



FORM C GAS

PGC STRIDENT FORCE



MODEL

Form C gas

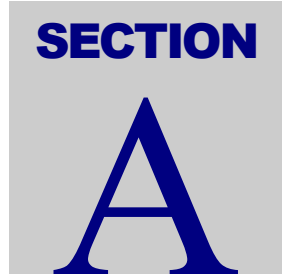
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GENERAL INFORMATION

A1 PRINCIPAL SHIP PARTICULARS

1.1	Name of Ship	PGC STRIDENT FORCE	
1.2	Previous Name(s)	NEW MARKET 1	
1.3	Builder	Higaki ship building, Japan	
1.4	Date of delivery	23 June 1999	
1.5	Classification Society	NKK	
1.6	Gross Registered Tonnage	6,560	
1.7	Net registered Tonnage	1,968	
1.8	Suez Tonnage Gross/Net	7,438.24T / 6375.95T	
1.9	Panama tonn. Total Gross/Net	6,560 / 5,566	
1.10	Registered Owner	VOM PANAMA S.A.	
	Address	80 Broad Street. Monrovia Liberia.	
	Telephone	53rd Street Marbella, World Trade Center 5th Floor, City of Panama, Panama	
	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	Portugal	
1.13	Port of registry	Madeira	
1.14	Official No.	1635	
1.15	Call Sign	CQAE3	
1.16	Immarsat No.	primary: +870773261323, secondary: +870773261325	
1.17	LR/IMO No.	9205574	
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	08/01/2018	

A2 HULL DIMENSIONS

2.1	Length overall	117.09m
2.2	Length between perpendiculars	109.02m
2.3	Extreme breadth	19.6 m
2.4	Extreme depth	9.75 m
2.5	Summer draught	7.57 m
2.6	Corresponding deadweight	8,485.4 Tonnes
2.7	Load displacement	
2.8	Load displacement (summer)	12,330 Tonnes
2.9	Cargo tank cubic capacity (100%)	6,527.407 m ³
2.10	Distance from keel to top antenna	34.40 m
2.11	Air draught (with normal ballast)	27.39 m

A3 BALLAST PARTICULARS

3.1	Permanent Ballast	N/A
3.2	Ballast quantity	2,684Tonnes
3.3	Bunkers, stores, etc.	560 Tonnes
3.4	Draught - Forward	2.89 m
	- Aft	6.91 m
	- Mean	4.90 m

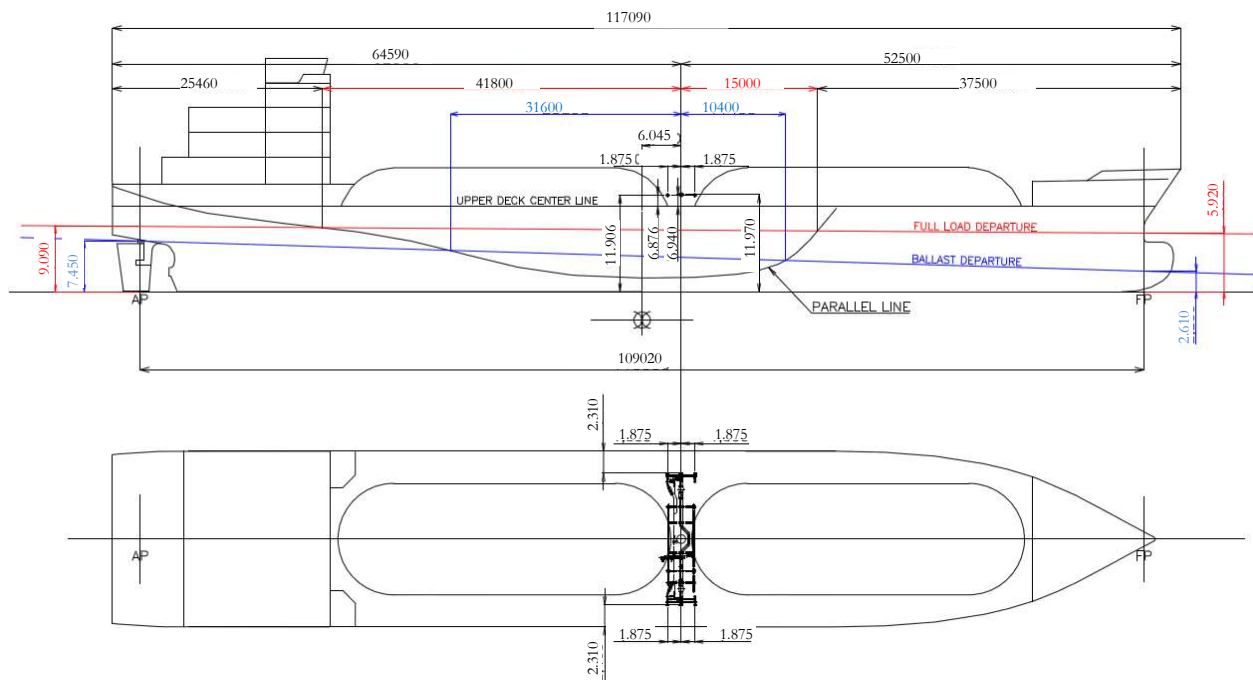
A4 IMMERSION

4.1	TPC at normal draught	17.25 Tonnes at 4.90m mean draught
4.2	TPC at loaded draught	18.68 Tonnes at 7.57 m mean draught

A5 LOADED PARTICULARS

5.1	Cargo	Butane	Propane	C4 (Butylene)	VCM
5.2	Density	0.600	0.582	0.625	0.972
5.3	Cargo tons	3935	4097	4125	6290
5.4	Bunkers IFO	461	461	461	461
5.5	GASOIL	207	207	207	207
5.6	Fresh water	211	211	211	211
5.7	Stores/spares	-	-	-	-
5.8	Lub oil	35	35	35	35
5.9	Ballast	1010	1010	1010	613
5.10	Deadweight	5795	6061	6051	7857
5.11	Draught - Forward	5.39	5.63	5.62	7.06
	- Aft	7.09	7.16	7.15	7.71
	- Mean	6.24	6.40	6.39	7.39

A6 PARALLEL MID-BODY DIMENSIONS



A7 BUNKER CAPACITIES

7.1	M.E. Fuel Oil	Grade	IFO 380	(δ : 0,980)
		Capacity 98%	686.882Tonnes	
7.2	Diesel Oil	Grade	(δ : 0,840)	
		Capacity 98%	143.276Tonnes	

A8 SPEED & FUEL CONSUMPTION DETAILS

8.1	At sea, laden speed 13.00 kts / ballast speed 13.5 kts	FO	14.0 tons/day
		GO -	1.5 ton/day
8.2	At sea (normal service speed) while conditioning cargo	FO	14.0 tons/day
		GO -	3.0 ton/day
8.3	In port, loading	FO	Nil
		GO	3.0 ton/day
8.4	In port, discharging	FO	ton/day
		GO	3.0 ton/day
8.5	In port, idle	FO	ton/day
		GO	1.0 ton/day

A9 MAIN ENGINE PARTICULARS

9.1	Main engine make and type	AKASAKA –Mitsubishi, 6 UEC 45LA / Vertical Water Cooled, 2 stroke Diesel Engine
9.2	No. of units	1
9.3	Maximum continuous rating (MCR) per engine	7200PS / 158 RPM
9.4	Total available power	5,371kW
9.5	Normal service power (ECR)	5,295 kW at 158 rpm

A10 AUXILIARY PLANT

10.1	Make and type of auxiliary generators	Yanmar Diesel Marine Engine
10.2	No. of units	3
10.3	Maximum generator output per unit	660 PS / 1200 RPM (per engine)
10.4	Shaft generator	N/A
10.5	Emergency generator	36 kW
10.6	Total available power	1906 kW

A11 SEA TRIALS POWER/SPEED INFORMATION

11.1	Trial data	BHP	100% 6639 BHP / 90% 5461 BHP
		MCR	7200@ 158 RPM
		Speed	17.2 knots
		Draught	F: 2.589m, A: 5.268m.
11.2	Normal service speed	BHP	4350 BHP
		MCR	4305@ 145 RPM
		Speed	Laden : 13.00 kts, ballast : 13.50 kts
		Draught	F: 2.589m, A: 5.268m.

A12 THRUSTERS

12.1	Make and type	NISHISIBA / NTKKC
12.2	No. Installed	1
12.3	Location and rated bollard pull	FORE (Fr. 145) – 700HP (522Kw)

A13 FRESH WATER

13.1	Capacity of distilled tanks	Nil
13.2	Capacity of domestic tanks	247.2 m ³
13.3	Daily consumption distilled	na
	domestic	4 mt.
13.4	Daily evaporator production	Abt. 7 tonnes/day

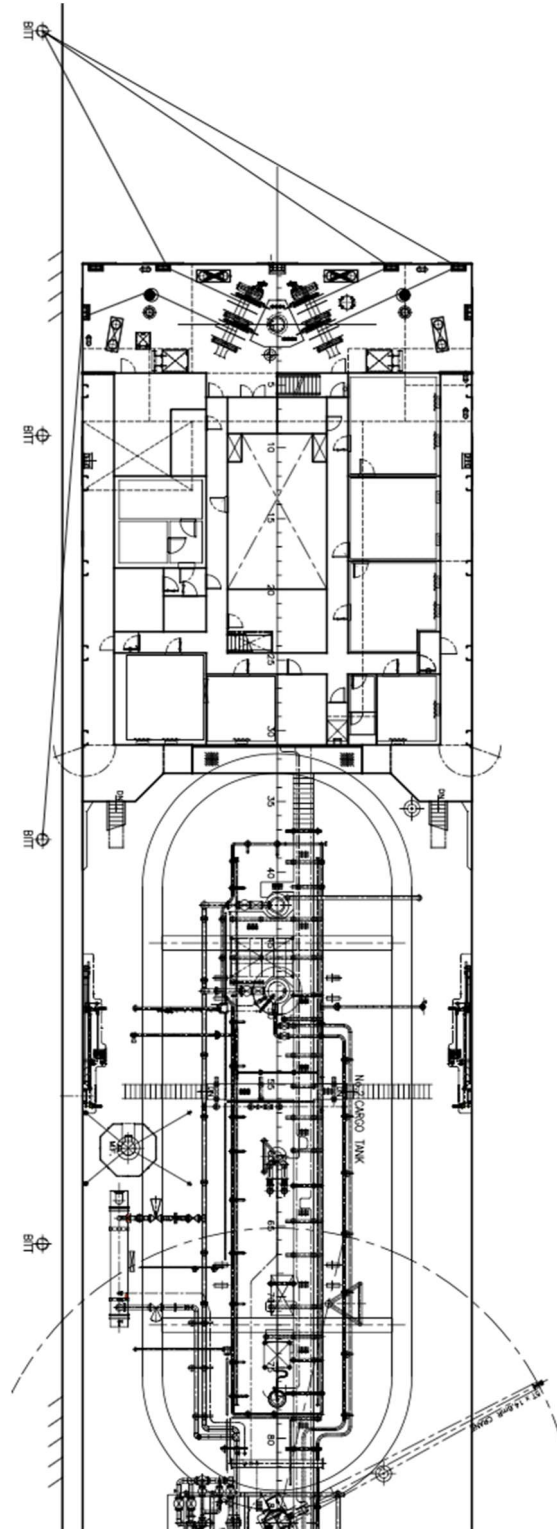
A14 BALLAST CAPACITIES AND PUMPS

Fill the following table		
	Tank	Capacity (m ³)
14.1	Fore peak	213.94
14.2	Wing or side tanks	1183.66
14.3	Double bottoms center	1659.15
14.4	Aft peak	-
14.5	Other (WBT 8 C use for sewage tank)	99.22
14.6	Total	3155.97
14.7	Ballast pump make and type	Centrifugal - TAIKO KIKAI / VSN-150 MBT
14.8	No. of Pumps	2
14.9	Total capacity	360 m ³ /h (2 x 180m ³ /h)
14.10	Location	Engine Room Lower Floor Port side
14.11	Control Location	Engine Control Room

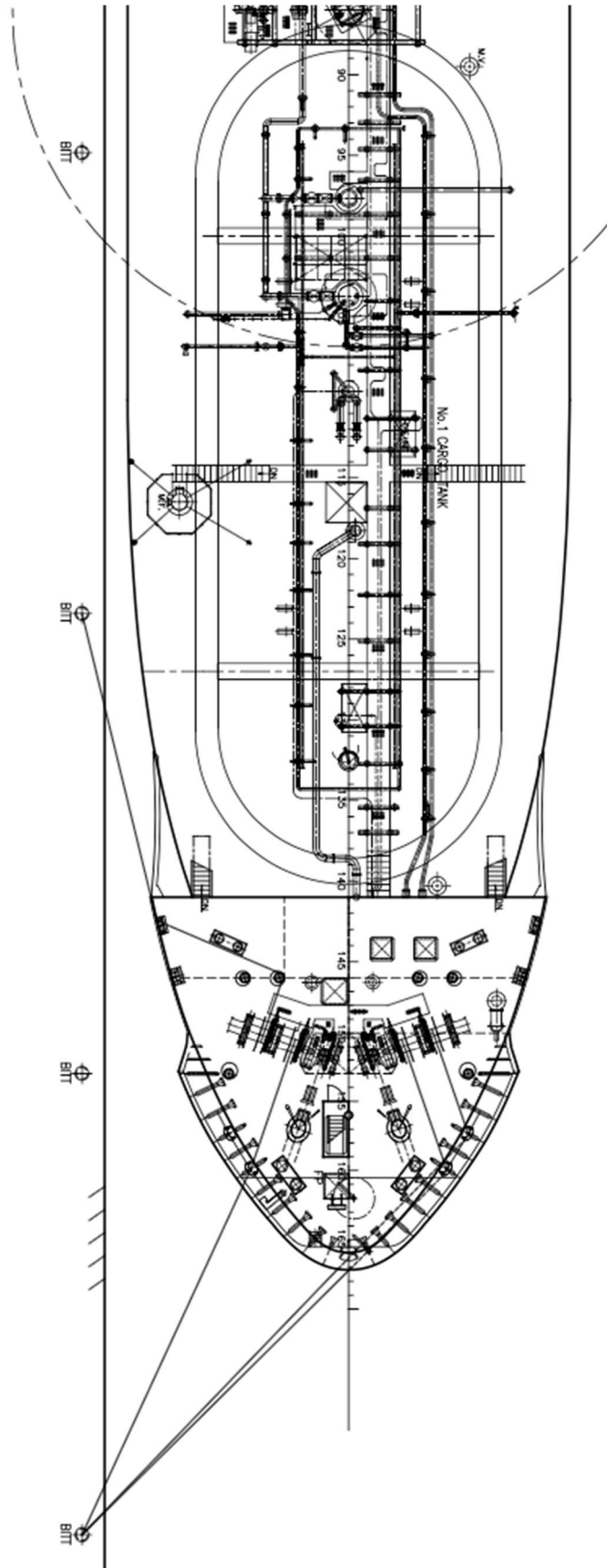
A15 MOORING EQUIPMENT

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.



GENERAL INFORMATION



GENERAL INFORMATION

Mooring Winches					
	No	Motive power (steam,hydraulic)	Heaving power	Brake Capacity	Hauling speed
Forecastle	2	hydraulic	73.5 kN	224 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, Combined Mooring Winches			
	Hauling power	Tonnes 143 Kn X 9m/min x2			
	Brake holding capacity	Tonnes 224Kn			
	Date of last test				
	Anchor type	Stockless JIS Type			
	Weight	Port side: 3555 kgs, Stbd side: 3565 kgs.			
	Is spare carried	NO			
	Cable diameter	52 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	FBB 500	
17.15	Telephone	+870 773 261 323	
	if yes, state identification number	FBB 250	
17.16	Telephone	+870 773 261 325	
	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	





C A R G O S Y S T E M S

SECTION

B

B1 CARGO - GENERAL INFORMATION

1.1	List products which the ship is certified to carry	12
1.2	Minimum allowable tank temp.	-48 °C
1.3	Maximum permissible tank pressure	7.0 kg/cm ²
1.4	List grades which can be transported simultaneously	2
1.5	List grades which can be loaded or discharged simultaneously	Two grades can be loaded by segregating the flanges and or valve. Two grades can be discharge simultaneously with booster pump, not segregated cargo. One grade only to discharge with booster pump if two segregated cargo loaded.
1.6	State natural tank segregation. (N.B. separation obtained by the removal of spools or by insertion of blind flange)	By blind flange or valves
1.7	Number of products, (gas) that can be conditioned by reliquefaction simultaneously.	Two grades if not segregated. One grade only if segregated.

B2 CARGO TANKS

2.1	No. and type of cargo tanks	2 Tanks - Type C
2.2	Maximum allowable relief valve setting	7.0 kg/cm ²
2.3	Safety valve set pressure - if variable give range for pilot valve	7.0 kg/cm ² / 6.0 kg/cm ² / 4.0 kg/cm ² .
2.4	Maximum vacuum	0.344 Mpa
2.5	Maximum cargo density	0.972Ton/m ³ (VCM)
2.6	Maximum rate of cool-down	115,000 kcal/hr (suction temp. -20°C, suction press 0.1 kg/cm ² G)
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

Complete the following table

TANK	Capacity CBM	Capacity CBM	PROPANE	AMMONIA	BUTANE	VCM
	100%	98%	Tonnes -42.8°C	Tonnes -33°C	Tonnes -0.5°C	Tonnes -10°C
1	3,263.818	3,198.542	2,051.8	2,312.5	1,922.3	3,174.8
2	3,263.589	3,198.317	2,051.6	2,312.0	1,922.2	3,174.5
TOTALS	6,527.407	6,396.859	4,103.4	4,624.5	3,844.5	6,349.3

B4 LOADING RATES

	PRODUCT	RATE (Tonnes/hr)	
		With vapour return	Without return
4.1	From refrigerated storage		
4.2	BUTANE	340	300
4.3	PROPANE	330	300
4.4	AMMONIA	380	330
4.5			
4.6			
4.7			
4.8	From pressure storage		
4.9	BUTANE 0-30°C	340	175
4.10	PROPANE 0°C	320	175
4.11	10° C	300	175
4.12	20° C	280	175
4.13	30° C	270	175

B5 DISCHARGING - GENERAL

Cargo pumps		
5.1	Type of pumps	Dw 150/150-3 k+1 deep well pump vertical centrifugal, multistage design.
5.2	Number per tank	1
5.3	Rate (per pump)	260 m ³ /h,
5.4	Delivery head	120 mlc
5.5	Maximum density	0.972
	Booster pumps	260M3/h , 0.972 S.G.
5.6	Type of pump	Horizontal centrifugal
5.7	Number	1
5.8	Rate (per pump)	260 m ³ /h
5.9	Delivery head	120 mlc
5.10	Maximum density	0.972

B6 DISCHARGE PERFORMANCES

Full cargo discharge times (using all main pumps)

		MANIFOLD		Hours	
		BACK PRESSURE		With vapour return	Without return
6.1	From refrigerated				
6.2		1 bar (with 2 deepwell)		27	
6.3		5 bar (with 2 deepwell)		53	
6.4		10 bar (with 2 deepwell)			
<hr/>					
		MANIFOLD		Hours	
		BACK PRESSURE		With vapour return	Without return
6.5	Pressurized				
6.6		1 bar (with 4 deepwell)		27	
6.7		5 bar (with 4 deepwell)		53	
6.8		10 bar (with 4 deepwell)			

B7 UNPUMPABLES

	TANK NO.	1	2	3	4	5	6	TOTAL TONNES
7.1	Vapour							
7.2	Liquid	0.70	0.70					1.40
7.3								
Total quantity								1.40

B8 VAPORISING UNPUMPABLES

- 8.1 Process used Normal Stripping
- 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

- 9.1 Plant design conditions Air temperature 0°C to 45°C
Sea temperature Below 32° C
- Plant type :
- 9.2 Single stage/direct
- 9.3 Two stage/direct
- 9.4 Simple cascade
- 9.5 Coolant type
- Compressors Vertical, Oil free, reciprocating.
- 9.6 Type 2 K160-2H
- 9.7 Number 2
- 9.8 Capacity (per unit) 1495 m3/h (1st stage)
- 9.9 Are they oil-free Yes

B10 COOLING CAPACITY

State cooling capacity (in Kcal/hr) for :

10.1	Propane	@ -20°C	115,000.00
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		°C to °C	
11.2	Propylene	+6°C to -48 °C	213Hrs
11.3	Propylene	-6°C to -48°C	198Hrs
11.4	Propylene	-32°C to -48°C	112 Hrs
11.5	Butylene	+18°C to -1.8°C	84hrs
11.6		°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	185 m ³ /h
12.3	Composition of inert gas	99.5%
12.4	Dew point	-50
12.5	Used for	Gas Freeing
	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% O ₂ at -25°C dewpoint	90Hrs
	Time taken from cargo vapour to fully inert at -25°C dewpoint	108Hrs.
13.2	When : Inert gas density less than product	108Hrs
	Inert gas density greater than product	

B14 GAS FREEING TO FRESH AIR

14.1	Plant used	N ₂ plant (air mode)
14.2	Time taken from fully inerted condition to fully breathable fresh air	36 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				235H / 59,000M3	295H / 74,000M3
PROPYLENE AMMONIA	235H / 59,000M3	235H / 59,000M3	235H / 59,000M3	235H / 59,000M3	295H / 74,000M3
VCM	235H / 59,000M3	235H / 59,000M3	235H / 59,000M3	235H / 59,000M3	

B16 DECK TANK CAPACITY

16.1	Propane capacity	Cbm	22.50
16.2	Butane capacity	Cbm	22.50
16.3	Ammonia capacity	Cbm	22.50
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.

	PRODUCT	QUANTITY REQUIRED	TIME	
			With return line	Without return line
17.1				
17.2	PROPANE	80	12	12
17.3	BUTANE	100	6	6
17.4	AMMONIA	100	12	12
17.5	VINYL	80	12	10

B18 VAPORISER

18.1	Type of vaporiser	NIL
18.2	Number fitted	
18.3	Capacity (per unit)	
18.4	Liquid supply rate	
18.5	Delivery temperature	

B19 BLOWER

19.1	Type of blower	NIL
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 16°C to raise product temperature:		
20.4	for propane from -42°C to -5°C	250M3/hr
20.5	for ammonia from -42°C to -5°C	230M3/hr

B21 HYDRATE CONTROL

21.1	Freezing point temperature of Depressant	0.00 Deg C
21.2	Quantity of Depressant carried	150 ltrs
21.3	Means of injection	Methanol pump

B22 CARGO MEASUREMENT

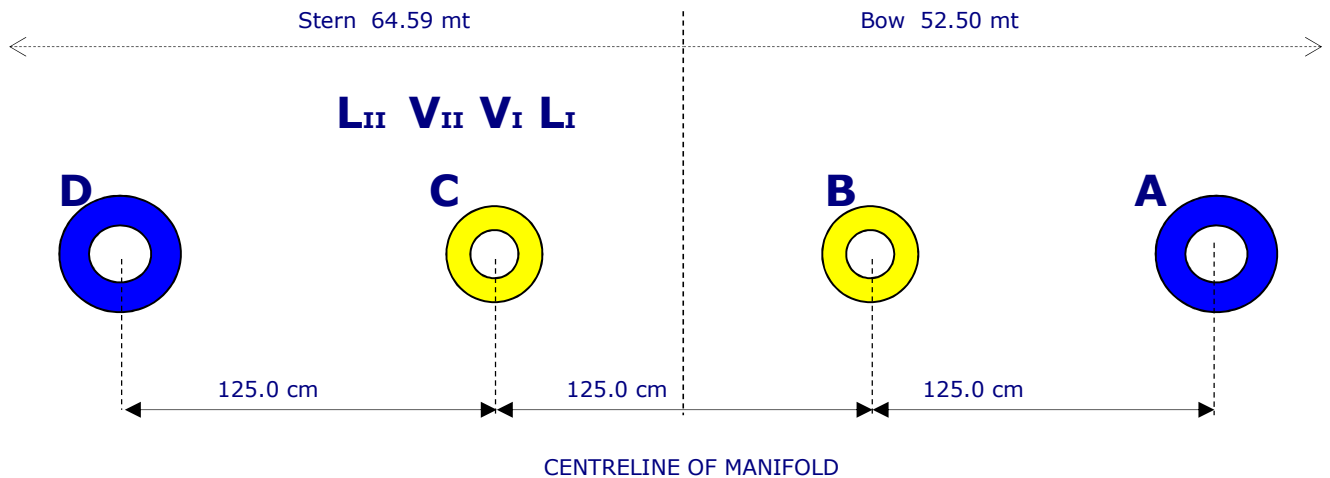
LEVEL GAUGES		
21.1	Are level gauges local or remote	Local and Remote
21.2	Manufacturer	Enraf FTLG 806 // Henri System HollandB.V
21.3	Type	Innage measurement// AMTG821/02
21.4	Rated accuracy	±2mm
21.5	Certifying authority	FORCE TECHNOLOGY
TEMPERATURE GAUGES		
22.6	Manufacturer	T.HYODA INSTRUMENTS
22.7	Type	Drip-proof type
22.8	Rated accuracy	±1 deg C.
22.9	Certifying authority	
PRESSURE GAUGES		
22.10	Manufacturer	WIKA
22.11	Type	Weather proof type
22.12	Rated accuracy	±0.1 kg/cm ²
22.13	Certifying authority	FORCE TECHNOLOGY
OXYGEN ANALYSER		
22.14	Manufacturer	UNITOR
22.15	Type	G36P Panel mounted
FIXED GAS DETECTOR		
22.16	Manufacturer	TOKA SEIKE and TOCIA
22.17	Type	Combustible Gas Alarm and TS-303
22.18	No of points detected	8 points
PORTABLE GAS DETECTOR		
22.19	Number	4 pcs
22.20	Manufacturer	Riken Keiki / Toka Seiki
22.21	Type	
TOXIC GAS INDICATOR		
22.22	Number	8 pcs
22.23	Type	Riken Keiki
TOXIC GAS INDICATOR TUBES		
22.24	Number	49pcs
22.25	Products	Kitagawa tubes
22.26	Exp.dates	Aug.2016, May 2019, June 2018, Sept. 2017,
TANKSCOPE		
22.27	Type	RX-415 HC

B23 CARGO SAMPLING

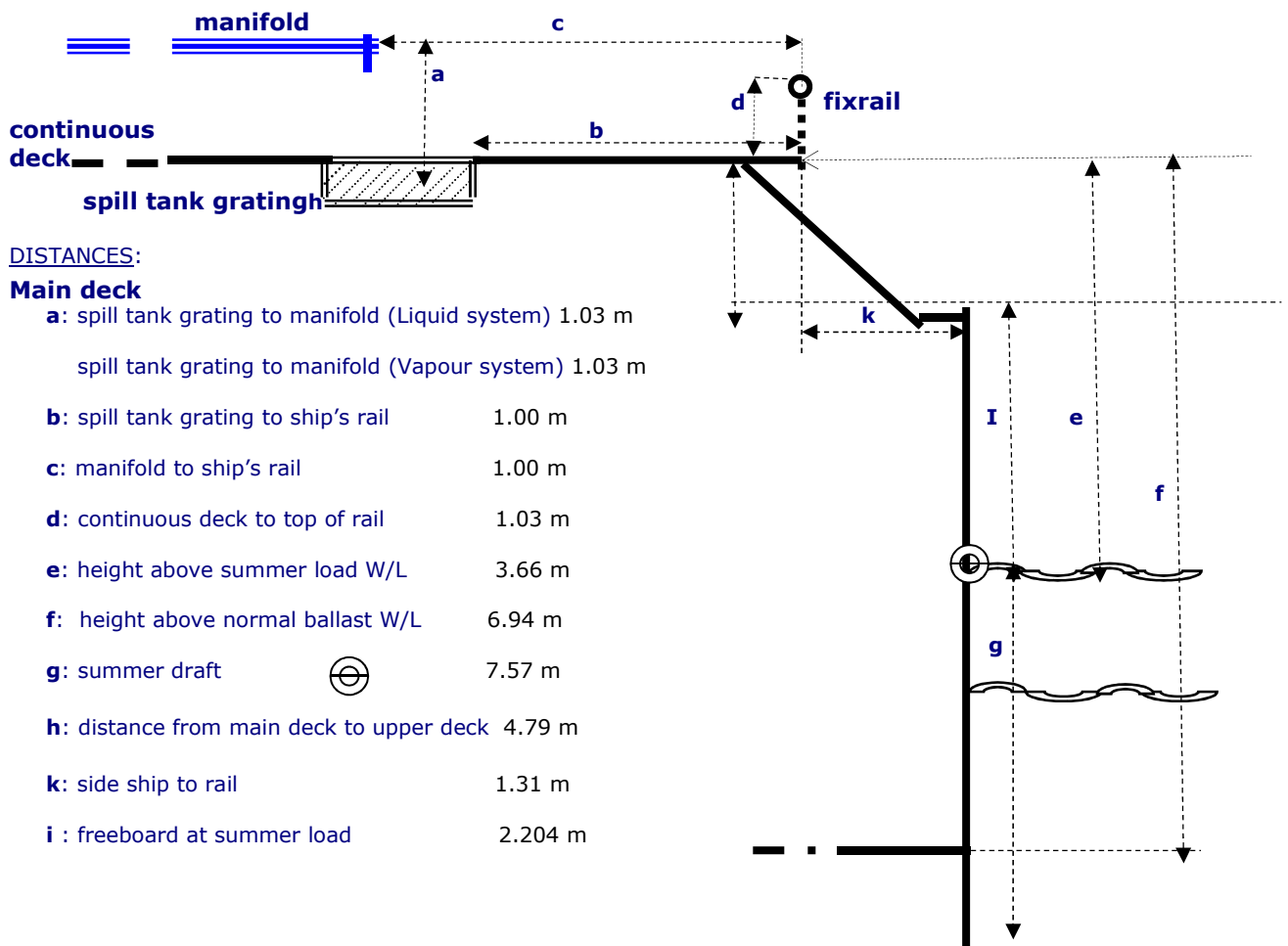
23.1 Fill the following table			
CARGO TANKS	CARGO TANKS	CARGO TANKS	
1	2		
23.2 Can sample be drawn from:			
Yes- Tank vapour outlet	Yes- Tank vapour outlet	- Tank vapour outlet	
Yes - Manifold liquid line	Yes - Manifold liquid line	- Manifold liquid line	
Yes - Manifold vapour line	Yes - Manifold vapour line	- Manifold vapour line	
- Pump discharge line	- Pump discharge line	- Pump discharge line	
23.3 State connection type and size	SCREW ½ bsp	23.3 State connection type and size	
Sample can be drawn from: Tank 1 and Tank 2 sample point at Tank dome: TOP, MIDDLE and BOTTOM SAMPLING LINE.			

B24 CARGO MANIFOLD ARRANGEMENTS

CARGO MANIFOLD



Pipe Flange	Duty	Rating	Size	Raised (R) or Flat (F) face
A	Liquid system I	Ansi 300	8"	R
B	Vapour " I	Ansi 300	6"	R
C	Vapour " II	Ansi 300	6"	R
D	Liquid system II	Ansi 300	6"	R



B25 CARGO MANIFOLD REDUCERS

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

Ship Side	Terminal Side	Quantity
ANSI 8" X 300	ANSI 10" X 300	2
ANSI 8" X 150	ANSI 8" X 150	1
ANSI 8" X 150	ANSI 6" X 150	1
ANSI 8" X 150	ANSI 5" X 150	1
ANSI 8" X 150	ANSI 4" X 150	2
ANSI 8" X 150	ANSI 3" X 150	2
ANSI 6" X 300	ANSI 5" X 300	1

- For Vapor (design temperature: -48^{0C})

Ship Side	Terminal Side	Quantity
ANSI 8" X 150	ANSI 6" X 150	1
ANSI 6" X 300	ANSI 6" X 300	1
ANSI 6" X 300	ANSI 4" X 300	2
ANSI 6" X 300	ANSI 3" X 300	1
ANSI 6" X 300	ANSI 5" X 300	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	4 Tonnes at maximum outreach of 13m (3 m from side)	