

**GAS FORM-C**  
based on the  
**OCIMF / SIGTTO**  
**SHIP INFORMATION QUESTIONNAIRE**  
for  
**GAS CARRIERS**  
2nd Edition 1998

Specifications of the vessel and the gas installations are believed to be correct, but not guaranteed.

## INDEX

	<b>GENERAL INFORMATION</b>	<b>PAGE</b>
A1	Principal Ship Particulars	2-3
A2	Hull Dimensions	4
A3	Immersion	4
A4	Loaded Particulars	4-5
A5	Parallel Mid-Body Dimensions	6
A6	Bunker Specifications and Capacities	6
A7	Fuel Consumption Details	6
A7	Speed/Consumption (Appendix)	7
A8	Main Engine Particulars	7
A9	Auxiliary Plants	7
A10	Power/Speed Information	7
A11	Thrusters	7
A12	Fresh Water	7
A13	Ballast Capacities and Pumps	8
A14	Mooring Equipment	8-10
A15	Navigational Equipment	10-11
A16	Communication and Electronics	11
	<b>CARGO SYSTEMS</b>	
B1	Cargo - General Information	12
B2	Cargo Tanks	12
B3	Cargo Tank Capacities	13-15
B16	Deck Tank Capacities	15-16
B4	Loading Rates	16-17
B5	Discharging - General	17-18
B6	Discharge Performance	18
B7	Unpumpables	18
B8	Vaporising Unpumpables	18
B9	Reliquefaction Plant	18-19
B10	Section not in use.	
B11	Cargo Temperature Lowering Capability	19
B12	Inert Gas and Nitrogen	19-20
B13	Cargo Tank Inerting / De-Inerting	20
B14	Gas Freeing to Fresh Air	20
B15	Changing Cargo Grades	20-21
B17	Pre-Loading Cooldown	21-22
B18	Vaporiser	22
B19	Blower	22
B20	Cargo Re-Heater	22
B21	Hydrate Control	22
B22	Cargo Measurement	22-23
B23	Cargo Sampling	23
B24	Cargo Manifold	24-25
B25	Cargo Manifold Reducers	25-26
B26	Connections to Shore for ESD and Communication Systems	26
B27	Manifold Derrick/Crane	26
B28	Stores Derrick/Crane	26
B29	Sister Vessel(s)	

**SECTION A  
GENERAL INFORMATION**

**A1 PRINCIPAL SHIP PARTICULARS**

1,1	Date questionnaire completed	23-Aug-16
1,2	Name of vessel	JS GREENSUN
1,3	LR/IMO number	9553646
1,4	Last previous name	N/A
1.4.1	Date of name change	N/A
1,5	Second last previous name	N/A
1.5.1	Date of name change	N/A
1,6	Third last previous name	N/A
1.6.1	Date of name change	N/A
1,7	Fourth last previous name	N/A
1.7.1	Date of name change	N/A
1,8	Flag	Malta
1,9	Port of Registry	Valletta
1.10	Official number	9553646
1,11	Call sign	9HA3379
1,12	INMARSAT A or B number	N/A
1,13	Vessel's telephone number	870 773 242 116
1.13.1	Vessel's mobile number	N/A
1,14	Vessel's fax number	870 783 222 237
1,15	Vessel's telex number	N/A
1,16	Vessel's E-mail address	<a href="mailto:js.greensun@thomships.net">js.greensun@thomships.net</a>
1,17	INMARSAT C number	422952510 (SN GR 22035) 422952511 (SN GR 22036)
1,18	Vessel's MMSI number	229 525 000
1,19	Type of vessel	LPG/LEG Carrier

**OWNERSHIP AND OPERATION**

1.20	Registered Owner	Evergas Shipholding 2 AS
	Full address	Kalvebod Brygge 39-41 DK-1560 Copenhagen, Denmark
	Office telephone number	+ 45 3997 0350
	Office telex number	N/A
	Office fax number	N/A
	Office Email address	<a href="mailto:fleet@evergas.net">fleet@evergas.net</a>
	Contact person	Mihir Navalkar
	Contact person after hours telephone number	+33158470346
1.21	Name of technical operator (If different from above)	Evergas Ship Management Pte Ltd
	Full Address	16 Raffles Quay, #43-01 Hong Leong Building Singapore 048581
	Office telephone number	+65 6220 7291
	Office telex number	N/A
	Office fax number	N/A
	Office Email address	<a href="mailto:fleet@evergas.net">fleet@evergas.net</a>
	Contact person (Designated Person Ashore)	Rajneesh Rana
	Contact person after hours telephone number	+65 911 33759
	Emergency callout number	+65 818 88482
	Emergency callout pager number	N/A
	Contact details for person responsible for oil spill response	Rajneesh Rana
	Number of years controlled by technical operator	0

1.22	Total number of ships operated by this Operator	13
1.23	Number of years ship owned	3
1.23.1	Name of commercial operator (If different from above)	Evergas Management A/S
	Full Address	Kalvebod Brygge 39-41 1560 Copenhagen Denmark
	Office telephone number	+45 3997 0350
	Office telex number	N/A
	Office fax number	N/A
	Office Email address	<a href="mailto:operations@evergas.net">operations@evergas.net</a>
	Contact person	Nete Egebjerg
	Contact person after hours telephone number	+45 3038 1156
	Emergency callout number	+ 45 3997 0101
	Emergency callout pager number	N/A
	Number of years controlled by commercial operator	3

### BUILDER

1.24	Builder	Nantong Sinopacific Offshore & Engineering
1.25	Name of yard vessel built at	SOE
1.26	Hull number ( Class ID No. )	S1013
1.27	Date keel laid	23-Aug-12
1.28	Date launched	15-Dec-12
1.29	Date delivered	06-sep-13
1.30	Date of completion of major hull changes, - if any.	N/A
1.31	If changes were made, what changes were made and at which yard were they carried out	N/A

### CLASSIFICATION

1.32	Classification society	GL
1.33	Class Notation	Hull: + 100 A5, Liquefied Gas Carrier (-104°C, 6.1 bar g, 972 kg/m³), type 2G, EP, IW, BWM, Inert, Machinery: MC, AUT CM-PS EP
1.34	If Classification society changed, name of previous society	N/A
1.35	If Classification society changed, date of change	N/A
1.36	Was ship built in accordance with the following regulations:	
	IMO	Yes
	US COAST GUARD	Yes
	IACS Class	Yes
	Other: <u>ILO Convention Nr.92 &amp;133; MLS, 2006</u>	Yes
1.37	IMO certification	
	Certificate of fitness - IGC	Yes
	Certificate - A328	N/A
	Certificate - A329	N/A
	Letter of Compliance	Nil
	Issued by	
1.38	Unattended Machinery Space Certificate	No, "AUT" as per Class
1.39	Net Registered Tonnage	3.846
1.40	Gross Registered Tonnage	12.819
1.41	Suez Net Tonnage - Canal Tonnage	11.539,02
	Suez Gross Tonnage	14.148,97
1.42	Panama Net Tonnage - Canal Tonnage	10.772
	Panama Gross Tonnage	N/A

## A2 HULL DIMENSIONS

2.1	Length overall (LOA)	142,50	Metres
2.2	Length between perpendiculars (LBP)	134,50	Metres
2.3	Distance bow to bridge	112,00	Metres
2.4	Distance bridge front - mid point manifold	38,00	Metres
2.5	Distance bow to mid-point manifold	74,00	Metres
2.6	Extreme breadth	21,60	Metres
2.7	Extreme depth	12,10	Metres
2.8	Summer draught (design / Scantling)	9,50	Metres
2.9	Corresponding Summer deadweight	15 177,0	Tonnes
2.10	Light displacement	6993,6	Tonnes
2.11	Loaded displacement (Summer deadweight)	22170,6	Tonnes
2.12	Cargo tanks cubic capacity - 100%	12047,69	Cubic metres
2.12.1	Deck tank(s) cubic capacity - 100%	N/A	Cubic metres
2.12.2	Cargo tanks cubic capacity - 98%	11819,380	Cubic metres
2.12.3	Deck tank(s) cubic capacity - 98%	N/A	Cubic metres
2.13	Distance from keel to highest point	42,27	Metres
2.14	Air draught (normal ballast condition)	36,20	Metres

## A3 IMMERSION

3.1	TPC - in normal ballast condition	23,8	5,35
	TPC - in loaded condition (summer deadweight)	27,6	9,5

Tonnes / cm @ metres draught

23,8	5,35
27,6	9,5

## A4 LOADED PARTICULARS

	N-Butane	C-Propane	
4.1	Cargo grade		
4.2	Density	0,6018	Tonnes/m3
4.3	Cargo loadable	7133	Tonnes
4.4	Bunkers - FO	1341,00	Tonnes
4.5	Bunkers - DO	363,00	Tonnes
4.6	Fresh water	278,00	Tonnes
4.7	Stores & spares	10	Tonnes
4.8	Lub oil	57	Tonnes
4.9	Ballast	1940	Tonnes
4.10	Deadweight	11103	Tonnes
4.11	Draught - forward	6,89	Metres
	Draught - aft	8,95	Metres
	Draught - mean	7,92	Metres

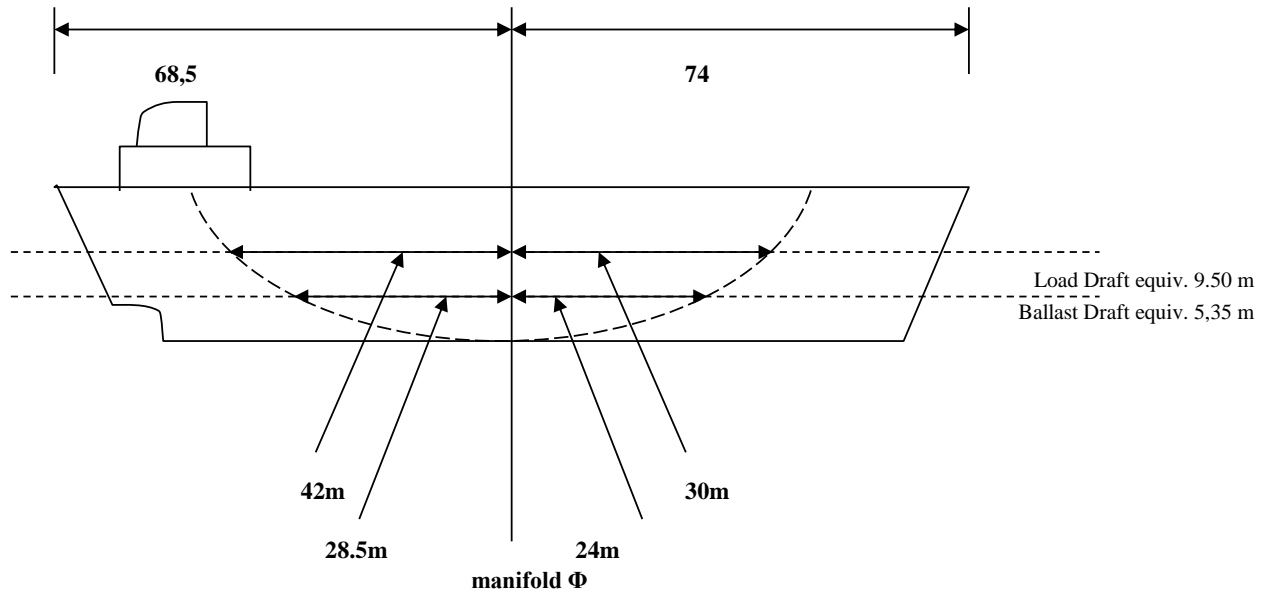
	Butadiene	Propylene	
	Cargo grade		
	Density	0,6503	Tonnes/m3
	Cargo loadable	7686	Tonnes
	Bunkers - FO	1341	Tonnes
	Bunkers - DO	363	Tonnes
	Fresh water	278	Tonnes
	Stores & spares	10	Tonnes
	Lub oil	57	Tonnes
	Ballast	1940	Tonnes
	Deadweight	11673	Tonnes
	Draught - forward	7,25	Metres
	Draught - aft	9,03	Metres
	Draught - mean	8,14	Metres

	Ethylene	Ammonia	
Cargo grade			
Density	0,568	0,6735	Tonnes/m3
Cargo loadable	6713	7960	Tonnes
Bunkers - FO / LNG	1341	1341	Tonnes
Bunkers - DO	363	363	Tonnes
Fresh water	278	278	Tonnes
Stores & spares	10	10	Tonnes
Lub oil	57	57	Tonnes
Ballast	1468	2342	Tonnes
Deadweight	10227	12348	Tonnes
Draught - forward	7,23	7,79	Metres
Draught - aft	8,05	9,01	Metres
Draught - mean	7,64	8,4	Metres

	VCM	Propylene Oxide	
Cargo grade			
Density	0,969	0,833	Tonnes/m3
Cargo loadable	11453	7497	Tonnes
Bunkers - FO	1341	1341	Tonnes
Bunkers - DO	363	363	Tonnes
Fresh water	278	278	Tonnes
Stores & spares	10	10	Tonnes
Lub oil	57	57	Tonnes
Ballast	1295	2438	Tonnes
Deadweight	14796	11984	Tonnes
Draught - forward	9,28	8,2	Metres
Draught - aft	9,4	8,41	Metres
Draught - mean	9,34	8,31	Metres

	Ballast		
Cargo grade			
Density			Tonnes/m3
Cargo loadable	Nil		Tonnes
Bunkers - FO	671		Tonnes
Bunkers - DO	94		Tonnes
Fresh water	142		Tonnes
Stores & spares	10		Tonnes
Lub oil	57		Tonnes
Ballast	4021		Tonnes
Deadweight	5128		Tonnes
Draught - forward	4,88		Metres
Draught - aft	6,46		Metres
Draught - mean	5,67		Metres

**A5 PARALLEL MID-BODY DIMENSIONS**



- 5.1 Light ship
- 5.2 Forward to mid-point manifold - light ship
- 5.3 Aft to mid-point manifold - light ship
- 5.4 Normal ballast
- 5.5 Forward to mid-point manifold - normal ballast
- 5.6 Aft to mid-point manifold - normal ballast
- 5.7 Loaded SDWT
- 5.8 Forward to mid-point manifold - loaded SDWT
- 5.9 Aft to mid-point manifold - loaded SDWT

47	Metres
22	Metres
25	Metres
52,5	Metres
24	Metres
28,5	Metres
72	Metres
30	Metres
42	Metres

**A6 BUNKER CAPACITIES**

Main engine  
 Auxiliary engine(s)  
 Other: LSDO

Grade	Capacity @ 98%
HFO	1353,1
MDO	208,7
LSDO	197,2

**A7 FUEL CONSUMPTION DETAILS**

- 7.1 At sea - normal service speed
- 7.2 At sea - normal service speed - while conditioning full cooling
- 7.3 In port - loading
- 7.4 In port - discharging
- 7.5 In port - idle

Grade		
HFO		Tonnes/day
Diesel oil		Tonnes/day
Gas oil		Tonnes/day
HFO		Tonnes/day
Diesel oil		Tonnes/day
Gas oil		Tonnes/day
HFO		Tonnes/day
Diesel oil		Tonnes/day
Gas oil		Tonnes/day
HFO		Tonnes/day
Diesel oil		Tonnes/day
Gas oil		Tonnes/day

Remark: the fuel consumption details are based on the little operational experience that is available at this time.

**A7 SPEED/CONSUMPTION**

Copies of the vessel's Speed and Consumption Graph for both Laden and Ballast conditions are enclosed?

NO
----

**A8 MAIN ENGINE PARTICULARS**

8.1	Main engine make and type	Hyundai - MAN B&W 6S42MC7.1-TII	
		Two stroke	
8.2	Number of units	1	
8.3	Maximum continuous rating (MRC) per engine	6.100	133.3 r/min
8.4	Total available power - Kwe	6.100 kW	
8.5	Normal service power - Kwe at 90% SMCR	5.490 kW	

**A9 AUXILIARY PLANTS**

9.1	Make and type of auxiliary generators / engines	MAN 7L23/30H	
		Four stroke	
9.2	Number of units	3	
9.3	Maximum generator output per unit	RPM	Kilowatts
	Unit no. 1	900	1050 kW
	Unit no. 2	900	1050 kW
	Unit no. 3	900	1050 kW
9.4	Shaft generator	N/A	
9.5	Total available power	N/A	
9.6	Emergency generator	1800	120 kW
9.7	Emergency fire pump - type	Motor driven vertical centrifugal	
	Delivery pressure	8 bar	
	Motive power	Electrical	
	If electrical, - indicate power required	19,4 kW	
9.8	Steering gear - type	Rotatory type - Rolls Royce SR-723-FCP	
	Indicate power required to steer the vessel with one pump unit	19 kW	

**A10 POWER/SPEED INFORMATION**

10.1	Trial data	BHP	6008	kW
		MRC	5407	kW
		Speed	16,36	KN
		Draught	5,5	M
10.2	Normal service speed (LOADED / BALLAST)	BHP	6100	kW
		MRC	5490	kW
		Speed		KN
		Draught	9,5	M

**A11 THRUSTERS**

11.1	Make and type	Suzhou STT 002 FP; transverse thruster	
11.2	Bow thruster	(output)	750 kW
11.3	Stern thruster	(output)	N/A

**A12 FRESH WATER**

12.1	Capacity of distilled tanks	59,1	Cubic metres
12.2	Capacity of domestic tanks	218,8	Cubic metres
12.3	Daily consumption	Distilled	1 Tonnes
		Domestic	7 Tonnes
12.4	Daily evaporator capacity	15	Tonnes



**A13 BALLAST CAPACITIES AND PUMPS**

Tank	Capacity (m3)	Number
13.1 Fore peak	261,1	1
13.2 Wing and or side tanks	3664,2	18
13.3 Double bottom tanks	608,5	4
13.4 Aft peak	259,6	1
13.5 Deep tank	177,1	1
13.6 Total	4970,5	25

13.7 Ballast pump make and type	Centrifugal, Allweiler, MA 80-315/01	
13.8 Number of pumps	2	
13.9 Total capacity	500 m3/h	
13.10 Location	ENGINE ROOM	
13.11 Control location	Local, ECR, CCR	
13.13 Ballast Water Treatment Plant	1 unit	700 m3/h

**A14 MOORING EQUIPMENT**

**14.1 ROPES**

Indicate on the diagram below the position of:

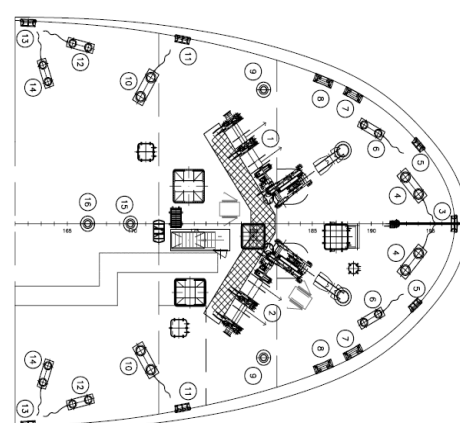
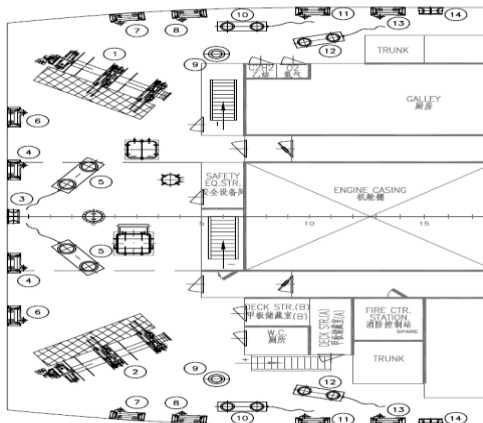
Winch Mounted Ropes (R)

Open Fairleads (O)

Closed Fairleads (C)

Alternatively enclosed copy of vessel's Mooring arrangements in A4 format.

NO



**MOORING ROPES (ON DRUMS)**

**Mooring Ropes (On Drums) Forecastle - Number**

Diameter

Material

Length

Breaking Strength

**Mooring Ropes (On Drums) Forward Main Deck - Number**

Diameter

Material

Length

Breaking Strength

	4	
	56 mm	MM
	Polyester & Polypropylene Mix	
	190 m	M
	37,7	MT
	0	
	N/A	
	N/A	
	N/A	
	N/A	

**Mooring Ropes (On Drums) Aft Main Deck -**

<b>Number</b>	0	
Diameter	N/A	
Material	N/A	
Length	N/A	
Breaking Strength	N/A	
<b>Mooring Ropes (On Drums) Poop - Number</b>	4	
Diameter	56	MM
Material	Polyester & Polypropylene Mix	
Length	190	M
Breaking Strength	37,7	MT

**OTHER MOORING LINES**

<b>Mooring Ropes not on Drums - Number</b>	6	
Diameter	56	MM
Material	Polyester & Polypropylene Mix	
Length	190	M
Breaking Strength	37,7	MT
<b>Emergency Towing Wires / Fire Wires - Number</b>	2	
Diameter	26	MM
Material	Steel Wire, Galvanized	
Length	25	M
Breaking Strength	33,9	MT

14,2

**MOORING WINCHES**

<b>Forecastle - Number</b>	2	
Single Drum or Double Drums	Double drum	
Split Drums Y/N	Yes	
Motive Power	Electro/Hydraulic	
Heaving Power	10 mt	
Brake Capacity	31.8 mt	
Hauling Speed	15 m/min	
<b>Forward Main Deck - Number</b>	0	
Single Drum or Double Drums	N/A	
Split Drums Y/N	N/A	
Motive Power	N/A	
Heaving Power	N/A	
Brake Capacity	N/A	
Hauling Speed	N/A	
<b>Aft Main Deck - Number</b>	0	
Single Drum or Double Drums	N/A	
Split Drums Y/N	N/A	
Motive Power	N/A	
Heaving Power	N/A	
Brake Capacity	N/A	
Hauling Speed	N/A	
<b>Poop - Number</b>	2	
Single Drum or Double Drums	Double drum	
Split Drums Y/N	Yes	
Motive Power	Electro/Hydraulic	
Heaving Power	10	mt
Brake Capacity	31.8 mt	
Hauling Speed	15 m/min	

14,3

**ANCHORS AND WINDLASS**

Windlass motive power(e.g. steam, hydraulic)	Electro/Hydraulic	
Hauling power	149	kN
Brake holding power	1094	kN
Anchor type	Stockless	P AC-14 Anchor
Weight	3950	kg

	Is spare anchor carried		No	
	Cable diameter		56	mm
	Number of shackles port cable		10	
	Number of shackles starboard cable		11	
14,4	<b>TOWING ARRANGEMENTS</b>			
	Is the vessel fitted with a Towing Bracket Aft?		No	
		If Yes, state SWL	N/A	
	Is Towing chain provided		No	
	Dimensions of Towing wire	Diameter	N/A	
		Length	N/A	
14.5	<b>WINDAGE</b>			
	Windage on ballast	Front	578	M2
		Lateral	2080	M2
	Windage on loaden	Front	485	M2
		Lateral	1560,5	M2
<b>A15</b>	<b>NAVIGATION EQUIPMENT</b>			
15.1	Magnetic compass		Yes	
15.2	Off Course Alarm - Magnetic compass		Yes	
15.3	Gyro compass		Yes	
		Number of Units	1	
15.4	Off Course Alarm - Gyro compass		Yes	
15.5	Gyro (Bridge) Repeaters		Yes	
		Number of Units	5	
15.6	Radar 3cm		Yes	
15.7	Radar 10cm		Yes	
15.8	Are radars gyro stabilised?		Yes	
15.9	Radar plotting equipment		No	
15.10	ARPA		Yes	
15.11	ECDIS		Yes	
15.12	Depth sounder with recorder		Yes	
15.13	Depth sounder without recorder		No	
15.14	Speed/distance indicator		Yes	
15.15	Doppler log		Yes	
15.16	Docking approach Doppler		No	
15.17	Rudder angle indicator		Yes	
15.18	Rudder angle indicator on Each Bridge Wing		Yes	
15.19	RPM indicator		Yes	
15.20	RPM indicator on Each Bridge Wing		Yes	
15.21	Controllable pitch propeller indicator		No	
15.22	Thruster(s) indicator		Yes	
15.23	Rate of turn indicator		No	
15.24	Radio direction finder		No	
15.25	Navtex receiver		Yes	
15.26	GPS		Yes	
15.26.1	DGPS		Yes	
15.27	Transit SATNAV		No	
15.28	Decca navigator		No	
15.29	Omega		No	
15.30	Loran C		No	
15.31	Weather fax		Yes	
15.32	Sextant(s)		Yes	
15.33	Signal lamp ALDIS		Yes	
15.34	Anemometer		Yes	
15.35	Engine order recorder		Yes	
15.35.1	VDR (Voyage Data Recorder)		Yes	
15.36	Course recorder		Yes	
15.37	Are steering motor controls and engine controls fitted on bridge wings?		Yes	

15.38	Is bridge equipped with a 'Dead-Man' alarm?		Yes
15.39	What chart outfit coverage is provided	World-wide	Yes
		Limited	No
	If limited, - please indicate area(s) covered		
15.40	Formal chart correction system in use		Yes
15.41	Electronic Chart system in use		Yes

**A16 COMMUNICATIONS AND ELECTRONICS**

16.2	What GMDSS areas is the vessel classed for? A1 A2 A3 A4		A1, A2 & A3
16.3	Transponder (SART)		Yes
16.4	EPIRB		Yes
16.5	How many VHF radios are fitted on the bridge?		2 + 1 slave VHF & 2 wing handset
16.6	Is vessel fitted with VHF in the cargo control room (CCR)?		Yes
16.7	Is the CCR connected to the vessel's internal communication system?		Yes
16.8	How many intrinsically safe walkie talkies are provided for cargo handling?		10
16.9	Is vessel fitted with an INMARSAT satellite communications system?		Yes
16.10	Does vessel carry at least three survival craft two-way radio telephones?		Yes
16.11	Inmarsat satellite system		Yes
	Specify system type A, B or C		C & FBB
16.12	2182kHz bridge auto alarm		Yes
16.13	Radio telephone distress frequency watch receiver		Yes
16.14	Emergency lifeboat transceiver		Yes
16.15	Can vessel transmit the helicopter homing signal on 410 kHz?		No
16.16	Full set of Radio List publications		Yes

**SECTION B  
CARGO SYSTEMS**

**B1 CARGO - GENERAL INFORMATION**

1.1 List products which the ship is Certified to carry

Cargo	Temp at atm. Press (Celcius)	Density at atm. Press (kg/m3)
Ethylene	-103,7	568
Ethane	-88,6	545
Propylene	-47,7	609
Propane (pure)	-42,1	581
C-Propane (2,5 mol% ethane in Liq. Phase)	-45	583
Mix of propane and butane	-	-
Anhydrous Ammonia	-33,4	673
VCM	-13,8	969
Iso-Butane	-11,7	594
Butylenes (data for Iso)	-6,9	625
Butadiene	-4,4	650
N-Butane	-0,5	602
Other Cargoes		
Acetaldehyde	20,2	778
Dimethyl Amine	6,9	666
Ethyl Chloride	12,3	903
Diethyl Ether	35	700
Isoprene (Monomer)	34,1	666
Isopropyl Amine	32	676
Monoethyl Amine	17	687
N-Pentane	36,2	609
Iso-Pentene	27,7	613
Neo-Pentene	9,5	597
Propylene Oxide (PO)	33,9	835
Ethylene Oxide/Propylene Oxide (PO) min (max 30% EO	27	817
Vinyl Ethyl Ether	36	750
Pentenenes	30,1	632,3
Demethyl Ether	-24,8	734

**Transport and Carriage Conditions**

1.2	Minimum allowable tank temperature	-104	Deg. Celsius
1.3	Maximum Permissible tank pressure	6.1	Bar gauge
1.4	List Number of grades that can be loaded/discharged simultaneously and completely segregated without risk of contamination?	2	
1.5	List the Number of grades that can be carried simultaneously and completely segregated without risk of contamination?	2	
1.6	What is the Number of Products that can be conditioned by reliquefaction simultaneously?	2	
1.7	State the number of natural segregation's (NB: Separation must be by the removal of spools or the insertion of blanks)	3	

**B2 CARGO TANKS**

2.1	Type and materials of cargo tanks	Low alloy 5% Ni Steel (X12Ni5 or Similar)	
2.2	Maximum allowable relief valve setting	6.1	Bar gauge
2.2.1	IMO Setting	6.1	Bar gauge
2.2.2	USCG Setting	3,9	Bar gauge
2.3	Safety valve set pressure, - if variable stipulate range of pilot valves	3.9; 6.1	Bar gauge
2.4	Maximum allowable vacuum	-0,25	Bar gauge
2.5	Maximum cargo density at 15 deg Celsius	972	Kg/m3
2.6	Maximum rate of cool-down	10	Deg Cel / Hour

2.7 State any limitations regarding partially filled tanks

No sloshing limitations


2.8 State allowable combinations of filled and empty tanks

Any combinations of filled and empty cargo tanks are allowed but subject to check of Bending
Shearing Forces being less than the maximum permissible values which have been indicated by
cation Society

### B3 CARGO TANK CAPACITIES

#### Tank number / location

Capacity m3 (100%)  
 Capacity 98%  
 N-Butane capacity 98%  
 N-Butane temperature  
 C-Propane capacity 98%  
 C-Propane temperature  
 Butadiene capacity  
 Butadiene temperature  
 Propylene capacity  
 Propylene temperature  
 Vinyl Chloride Monomer capacity  
 Vinyl Chloride Monomer temperature  
 Ethylene capacity  
 Ethylene temperature  
 Propylene Oxide capacity  
 Propylene Oxide temperature  
 Ammonia capacity  
 Ammonia temperature

CT 1	
4014,455	m3
3934,166	m3
2367,581	Tonnes
-0,5	Deg. C
2293,62	Tonnes
-42,3	Deg. C
2558,39	Tonnes
-4,4	Deg. C
2396,30	Tonnes
-47,7	Deg. C
3812,21	Tonnes
-13,8	Deg. C
2234,61	Tonnes
-103,7	Deg. C
2499,00	Tonnes
20	Deg. C
2649,66	Tonnes
-33,8	Deg. C

#### Tank number / location

Capacity m3 (100%)  
 Capacity 98%  
 N-Butane capacity 98%  
 N-Butane temperature  
 C-Propane capacity 98%  
 C-Propane temperature  
 Butadiene capacity  
 Butadiene temperature  
 Propylene capacity  
 Propylene temperature  
 Vinyl Chloride Monomer capacity  
 Vinyl Chloride Monomer temperature  
 Ethylene capacity  
 Ethylene temperature  
 Propylene Oxide capacity  
 Propylene Oxide temperature  
 Ammonia capacity  
 Ammonia temperature

CT 2	
4014,909	m3
3934,611	m3
2367,849	Tonnes
-0,5	Deg. C
2293,88	Tonnes
-42,3	Deg. C
2558,68	Tonnes
-4,4	Deg. C
2396,57	Tonnes
-47,7	Deg. C
3812,64	Tonnes
-13,8	Deg. C
2234,86	Tonnes
-103,7	Deg. C
2499,00	Tonnes
20	Deg. C
2649,96	Tonnes
-33,8	Deg. C

#### Tank number / location

Capacity m3 (100%)  
 Capacity 98%  
 N-Butane capacity 98%  
 N-Butane temperature  
 C-Propane capacity 98%  
 C-Propane temperature  
 Butadiene capacity  
 Butadiene temperature  
 Propylene capacity  
 Propylene temperature  
 Vinyl Chloride Monomer capacity  
 Vinyl Chloride Monomer temperature  
 Ethylene capacity  
 Ethylene temperature  
 Propylene Oxide capacity  
 Propylene Oxide temperature  
 Ammonia capacity  
 Ammonia temperature

CT 3	
4018,328	m3
3937,96	m3
2369,865	Tonnes
-0,5	Deg. C
2295,83	Tonnes
-42,3	Deg. C
2560,86	Tonnes
-4,4	Deg. C
2398,61	Tonnes
-47,7	Deg. C
3815,88	Tonnes
-13,8	Deg. C
2236,76	Tonnes
-103,7	Deg. C
2499,00	Tonnes
20	Deg. C
2652,22	Tonnes
-33,8	Deg. C

**Tank number / location**

Capacity m3 (100%)  
Capacity 98%  
Butane capacity  
Butane temperature  
Propane capacity  
Propane temperature  
Butadiene capacity  
Butadiene temperature  
Propylene capacity  
Propylene temperature  
Vinyl Chloride Monomer capacity  
Vinyl Chloride Monomer temperature  
Ethylene capacity  
Ethylene temperature  
Propylene Oxide capacity  
Propylene Oxide temperature  
Ammonia capacity  
Ammonia temperature

N/A	
	m3
	m3
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C

**Tank number / location**

Capacity m3 (100%)  
Capacity 98%  
Butane capacity  
Butane temperature  
Propane capacity  
Propane temperature  
Butadiene capacity  
Butadiene temperature  
Propylene capacity  
Propylene temperature  
Vinyl Chloride Monomer capacity  
Vinyl Chloride Monomer temperature  
Ethylene capacity  
Ethylene temperature  
Propylene Oxide capacity  
Propylene Oxide temperature  
Ammonia capacity  
Ammonia temperature

N/A	
	m3
	m3
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C

**Tank number / location**

Capacity m3 (100%)  
Capacity 98%  
Butane capacity  
Butane temperature  
Propane capacity  
Propane temperature  
Butadiene capacity  
Butadiene temperature  
Propylene capacity  
Propylene temperature  
Vinyl Chloride Monomer capacity  
Vinyl Chloride Monomer temperature  
Ethylene capacity  
Ethylene temperature  
Propylene Oxide capacity  
Propylene Oxide temperature  
Ammonia capacity  
Ammonia temperature

N/A	
	m3
	m3
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C



**Tank number / location**

Capacity m3 (100%)	N/A	m3
Capacity 98%		m3
Butane capacity		Tonnes
Butane temperature		Deg. C
Propane capacity		Tonnes
Propane temperature		Deg. C
Butadiene capacity		Tonnes
Butadiene temperature		Deg. C
Propylene capacity		Tonnes
Propylene temperature		Deg. C
Vinyl Chloride Monomer capacity		Tonnes
Vinyl Chloride Monomer temperature		Deg. C
Ethylene capacity		Tonnes
Ethylene temperature		Deg. C
Propylene Oxide capacity		Tonnes
Propylene Oxide temperature		Deg. C
Ammonia capacity		Tonnes
Ammonia temperature		Deg. C

**Tank number / location**

Capacity m3 (100%)	N/A	m3
Capacity 98%		m3
Butane capacity		Tonnes
Butane temperature		Deg. C
Propane capacity		Tonnes
Propane temperature		Deg. C
Butadiene capacity		Tonnes
Butadiene temperature		Deg. C
Propylene capacity		Tonnes
Propylene temperature		Deg. C
Vinyl Chloride Monomer capacity		Tonnes
Vinyl Chloride Monomer temperature		Deg. C
Ethylene capacity		Tonnes
Ethylene temperature		Deg. C
Propylene Oxide capacity		Tonnes
Propylene Oxide temperature		Deg. C
Ammonia capacity		Tonnes
Ammonia temperature		Deg. C

Total Capacity of all cargo tanks (100%)	12047,692	m3
Total Capacity of all cargo tanks (98%)	11806,738	m3
Total Capacity of N-Butane	7105,30	Tonnes
Total Capacity of C-Propane	6883,33	Tonnes
Total Capacity of Butadiene	7677,92	Tonnes
Total Capacity of Propylene	7191,48	Tonnes
Total Capacity of Vinyl Chloride Monomer	11440,73	Tonnes
Total Capacity of Ethylene	6706,23	Tonnes
Total Capacity of Propylene Oxide	7497,00	Tonnes
Total Capacity of Ammonia	7951,84	Tonnes

**B16 DECK TANK CAPACITIES**

Are Deck pressure tank(s) fitted?	No	
Material of tank(s)	N/A	
Maximum allowable relief valve setting	N/A	Bar gauge

**Deck tank number 1 - capacity (100%)**

Capacity 98%  
 Propane Capacity  
 Butane Capacity  
 Propylene capacity  
 Ethylene capacity  
 Ammonia Capacity

N/A	m3
	m3
	Tonnes
	Tonnes
	Tonnes
	Tonnes

**Deck tank number 2 - capacity (100%)**

Capacity 98%  
 Propane Capacity  
 Butane Capacity  
 Propylene capacity  
 Ethylene capacity  
 Ammonia Capacity

N/A	m3
	m3
	Tonnes
	Tonnes
	Tonnes
	Tonnes
	Tonnes

**B4 LOADING RATES****4.1 From Refrigerated Storage (Fully Refrigerated at Vessel's Manifold)**

N-Butane - with vapour return  
 N-Butane - without vapour return  
 C-Propane - with vapour return  
 C-Propane - without vapour return  
 Butadiene - with vapour return  
 Butadiene - without vapour return  
 Propylene - with vapour return  
 Propylene - without vapour return  
 Ethylene - with vapour return  
 Ethylene - without vapour return \*\*)  
 Ammonia - with vapour return  
 Ammonia - without vapour return  
 Vinyl Chloride Monomer - with vapour return  
 Vinyl Chloride Monomer - without vapour return  
 Propylene Oxide - with vapour return  
 Propylene Oxide - without vapour return

720	Tonnes/hour
720	Tonnes/hour
620	Tonnes/hour
780	Tonnes/hour
780	Tonnes/hour
780	Tonnes/hour
731	Tonnes/hour
731	Tonnes/hour
682	Tonnes/hour
585	Tonnes/hour
808	Tonnes/hour
710	Tonnes/hour
1163	Tonnes/hour
1140	Tonnes/hour
1002	Tonnes/hour
N/A	Tonnes/hour

**4.8 From Pressure Storage**

**N-Butane** 0 deg C - with vapour return  
 0 deg C - without vapour return  
 10 deg C - with vapour return  
 10 deg C - without vapour return  
 20 deg C - with vapour return  
 20 deg C - without vapour return

720	Tonnes/hour
720	Tonnes/hour
710	Tonnes/hour
630	Tonnes/hour
620	Tonnes/hour
480	Tonnes/hour

**C-Propane minus 30 deg C - with vapour return**

Minus 30 deg C - without vapour return  
 Minus 20 deg C - with vapour return  
 Minus 20 deg C - without vapour return  
 Minus 10 deg C - with vapour return  
 Minus 10 deg C - without vapour return  
 0 deg C - with vapour return  
 0 deg C - without vapour return  
 10 deg C - with vapour return by compressors  
 10 deg C - without vapour return  
 20 deg C - with vapour return by compressors  
 20 deg C - without vapour return

682	Tonnes/hour
682	Tonnes/hour
650	Tonnes/hour
610	Tonnes/hour
560	Tonnes/hour
470	Tonnes/hour
460	Tonnes/hour
380	Tonnes/hour
390	Tonnes/hour
260	Tonnes/hour
340	Tonnes/hour
109	Tonnes/hour

<b>Butadiene 0 deg C - with vapour return</b>	766	Tonnes/Hr.
0 deg C - without vapour return	766	Tonnes/Hr.
10 deg C - with vapour return	710	Tonnes/Hr.
10 deg C - without vapour return	737	Tonnes/Hr.
20 deg C - with vapour return	630	Tonnes/Hr.
20 deg C - without vapour return	737	Tonnes/Hr.

<b>Propylene minus 30 deg C - with vapour return</b>	703	Tonnes/Hr.
Minus 30 deg C - without vapour return	670	Tonnes/Hr.
Minus 20 deg C - with vapour return	689	Tonnes/Hr.
Minus 20 deg C - without vapour return	615	Tonnes/Hr.
Minus 10 deg C - with vapour return	672	Tonnes/Hr.
Minus 10 deg C - without vapour return	540	Tonnes/Hr.
0 deg C - with vapour return	655	Tonnes/Hr.
0 deg C - without vapour return	505	Tonnes/Hr.
10 deg C - with vapour return by compressors	590	Tonnes/Hr.
10 deg C - without vapour return	185	Tonnes/Hr.
20 deg C - with vapour return by compressors	390	Tonnes/Hr.
20 deg C - without vapour return	94	Tonnes/Hr.

<b>Ethylene minus 100 deg C - with vapour return</b>	684	Tonnes/Hr.
Minus 100 deg C - without vapour return **)	530	Tonnes/Hr.
Minus 95 deg C - with vapour return	674	Tonnes/Hr.
Minus 95 deg C - without vapour return **)	490	Tonnes/Hr.
Minus 90 deg C - with vapour return	620	Tonnes/Hr.
Minus 90 deg C - without vapour return **)	510	Tonnes/Hr.
Minus 85 deg C - with vapour return	580	Tonnes/Hr.
Minus 85 deg C - without vapour return **)	290	Tonnes/Hr.

<b>Ammonia 30 deg C - with vapour return</b>	725	Tonnes/Hr.
minus 30 deg C - without vapour return	725	Tonnes/Hr.
minus 20 deg C - with vapour return	710	Tonnes/Hr.
minus 20 deg C - without vapour return	610	Tonnes/Hr.
minus 10 deg C - with vapour return	690	Tonnes/Hr.
minus 10 deg C - without vapour return	430	Tonnes/Hr.

<b>VCM minus 10 deg C - with vapour return</b>	1153	Tonnes/Hr.
Minus 10 deg C - without vapour return	1153	Tonnes/Hr.
0 deg C - with vapour return	1050	Tonnes/Hr.
0 deg C - without vapour return	840	Tonnes/Hr.
10 deg C - with vapour return	1030	Tonnes/Hr.
10 deg C - without vapour return	780	Tonnes/Hr.
20 deg C - with vapour return	990	Tonnes/Hr.
20 deg C - without vapour return	570	Tonnes/Hr.

4.14

**Special remarks:**

The cargo tanks should be fully pre-cooled.
** ) Based on the air/SW temperature +20 deg.C
Maximum allowed P.O. cargo quantity per each tank is 3000 cub.m.

**B5 DISCHARGING - GENERAL**

**Cargo Pumps**

5.1	Type of Pumps	Hamworthy Svanehoj DW 200/200-3-K+I	
5.2	Number of pumps per tank	1	
5.3	Rate per Pump	400	m3/hr
5.4	At Delivery Head m/c	120	m/c
5.5	Maximum density	972	Kg/m3

5.6	<b>Booster Pump</b> Type of Booster Pumps	Hamworthy Svanehoj NMB 150c	
5.7	Number of pumps	2	
5.8	Rate per Pump	400	m3/hr
5.9	At Delivery Head mlc	120	mlc
5.10	Maximum density	680	kg/m3

**Copies of pumping curves for cargo and booster pumps are enclosed?** YES

**B6 DISCHARGE PERFORMANCE**

Full Cargo Discharge Times per tank (using 2 cargo pumps and 1 booster pump) 10 Hours

**Fully Refrigerated**

Manifold Back Press 1 kP/cm2, with vapour return 10 Hours

Manifold Back Press 1 kP/cm2, without vapour return 10 Hours

Manifold Back Press 5 bar g - Ammonia - DW pump 18 Hours

Manifold Back Press 5 bar g - C-Propane - DW pump 18 Hours

Manifold Back Press 10 kP/cm2, with vapour return 24 Hours

Manifold Back Press 10 kP/cm2, without vapour return 24 Hours

**Pressurised**

Manifold Back Press 1 kP/cm2, with vapour return 10 Hours

Manifold Back Press 1 kP/cm2, without vapour return 10 Hours

Manifold Back Press 5 bar g - Ammonia 0.9 bar g - DW pump 17 Hours

Manifold Back Press 5 kg/cm2, without vapour return 18 Hours

Manifold Back Press 10 bar g - C-Propane 4.8 bar g - DW pump 36 Hours

Manifold Back Press 10 bar g - Ammonia 0.9 bar g - DW pump 50 Hours

**B7 UNPUMPABLES**

7.1	Tank number / location	#1	1,2	m3
	Tank number / location	#2	1,2	m3
	Tank number / location	#3	1,2	m3
	Tank number / location			m3
	Tank number / location			m3
	Tank number / location			m3
	Tank number / location			m3
	Tank number / location			m3
	Tank number / location			m3
	Total		3,6	m3

**B8 VAPORISING UNPUMPABLES**

8.1 Process used Hot Gas

Time to vaporise liquid unpumpables remaining after full cargo discharge of (1 CT, 1 Compressor running):

8.2	Butane	5	Hours
8.3	Propane	2,5	Hours
8.4	Butadiene	4	Hours
8.5	Propylene	3	Hours

8.6	Ethylene	1,5	Hours
8.7	Ammonia	7	Hours
8.8	Vinyl Chloride Monomer	5	Hours
8.9	Propylene Oxide	N/A	Hours

**B9 RELIQUEFACTION PLANT**

9.1	Plant Design Conditions - air temperature	45	Deg. C
9.3	Plant Design Conditions - sea temperature	32	Deg. C

9.4	<b>Plant Type</b> Is the plant single stage/direct? (for warm cargoes):	YES	
9.5	Is the plant two stage/direct? (for propane, propylene and ammonia):	YES	
9.6	Is the plant simple cascade?	YES	
9.7	Coolant type	R-404A	
<b>Compressors</b>			
9.8	Compressor type	Receiprocating / labyrinth	
9.8.1	Compressor makers name	Burckhardt Compression 2K 140-2A	
9.9	Number of compressors	3	
9.10	Capacity per unit, 1st / 2nd stage (swept volume)	1260 / 510	m3/hr
9.11	Are they Oil Free?	YES	

**B11 CARGO TEMPERATURE LOWERING CAPABILITY (AT SEA WITH SEA TEMPERATURE +15C)**

<b>Time taken to lower the temperature of:</b>			
11.1	<b>C-Propane from -5 deg C to -42 deg C</b>	161	Hours
11.2	<b>C-Propane from -20 deg C to -42 deg C</b>	117	Hours
11.3	<b>C-Propane from -38 deg C to -42deg C</b>	35	Hours
11.4	<b>C-Propane from +20 deg C to -0.50 deg C</b>	54	Hours
11.5	<b>C-Propane from 0 deg C to -20 deg C</b>	66	Hours
11.6	<b>N-Butane from +20 deg C to-0.5 deg C</b>	85	Hours
11.7	<b>N-Butane from +10 deg C to-0.5 deg C</b>	67	Hours
11.8	<b>N-Butane from +10 deg C to -5 deg C</b>	N/A	Hours
11.9	<b>Butadiene</b> From +20 deg C to -5 deg C	97	Hours
11.10	<b>Propylene</b> From -20 deg C to -47 deg C	130	Hours
11.11	<b>Ethylene</b> From -99 deg C to -103 deg C	68	Hours
11.12	<b>Ammonia</b> From -16 deg C to -33 deg C	181	Hours
11.13	<b>Vinyl Chloride Monomer</b> From -5 deg C to -14 deg C	72	Hours

**B12 INERT GAS AND NITROGEN**

<b>Main IG Plant</b>			
12.1	Type of system	N/A	
12.2	Capacity		
12.3	Type of fuel used		
12.4	Composition of IG - oxygen		
	Composition of IG - CO2		
	Composition of IG - Nox		
	Composition of IG - N2		
12.5	Lowest dewpoint achievable		
12.6	Used for		
<b>Nitrogen plant</b>			
12.7	Type of System	Nitrogen generator, Gazcon 3xMN1000	
12.8	Purity N2	99,50%	
12.9	Capacity	1000 M3/Hr	
	Purity N2		
	Capacity		
	Purity N2		

- 12.10 Capacity of dry air production  
12.11 Used for

3000 Nm <sup>3</sup> /hr at -50 d.C
Inerting and Gas freeing

**Nitrogen**

- 12.12 Liquid storage capacity  
12.13 Daily boil-off loss  
12.14 Maximum supply pressure  
12.15 Supply capacity  
12.16 Used for

720	LTR
nil	
0,3	Bar
N <sub>2</sub> blanket for VCM, PO/EO, DTE, Acetaldehyde	

**B13 CARGO TANK INERTING/DE-INERTING**

- 13.1 Time taken to inert from fresh air to under 5% O<sub>2</sub> at minus 25 degree C?  
13.2 Time taken to inert from cargo vapour to fully inert at minus 25 degrees dewpoint when IG density is **less** than product?  
Time taken to inert from cargo vapour to fully inert at minus 25 degrees dewpoint when IG density is **greater** than product?

17	Hours
44	Hours
44	Hours

**B14 GAS FREEING TO FRESH AIR**

- 14.1 Plant used  
14.2 Time taken from fully inert condition to fully breathable fresh air?

Nitrogen Plant	
22	Hours

**B15 CHANGING CARGO GRADES**

Indicate number of hours needed to change grades from the removal of pumpables to tanks fit to load and the estimated quantity of Inert Gas and or Nitrogen consumed during the operation:

	Hours	Air	Nitrogen
From C-Propane to N-Butane	48	36 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From C-Propane to Butadiene	77	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From C-Propane to Ethylene	90	36 000 Nm <sup>3</sup>	84 000 Nm <sup>3</sup>
From C-Propane to Ammonia	72	72 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From C-Propane to Vinyl Chloride Monomer	77	36 000 Nm <sup>3</sup>	54 000 Nm <sup>3</sup>
From C-Propane to Propylene Oxide	84	36 000 Nm <sup>3</sup>	84 000 Nm <sup>3</sup>
From N-Butane to C-Propane	48	36 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From N-Butane to Butadiene	77	36 000 Nm <sup>3</sup>	84 000 Nm <sup>3</sup>
From N-Butane to Ethylene	84	36 000 Nm <sup>3</sup>	72 000 Nm <sup>3</sup>
From N-Butane to Ammonia	72	72 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From N-Butane to Vinyl Chloride Monomer	72	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From N-Butane to Propylene Oxide	84	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Butadiene to C-Propane	78	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Butadiene to N-Butane	78	37 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Butadiene to Ethylene	90	36 000 Nm <sup>3</sup>	84 000 Nm <sup>3</sup>
From Butadiene to Ammonia	96	72 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From Butadiene to Vinyl Chloride Monomer	96	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Butadiene to Propylene Oxide	84	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Ethylene to C-Propane	90	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Ethylene to N-Butane	90	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Ethylene to Butadiene	90	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Ethylene to Ammonia	60	36 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>
From Ethylene to Vinyl Chloride Monomer	90	36 000 Nm <sup>3</sup>	84 000 Nm <sup>3</sup>
From Ethylene to Propylene Oxide	84	32 000 Nm <sup>3</sup>	60 000 Nm <sup>3</sup>
From Ammonia to C-Propane	84	64 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From Ammonia to N-Butane	77	64 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From Ammonia to Butadiene	77	64 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From Ammonia to Ethylene	90	64 000 Nm <sup>3</sup>	36 000 Nm <sup>3</sup>
From Ammonia to Vinyl Chloride Monomer	84	64 000 Nm <sup>3</sup>	54 000 Nm <sup>3</sup>
From Ammonia to Propylene Oxide	60	37 000 Nm <sup>3</sup>	46 000 Nm <sup>3</sup>

From Vinyl Chloride Monomer to C-Propane  
 From Vinyl Chloride Monomer to N-Butane  
 From Vinyl Chloride Monomer to Butadiene  
 From Vinyl Chloride Monomer to Ammonia  
 From Vinyl Chloride Monomer to Ethylene  
 From Vinyl Chloride Monomer to Propylene Oxide  
 From Propylene Oxide to C-Propane  
 From Propylene Oxide to N-Butane  
 From Propylene Oxide to Butadiene  
 From Propylene Oxide to Ethylene  
 From Propylene Oxide to Vinyl Chloride Monomer  
 From Propylene Oxide to Ammonia

84	36 000 Nm3	48 000 Nm3
77	36 000 Nm3	60 000 Nm3
84	36 000 Nm3	72 000 Nm3
100	36 000 Nm3	56 000 Nm3
90	36 000 Nm3	64 000 Nm3
110	36 000 Nm3	82 000 Nm3
60	36 000 Nm3	60 000 Nm3
60	36 000 Nm3	72 000 Nm3
60	36 000 Nm3	72 000 Nm3
60	36 000 Nm3	72 000 Nm3
60	36 000 Nm3	84 000 Nm3
60	72 000 Nm3	48 000 Nm3

Cargo Grade Change Operations that cannot be carried out at sea:

All purging operations can be carried out at sea after loading cargo parcel for gassing up operation the ship has to load for cooling down purpose additional parcel circa 60-100 cub.m.

**B17 PRE-LOADING COOLDOWN**

The following questions ask the Time and Quantity of coolant required to cooldown cargo tanks from ambient temperature to fully gassed up state sufficient to allow loading to commence.

17.1	<b>Propane</b> - Quantity of Coolant Required <b>Propane</b> - Time required to cooldown cargo tanks from ambient temperature with vapour return line <b>Propane</b> - Time required to cooldown cargo tanks from ambient temperature without vapour return line	70 cub.m. 40 56	
17.2	<b>Butane</b> - Quantity of Coolant Required <b>Butane</b> - Time required to cooldown cargo tanks from ambient temperature with vapour return line <b>Butane</b> - Time required to cooldown cargo tanks from ambient temperature without vapour return line	50 cub.m. 28 32	
17.3	<b>Butadiene</b> - Quantity of Coolant Required <b>Butadiene</b> - Time required to cooldown cargo tanks from ambient temperature with vapour return line  <b>Butadiene</b> - Time required to cooldown cargo tanks from ambient temperature without vapour return line	60 cub.m. 36 40	
17.4	<b>Propylene</b> - Quantity of Coolant Required <b>Propylene</b> - Time required to cooldown cargo tanks from ambient temperature without vapour return line  <b>Propylene</b> - Time required to cooldown cargo tanks from ambient temperature with vapour return line	75 cub.m. 36 40	
17.5	<b>Ethylene</b> - Quantity of Coolant Required <b>Ethylene</b> - Time required to cooldown cargo tanks from ambient temperature with vapour return line <b>Ethylene</b> - Time required to cooldown cargo tanks from ambient temperature without vapour return line	80 cub.m. 72 84	Tons Hours
17.6	<b>Ammonia</b> - Quantity of Coolant Required	75 cub.m.	



**Ammonia** - Time required to cooldown cargo tanks from ambient temperature with vapour return line

36
----

**Ammonia** - Time required to cooldown cargo tanks from ambient temperature without vapour return line

40
----

17.7	<b>VCM - Quantity of Coolant Required</b>	70 cub.m.
	<b>VCM - Time required to cooldown cargo tanks from ambient temperature without vapour return line</b>	60
	<b>VCM - Time required to cooldown cargo tanks from ambient temperature with vapour return line</b>	72

**B18 LPG VAPORISER**

18.1	Type of Vaporiser	U-tubes, welded in tube plate	
18.2	Number of Vaporisers fitted	1	
18.3	Capacity per unit - C-Propane	2500	Nm3/h
18.4	Liquid Supply Rate	8	m3/h
18.5	Delivery Temperature	-42	degC
18.6	Capacity per unit - Ammonia	2500	Nm3/h
18.7	Liquid Supply Rate	6	m3/h
18.8	Delivery Temperature	-33	degC
18.9	Capacity per unit - Nitrogen	NA	Nm3/h
18.10	Liquid Supply Rate	NA	m3/h
18.11	Delivery Temperature	NA	degC
		NA	

**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	"Shell and tube" type, U-tubes are welded to plate	
20.2	Number Fitted	1	
20.3	Heating Medium	Seawater	
20.4	Discharge rates with seawater at 15 degC to raise product temperature of Propane from -42 degC to 0 degC	500	m3/h
20.5	Discharge rates with seawater at 15 deC to raise product temperature of Ammonia from -33 degC to 0 degC	280	m3/h

**B21 HYDRATE CONTROL**

21.1	Type of Depressant?	Ethanol	
21.1.1	Freezing point temperature?	-117	
21.2	Quantity of Depressant Carried?	200	Ltr.
21.3	Means of injection?	Portable pump	
	Name any other system used	Hot gas	

**B22 CARGO MEASUREMENT**

**Level Gauges**

22.1	Are level gauges local or remote?	Both	
22.2	Name of manufacture	Henri Systems Holland B.V.	
22.3	Type	Marine Level Gauge	FTLG 807 SUS
22.4	Rated Accuracy	+/- 5 mm	
22.5	Certifying Authority	SGS	

**Temperature Gauges**

22.6	Name of manufacture	Teck Skoteslv	
22.7	Type	Type TXC	
22.8	Rated Accuracy	±1% x F.S.	
22.9	Certifying Authority	SGS	

<b>Pressure Gauges</b>		
22.10	Name of manufacture	Teck Skoteslv
22.11	Type	Type IM
22.12	Rated Accuracy	±1%xF.S.
22.13	Certifying Authority	SGS

<b>Oxygen Analyser</b>		
22.14	Name of manufacture	Riken Keiki
22.15	Type	GX-8000E
22.15.1	What is the lowest level measurable?	0%

<b>Fixed Gas Analyser</b>		
22.16	Name of manufacture	Omicron
22.17	Type	OGS 3.11

<b>Cargo Tank Calibrations</b>		
22.18	Are Cargo tank calibration tables available?	Yes
22.19	Name of Measuring Company	SGS South Korea
22.20	Name of Certifying Authority	
22.21	Calibration calculated to cm?	NO
22.21.1	Calibration calculated to 1/2 cm?	YES
22.22	Tables established to cm?	NO
22.22.1	Tables established to mm?	YES
22.22.2	Tables established to "other" (state what other)	N/A
22.23	Are trim and list corrections available?	YES
22.24	Are temperature corrections available?	YES
22.25	Are float gauge tape corrections available?	YES

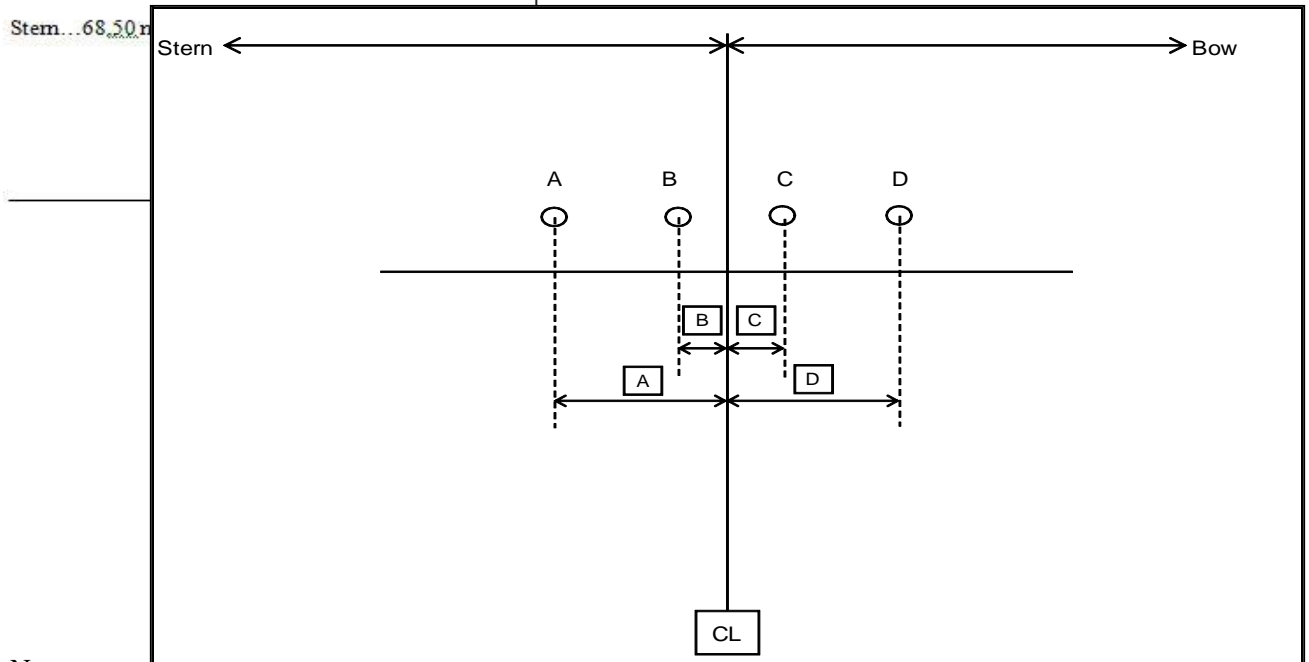
**B23 CARGO SAMPLING**

23.1	May cargo samples be obtained from the levels; top, middle and bottom in all cargo tanks?	Yes
------	-------------------------------------------------------------------------------------------	-----

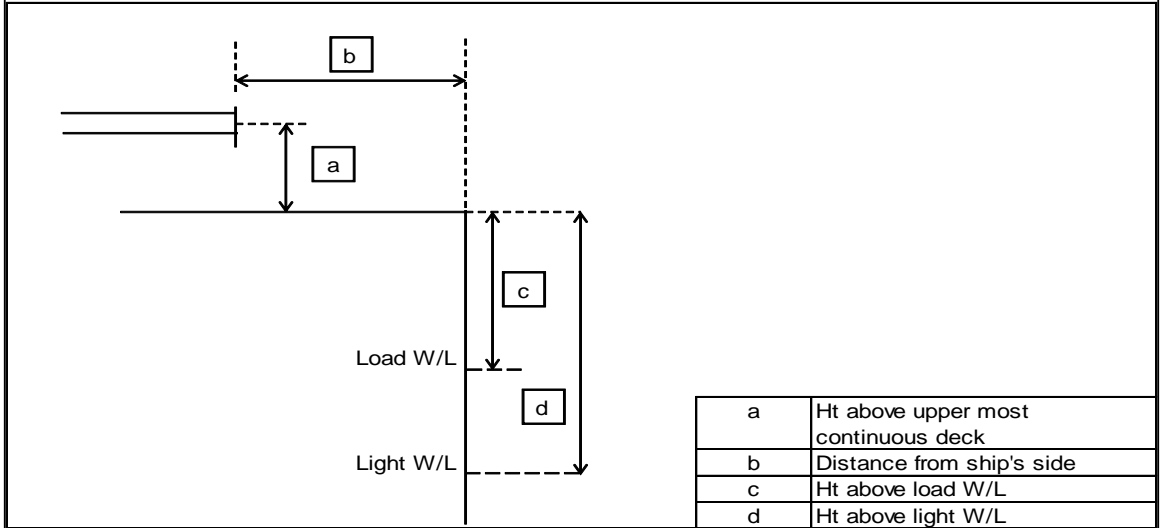
If no, - the arrangement for sampling is limited to:


23.2	Can samples be drawn from tank vapour outlet?	NO
	Can samples be drawn from manifold liquid line?	NO
	Can samples be drawn from manifold vapour line?	NO
	Can samples be drawn from pump discharge line?	YES
23.3	State sample connection type	NPT 1/2" FEMALE CONNECTOR
	Size of sample connection	1/2"

Manifold arrangement diagram



Notes



Center of manifold to bow	74,00	M
Center of manifold to stern	68,50	M
<b>Liquid line L1 ( D )</b>		
Distance from bow	71,70	M
Distance from stern	70,84	M
Distance from manifold centerline ( D )	2,30	M
Size and rating	8" / ANSI 300	
Type	Flat	
Height above uppermost continuous deck	2,75	M
Distance from ship's side	2,50	M
Height above load waterline	5,36	M
Height above light waterline	11,13	M
<b>Vapour line V1 ( C )</b>		
Distance from bow	73,15	M
Distance from stern	69,39	M
Distance from manifold centerline ( C )	0,85	M
Size and rating	6" / ANSI 300	
Type	Flat	
Height above uppermost continuous deck	2,75	M
Distance from ship's side	2,50	M
Height above load waterline	5,36	M
Height above light waterline	11,13	M
<b>Vapour line V2 ( B )</b>		
Distance from bow	74,85	M
Distance from stern	67,69	M
Distance from manifold centerline ( B )	0,85	M
Size and rating	6" / ANSI 300	
Type	Flat	
Height above uppermost continuous deck	2,75	M
Distance from ship's side	2,50	M
Height above load waterline	5,36	M
Height above light waterline	11,13	M
<b>Liquid line L2 ( A )</b>		
Distance from bow	76,35	M
Distance from stern	66,19	M
Distance from manifold centerline ( A )	2,35	M
Size and rating	10" / ANSI 300	
Type	Flat	
Height above uppermost continuous deck	2,75	M
Distance from ship's side	2,50	M
Height above load waterline	5,36	M
Height above light waterline	11,13	M
<b>Liquid line L3</b>		
Distance from bow	N/A	
Distance from stern		
Distance from manifold centerline		
Size and rating		
Type		
Height above uppermost continuous deck		
Distance from ship's side		
Height above load waterline		
Height above light waterline		
<b>Vapour line V3</b>		
Distance from bow	N/A	
Distance from stern		

Distance from manifold centerline	
Size and rating	
Type	
Height above uppermost continuous deck	
Distance from ship's side	
Height above load waterline	
Height above light waterline	

**Vapour line V4**

Distance from bow	N/A
Distance from stern	
Distance from manifold centerline	
Size and rating	
Type	
Height above uppermost continuous deck	
Distance from ship's side	
Height above load waterline	
Height above light waterline	

**Liquid line L4**

Distance from bow	N/A
Distance from stern	
Distance from manifold centerline	
Size and rating	
Type	
Height above uppermost continuous deck	
Distance from ship's side	
Height above load waterline	
Height above light waterline	

**Nitrogen manifold**

Distance from bow	N/A
Distance from stern	
Distance from manifold centerline	
Size	
Height above uppermost continuous deck	
Distance from ship's side	

**Manifold Arrangement Located on Top of Compressor**

Distance from rail of compressor room/platform to presentation flanges	N/A
Distance from deck of compressor room/platform/try to centre of manifold	N/A

**B25 CARGO MANIFOLD REDUCERS**

25.1	Number of ANSI Class 300 reducers carried onboard	15	
	Flange rating of ANSI Class 300 reducer	ANSI B16.5 WN RF	
	Size of ANSI Class 300 reducer	10" down to 3"	
	Length of ANSI Class 300 reducer	500	MM
25.2	Number of ANSI Class 300 to Class 150 reducers carried onboard	15	
	Flange rating of ANSI Class 300 to Class 150 reducer	ANSI B16.5 WN RF	
	Size of ANSI Class 300 to Class 150 reducer	10" down to 3"	
	Length of ANSI Class 300 to Class 150 reducer	500	MM
25.3	Number of ANSI Class 150 reducers carried onboard	N/A	
	Flange rating of Class 150 reducer		
	Size of ANSI Class 150 reducer		
	Length of ANSI Class 150 reducer		

**B26 CONNECTIONS TO SHORE FOR ESD AND COMMUNICATIONS SYSTEMS**

26.1	Is ESD connection to shore available?	Yes	
	If yes, is the system pneumatic?	No	
	If yes, is the system electrical?	Yes	
	If yes, is the system fiber optic?	No	
26.2	What is the type of connection used?	For MTL SIG04 cable	
26.3	Are ESD hoses or cables available on board?	Pendant	
	If yes, length of pneumatic	No	
	If yes, length of electrical	30,00	M
	If yes, length of fiber optic	N/A	
26.4	Is there a connection available for a telephone line?	No	
26.5	Are ESD connections available on both sides of vessel?	Yes	
	Are ESD Fusible plugs fitted at tank domes?	Yes	
	Are ESD Fusible plugs fitted at manifolds?	Yes	
	Is the link compatible with the SIGTTO guidelines?	Yes	
	Type of manifold valve	Westad	Ball
	Closing time in seconds	29 sec	
	Is closing time adjustable?	Yes	
	Is Independent high level shut down system fitted(overflow control)?	Yes	
	If yes, does the independent high level shutdown system also switch off running cargo pumps?	Yes	
	Shut down level %	99	

**B27 MANIFOLD DERRICK/CRANE**

27.1	Is manifold derrick provided	N/A	
27.2	Is manifold crane provided	YES	
27.3	Is lifting equipment same for port and starboard?	YES	
	If no, then stipulate details	Midship Crane	
27.4	State SWL at maximum outreach	3,60	MT
27.4.1	Maximum outreach of lifting equipment	16,00	m