

spill tank grating to manifold (Vapour system) 1.14 m

b: spill tank grating to ship's rail 1.30 m

c: manifold to ship's rail 2.29 m

d: continuous deck to top of rail 0.93 m

e: height above summer load W/L 2.20 mt

f: height above normal ballast W/L 5.12 mt

g: summer draft 6.80 mt

h: distance from main deck to upper deck 0 mt

k: side ship to rail 0.06 mt

i : freeboard at summer load 2.22 mt

B25 CARGO MANIFOLD REDUCERS

- For Liquid (design temperature: -48^{OC})

Ship Side	Terminal Side	Quantity
ANSI #300-250A	ANSI #300-300A	1
ANSI #300-250A	ANSI #300-200A	1
ANSI #300-250A	ANSI #300-150A	1
ANSI #300-250A	ANSI #300-125A	1
ANSI #300-250A	ANSI #300-100A	1
ANSI #300-250A	ANSI #300-80A	1
ANSI #300-250A	ANSI #150-250A	1
ANSI #300-250A	ANSI #150-200A	1
ANSI #300-250A	ANSI #150-150A	1
ANSI #300-250A	ANSI #150-125A	1

- For Vapor (design temperature: -10^{OC})

Ship Side	Terminal Side	Quantity
ANSI #300-150A	ANSI #300-200A	1
ANSI #300-150A	ANSI #300-125A	1
ANSI #300-150A	ANSI #300-100A	1
ANSI #300-150A	ANSI #300-80A	1
ANSI #300-150A	ANSI #300-50A	1
ANSI #300-150A	ANSI #150-200A	1
ANSI #300-150A	ANSI #150-150A	1
ANSI #300-150A	ANSI #150-125A	1
ANSI #300-150A	ANSI #150-100A	1
ANSI #300-150A	ANSI #150-80A	1

B26 MANIFOLD DERRICK/CRANE

26.1	Is Manifold Derrick provided	NO	
26.2	Is Manifold Crane provided	YES	
26.3	Is lifting equipment same port and starboard	YES	
	If not give details	**(Welded steel post arranged at the Centre Line of the vessel)**	
26.4	State SWL at maximum outreach	**5 Tonnes at maximum outreach of 14.6 m (5 m from side)**	