GAS FORM-C

based on the

OCIMF / SIGTTO

SHIP INFORMATION QUESTIONNAIRE

for

GAS CARRIERS

2nd Edition 1998

GTS

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

INDEX

SECTION A

GENERAL INFORMATION

A1 PRINCIPAL SHIP PARTICULARS

1.1	Date questionnaire completed		1-Apr-2017
1.2	Name of vessel		JS INEOS INVENTION
1.3	LR/IMO number		9771511
1.4	Last previous name		
1.4.1	Date of name change		
1.5	Second last previous name		
1.5.1	Date of name change		
1.6	Third last previous name		
1.6.1	Date of name change		
1.7	Fourth last previous name		
1.7.1	Date of name change		
1.8	Flag		Malta
1.9	Port of Registry		Valletta
1.10	Official number		9771511
1.11	Call sign		9HA4281
1.12	INMARSAT A or B number	FBB	870 773 936 918
1.13	Vessel's telephone number	VSAT	47 2240 7580 / Norway
		VSAT	47 2240 7581 / Norway
1.13.1	Vessel's mobile number		
1.14	Vessel's fax number		870 773 936 918
1.15	Vessel's telex number	424 955 114	424 955 115
1.16	Vessel's E-mail address		js.invention@skyfile.com
1.17	INMARSAT C number	424 955 114	424 955 115
1.18	Vessel's MMSI number		249 551 000
1.19	Type of vessel		Liquefied Gas Carrier

OWNERSHIP AND OPERATION

1.20	Registered Owner	SNC Jaspe 3
	Full address	18 Quai de la Rapee, 75012
		Paris
		France
	Office telephone number	+86 21 5355 9858
	Office telex number	N/A
	Office fax number	+86 21 6278 3326
	Office Email address	fleet@greenshipgas.com
	Contact person	Mihir Navakar
	Contact person after hours telephone number	+33 158 470 346

1.21	Name of technical operator (If different from above)	Evergas Ship Management Pte Ltd
	Full Address	21 Ubi Road
		# 06-01, Cambridge Trust Building
		Singapore 408724
	Office telephone number	+65 6220 7291
	Office telex number	N/A
	Office fax number	N/A
	Office Email address	fleet@evergas.net
	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	15
1.23	Number of years ship owned	0
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	operations@evergas.net
	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	0

BUILDER

1.24	Builder	Jiangsu New Yangzi Shipbuilding Co Ltd, Jingjiang
1.25	Name of yard vessel built at	YZJ
1.26	Hull number (Class ID No.)	YZJ 2015-1182
1.27	Date keel laid	16-Dec-2015
1.28	Date launched	27-Sep-2016
1.29	Date delivered	31-Mar-2017
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	

CLASSIFICATION

1.32	Classification society	Bureau Veritas
1.33	Class Notation	BV I, +HULL, +MACH, Liquefied Gas Carrier, Type 2G - Dualfuel, Unrestricted Navigation,CPS (WBT), +VeriSTAR - HULL DFL 25 Years, +AUT-UMS, +SYS-NEQ, MON-SHAFT, GREEN PASSPORT, CLEANSHIP, INWATERSURVEY
1.34	If Classification society changed, name of previous society	N/A
1.35	If Classification society changed, date of change	
1.36	Was ship built in accordance with the following regulations:	
	IMO	Yes
	US COAST GUARD	Yes
	IACS Class	Yes
	Other:_____	
1.37	IMO certification	
	Certificate of fitness - IGC	Yes
	Certificate - A328	
	Certificate - A329	
	Letter of Compliance	
	Issued by	
1.38	Unattended Machinery Space Certificate	
1.39	Net Registered Tonnage	6,866
1.40	Gross Registered Tonnage	22,887
1.41	Suez Net Tonnage - Canal Tonnage	24966.94
	Suez Gross Tonnage	21589.49
1.42	Panama Net Tonnage - Canal Tonnage	19070
	Panama Gross Tonnage	N/A

A2 HULL DIMENSIONS

2.1	Length overall (LOA)	180.3
2.2	Length between perpendiculars (LBP)	170.8
2.3	Distance bow to bridge	142.40
2.4	Distance bridge front - mid point manifold	46.40
2.5	Distance bow to mid-point manifold	92.0
2.6	Extreme breadth	26.60
2.7	Extreme depth	17.80
2.8	Summer draught (design / Scantling)	9.40
2.9	Corresponding Summer deadweight	20737.9
2.10	Light displacement	11350.0
2.11	Loaded displacement (Summer deadweight)	32087.9
2.12	Cargo tanks cubic capacity - 100%	27,554.0
2.12.1	Deck tank(s) cubic capacity - 100%	2000.68
2.12.2	Cargo tanks cubic capacity - 98%	27,002.9
2.12.3	Deck tank(s) cubic capacity - 98%	1960.7
2.13	Distance from keel to highest point	46.50
2.14	Air draught (normal ballast condition)	38.36

A3 IMMERSION

		Tonnes / cm @ metres draught	
3.1	TPC - in normal ballast condition	37.00	6.50
	TPC - in loaded condition (summer deadweight)	41.90	9.40

A4 LOADED PARTICULARS

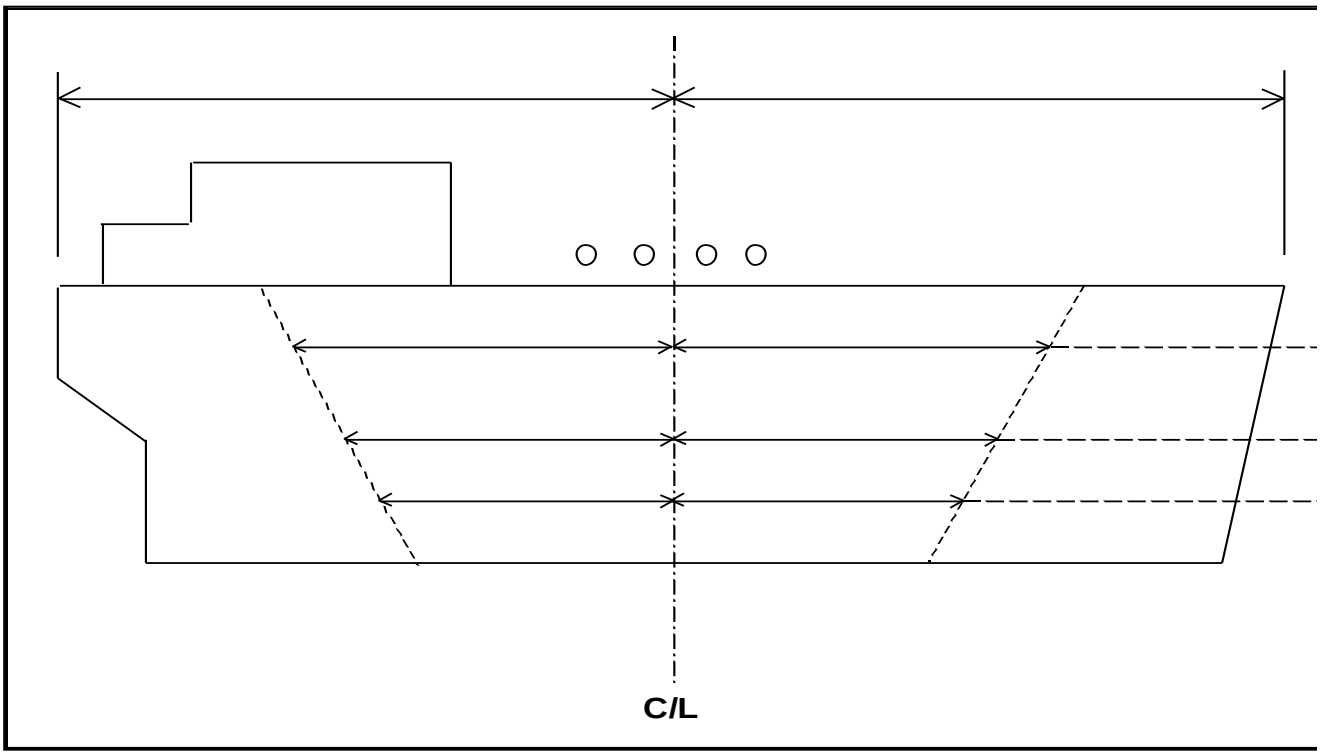
4.1	Cargo grade	Methane	Butadiene
4.2	Density	0.42	0.65
4.3	Cargo loadable	11341	17552
4.4	Bunkers - FO / Metane or Ethane	1316.8 / 823	1316.8 / 1068
4.5	Bunkers - DO	232	232
4.6	Fresh water	304	304
4.7	Stores & spares	60	60
4.8	Lub oil	109.4	109.4
4.9	Ballast	1377	205.6
4.10	Deadweight	15563	20848
4.11	Draught - forward	7.50	9.23
	Draught - aft	8.67	9.56
	Draught - mean	8.08	9.39

	Cargo grade	Ethylene	Ethane
	Density	0.568	0.545
	Cargo loadable	15346	14717
	Bunkers - FO / Ethane	1316.8 / 1068	1316.8 / 1068
	Bunkers - DO	232	232
	Fresh water	304	304
	Stores & spares	60	60
	Lub oil	109.4	109.4
	Ballast	701.4	701.4
	Deadweight	19130	18509
	Draught - forward	8.87	8.39
	Draught - aft	9.13	9.24
	Draught - mean	9.00	8.81

Cargo grade	Propane	Butane
Density	0.583	0.602
Cargo loadable	15743	16265
Bunkers - FO / Ethane	1316.8 / 1068	1316.8 / 1068
Bunkers - DO	232	232
Fresh water	304	304
Stores & spares	60	60
Lub oil	109.4	109.4
Ballast	701.4	701.4
Deadweight	19535	20048
Draught - forward	8.78	8.98
Draught - aft	9.36	9.42
Draught - mean	9.07	9.2

Cargo grade	Propylene	Ballast
Density	0.609	
Cargo loadable	16445	
Bunkers - FO / Ethane or Methane	1316.8 / 1068	1316.8 / 823
Bunkers - DO	232	239.4
Fresh water	304	304
Stores & spares	60	60
Lub oil	109.4	109.4
Ballast	701.4	6726.4
Deadweight	20237	9579
Draught - forward	9.05	4.88
Draught - aft	9.44	8.14
Draught - mean	9.25	6.51

A5 PARALLEL MID-BODY DIMENSIONS



5.1	Light ship	47.9
5.2	Forward to mid-point manifold - light ship	24.0
5.3	Aft to mid-point manifold - light ship	23.9
5.4	Normal ballast	60.9
5.5	Forward to mid-point manifold - normal ballast	30.7
5.6	Aft to mid-point manifold - normal ballast	30.3
5.7	Loaded SDWT	83.2
5.8	Forward to mid-point manifold - loaded SDWT	40.0
5.9	Aft to mid-point manifold - loaded SDWT	43.2

A6 BUNKER CAPACITIES

	Grade	Capacity @ 98%
Main engine	HFO	1237
Auxiliary engine	MDO	400.7
Other:	LNG / Ethane	1983.4

A7 FUEL CONSUMPTION DETAILS

		Grade	
7.1	At sea - normal service speed SG engaged	HFO	
		Diesel oil	
		Gas oil	
7.2	At sea - normal service speed - while conditioning cargo full cooling	HFO	
		Diesel oil	
		Gas oil	
7.3	In port - loading	LNG	
		Diesel oil	
		Gas oil	
7.4	In port - discharging	LNG	
		Diesel oil	
		Gas oil	
7.5	In port - idle	LNG	
		Diesel oil	
		Gas oil	

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	Wartsila	
		Type 6L50DF Tire II - 2 Sets	
8.2	Number of units		2
8.3	Maximum continuous rating (MRC) per engine		5850
8.4	Total available power - Kwe		7,000
8.5	Normal service power - Kwe at 75% SMCR		5,250

A9 AUXILIARY PLANTS

9.1	Make and type of auxiliary generators / engines	Wartsila		
		6L20 DF		
9.2	Number of units			2
9.3	Maximum generator output per unit		RPM	Kilowatts
		Unit no. 1	1200	1056
		Unit no. 2	1200	1056
		Unit no. 3		
9.4	Shaft generator			2 x 1875
9.5	Total available power			3750
9.6	Emergency generator		1800	150
9.7	Emergency fire pump - type		Motor driven Vertical Centrifugal	
	Delivery pressure			8
	Motive power			Electrical
	If electrical, - indicate power required			43
9.8	Steering gear - type		Rolls-Royce RV850-R	
	Indicate power required to steer the vessel with one pump unit			34

A10 POWER/SPEED INFORMATION

10.1	Trial data	BHP	5412
		MRC	5250
		Speed	15.94
		Draught	9.4
10.2	Normal service speed (LOADED / BALLAST)	BHP	
		MRC	
		Speed	16
		Draught	9.4

A11 THRUSTERS

11.1	Make and type	N/A	
11.2	Bow thruster	(output)	N/A
11.3	Stern thruster	(output)	N/A

A12 FRESH WATER

12.1	Capacity of distilled tanks		49.7
12.2	Capacity of domestic tanks		254.5
12.3	Daily consumption	Distilled	
		Domestic	
12.4	Daily evaporator capacity		

A13 BALLAST CAPACITIES AND PUMPS

	Tank	Capacity (m3)	Number
13.1	Fore peak	286.1	FPT
13.2	Wing and or side tanks	1928.6	1-4 P+S
13.3	Double bottom tanks	5469	1-6 P+S
13.4	Aft peak	821.4	APT
13.5	Deep tank	N/A	N/A
13.6	Total	8505	

13.7	Ballast pump make and type	Allweiler / Centrifugal Pump
13.8	Number of pumps	2
13.9	Total capacity	700
13.10	Location	Engine Room
13.11	Control location	ECR, CCR, Bridge
13.13	Ballast Water Treatment Plant	GloEn - P700 - 1 Set

A14 MOORING EQUIPMENT

14.1 **ROPES**

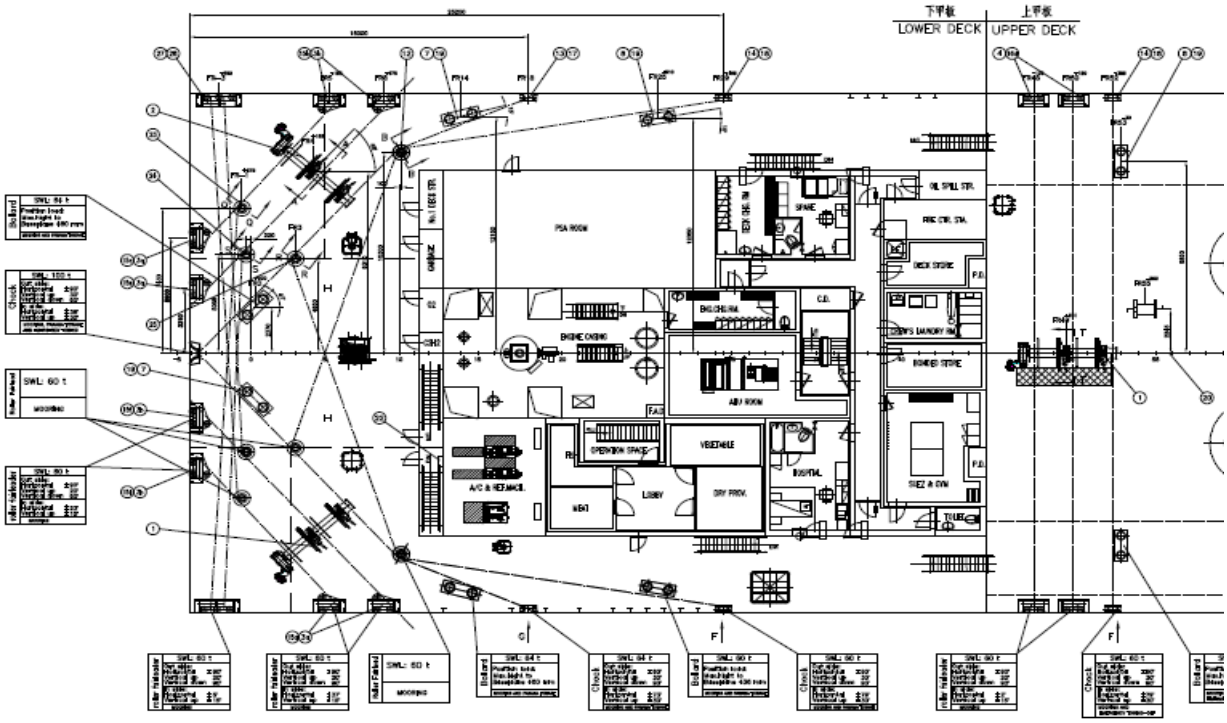
Indicate on the diagram below the position of:

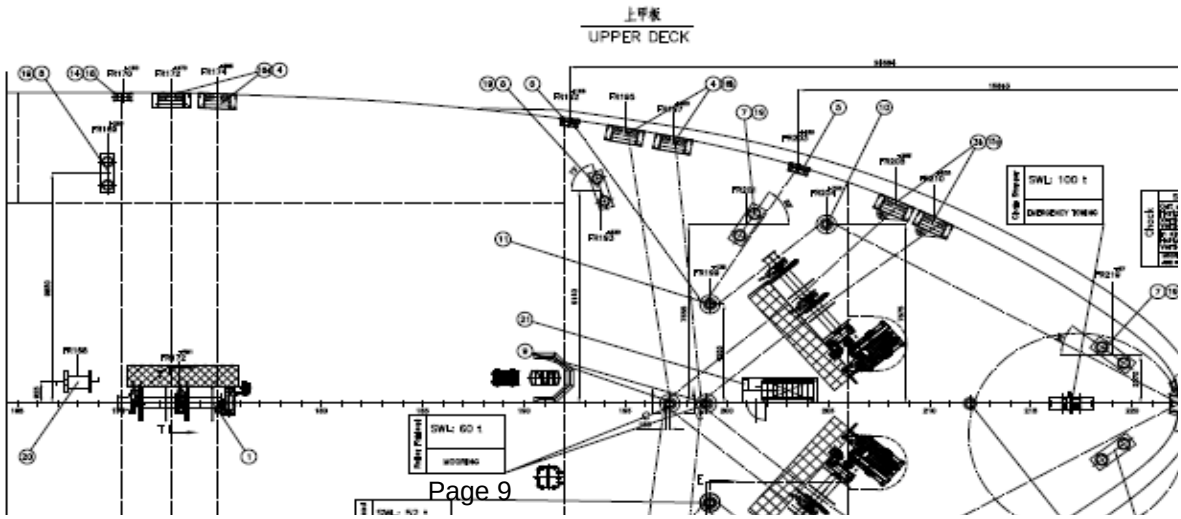
Winch Mounted Ropes (R)

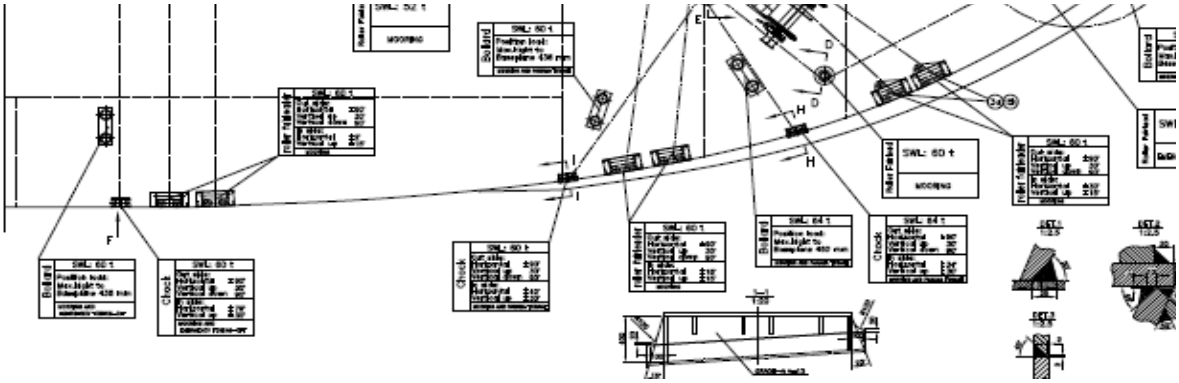
Open Fairleads (O)

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	4
Diameter	64
Material	Polyester & Propylene Mix
Length	220
Breaking Strength	58.7
Mooring Ropes (On Drums) Forward Main Deck - Number	2
Diameter	64
Material	Polyester & Propylene Mix
Length	220
Breaking Strength	58.7

Mooring Ropes (On Drums) Aft Main Deck - Number	2
Diameter	64
Material	Polyester & Propylene Mix
Length	220
Breaking Strength	58.7
Mooring Ropes (On Drums) Poop - Number	4
Diameter	64
Material	Polyester & Propylene Mix
Length	220
Breaking Strength	58.7

OTHER MOORING LINES

Mooring Ropes not on Drums - Number	2
Diameter	64
Material	Polyester & Propylene Mix
Length	220
Breaking Strength	58.7
Emergency Towing Wires / Fire Wires - Number	2
Diameter	32
Material	Steel Wire
Length	45
Breaking Strength	

14.2 **MOORING WINCHES**

Forecastle - Number	2
Single Drum or Double Drums	Double
Split Drums Y/N	Y
Motive Power	Hydraulic
Heaving Power	150
Brake Capacity	461
Hauling Speed	15
	45
Forward Main Deck - Number	1
Single Drum or Double Drums	Double
Split Drums Y/N	Y
Motive Power	Hydraulic
Heaving Power	150
Brake Capacity	461
Hauling Speed	15
	45
Aft Main Deck - Number	1
Single Drum or Double Drums	Double
Split Drums Y/N	Y
Motive Power	Hydraulic
Heaving Power	150
Brake Capacity	461
Hauling Speed	15
	45
Poop - Number	2
Single Drum or Double Drums	Double
Split Drums Y/N	Y
Motive Power	Hydraulic
Heaving Power	150
Brake Capacity	461
Hauling Speed	15
	45

14.3 **ANCHORS AND WINDLASS**

Windlass motive power(e.g. steam, hydraulic)	Hydraulic
Hauling power, nominal	220
Hauling power, max	329
Brake holding power	1575
Anchor type	HY-14 SB HPP

	Is spare anchor carried		No
	Cable diameter		68
	Number of shackles port cable		11
	Number of shackles starboard cable		11

14.4 **TOWING ARRANGEMENTS**

	Is the vessel fitted with a Towing Bracket Aft?		Yes
	If Yes, state SWL		100
	Is Towing chain provided		Yes
	Dimensions of Towing wire	Diameter	65
		Length	100

14.5 **WINDAGE**

	Windage on ballast draught	Front	
		End-on	
		Lateral	2205

A15 NAVIGATIONAL EQUIPMENT

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	4
15.6	Radar 3cm		Yes
15.7	Radar 10cm		Yes
15.8	Are radars gyro stabilised?		Yes
15.9	Radar plotting equipment		Yes
15.10	ARPA		Yes
15.11	ECDIS		Yes
15.12	Depth sounder with recorder		No
15.13	Depth sounder without recorder		Yes
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		No
15.21	Controllable pitch propeller indicator		Yes
15.22	Thruster(s) indicator		N/A
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		AVCS

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)	2
16.4	EPIRB	2
16.5	How many VHF radios are fitted on the bridge?	2
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
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)
Methane	-163	545
Ethylene	-104	568
C-Ethane (0,5 mol% Methane in Liq. Phase)	-89	545
Propylene	-48	609
C-Propane (2,5 mol% Ethane in Liq. Phase)	-45	583
VCM	-14	969
Iso-Butane	-12	594
Butylenes	-7	625
Butadiene	-5	650
N-Butane	0	602
Methyl Cloride		
DME	-25	734
Other Cargoes		
Acetaldehyde	20	778
Dimethyl Amine	7	666
Ethyl Cloride	13	903
Diethyl Ether	35	700
Isoprene (Monomer)	34	666
Isopropyl Amine	32	676
Monoethyl Amine	17	687
Pentanes/Pentenes	36 / 30	605 / 608
Vinyl Ethyl Ether	36	750

Transport and Carriage Conditions

1.2	Minimum allowable tank temperature	-163
1.3	Maximum Permissible tank pressure	4.5
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)	Removal of spools

B2 CARGO TANKS

2.1	Type and materials of cargo tanks	Type C, Bilobe / X7Ni9 Steel
2.2	Maximum allowable relief valve setting	4.5
2.2.1	IMO Setting	4.5
2.2.2	USCG Setting	4.5
2.3	Safety valve set pressure, - if variable stipulate range of pilot valves	4.5
2.4	Maximum allowable vacuum	-0.25
2.5	Maximum cargo density at 15 deg Celsius	992
2.6	Maximum rate of cool-down	10
2.7	State any limitations regarding partially filled tanks	

2.8 State allowable combinations of filled and empty tanks

B3 CARGO TANK CAPACITIES

Tank number / location	CT 1
Capacity m3 (100%)	8181.62
Capacity 98%	8017.99
N-Butane capacity	4834
N-Butane temperature	-0.5
C-Propane capacity	4681
C-Propane temperature	-45
Butadiene capacity	5219
Butadiene temperature	-4.5
Propylene capacity	4890
Propylene temperature	-48
Vinyl Chloride Monomer capacity	7781
Vinyl Chloride Monomer temperature	-13.8
Ethylene capacity	4561
Ethylene temperature	-104
Propylene Oxide capacity	N/A
Propylene Oxide temperature	N/A
Ammonia capacity	N/A
Ammonia temperature	N/A

Tank number / location	CT 2
Capacity m3 (100%)	9687.69
Capacity 98%	9493.94
N-Butane capacity	5708
N-Butane temperature	-0.5
C-Propane capacity	5528
C-Propane temperature	-45
Butadiene capacity	6163
Butadiene temperature	-4.5
Propylene capacity	5774
Propylene temperature	-48
Vinyl Chloride Monomer capacity	9187
Vinyl Chloride Monomer temperature	-13.8
Ethylene capacity	5385
Ethylene temperature	-104
Propylene Oxide capacity	N/A
Propylene Oxide temperature	N/A
Ammonia capacity	N/A
Ammonia temperature	N/A

Tank number / location	CT 3
Capacity m3 (100%)	9684.69
Capacity 98%	9491.00
N-Butane capacity	5714
N-Butane temperature	-0.5
C-Propane capacity	5534
C-Propane temperature	-45
Butadiene capacity	6170
Butadiene temperature	-4.5
Propylene capacity	5781
Propylene temperature	-48
Vinyl Chloride Monomer capacity	9198
Vinyl Chloride Monomer temperature	-13.8
Ethylene capacity	5391
Ethylene temperature	-104
Propylene Oxide capacity	N/A
Propylene Oxide temperature	N/A
Ammonia capacity	N/A
Ammonia temperature	N/A

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	

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	

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	

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	

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	

Total Capacity of all cargo tanks (100%)	27,554.00
Total Capacity of all cargo tanks (98%)	27,002.93
Total Capacity of N-Butane	16265
Total Capacity of C-Propane	15743
Total Capacity of Butadiene	17552
Total Capacity of Propylene	16445
Total Capacity of Vinyl Chloride Monomer	26166
Total Capacity of Ethylene	15346
Total Capacity of Propylene Oxide	N/A
Total Capacity of Ammonia	N/A

B16 DECK (FUEL) TANK CAPACITIES

Are Deck pressure tank(s) fitted?	Yes
Material of tank(s)	Ni-Steel: X7Ni9
Maximum allowable relief valve setting	8.0

Deck tank number 1 - capacity (100%)	1000.14
Capacity 98%	980.14
Propane Capacity	N/A
Butane Capacity	N/A
Propylene capacity	N/A
Ethylene capacity	N/A
Ammonia Capacity	N/A

Deck tank number 2 - capacity (100%)	1000.53
Capacity 98%	980.52
Propane Capacity	N/A
Butane Capacity	N/A
Propylene capacity	N/A
Ethylene capacity	N/A
Ammonia Capacity	N/A

B4 LOADING RATES

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

N-Butane - with vapour return	1268
N-Butane - without vapour return	1268
C-Propane - with vapour return	1231
C-Propane - without vapour return	1231
Butadiene - with vapour return	1366
Butadiene - without vapour return	1366
Propylene - with vapour return	1277
Propylene - without vapour return	1277
Ethylene - with vapour return	1197
Ethylene - without vapour return	1197
Ammonia - with vapour return	N/A
Ammonia - without vapour return	N/A
Vinyl Chloride Monomer - with vapour return	2027
Vinyl Chloride Monomer - without vapour return	2027
Propylene Oxide - with vapour return	N/A
Propylene Oxide - without vapour return	N/A

4.8 **From Pressure Storage**

N-Butane 0 deg C - with vapour return	1267
0 deg C - without vapour return	1267
10 deg C - with vapour return	1243
10 deg C - without vapour return	1243
20 deg C - with vapour return	1220
20 deg C - without vapour return	1220

C-Propane minus 30 deg C - with vapour return	1192
Minus 30 deg C - without vapour return	1192
Minus 20 deg C - with vapour return	1166
Minus 20 deg C - without vapour return	1166
Minus 10 deg C - with vapour return	1140
Minus 10 deg C - without vapour return	1140
0 deg C - with vapour return	1112
0 deg C - without vapour return	1112
10 deg C - with vapour return	1083
10 deg C - without vapour return	1083
20 deg C - with vapour return	1053
20 deg C - without vapour return	1053

Butadiene 0 deg C - with vapour return	1340
0 deg C - without vapour return	1340
10 deg C - with vapour return	1315
10 deg C - without vapour return	1315
20 deg C - with vapour return	1290
20 deg C - without vapour return	1290

Propylene minus 30 deg C - with vapour return	1231
Minus 30 deg C - without vapour return	1231
Minus 20 deg C - with vapour return	1203
Minus 20 deg C - without vapour return	1203
Minus 10 deg C - with vapour return	1176
Minus 10 deg C - without vapour return	1176
0 deg C - with vapour return	1147
0 deg C - without vapour return	1147
10 deg C - with vapour return	1116
10 deg C - without vapour return	1116
20 deg C - with vapour return	1084
20 deg C - without vapour return	1084

Ethylene minus 100 deg C - with vapour return	1195
Minus 100 deg C - without vapour return	1195
Minus 95 deg C - with vapour return	1180
Minus 95 deg C - without vapour return	1180
Minus 90 deg C - with vapour return	1166
Minus 90 deg C - without vapour return	1166
Minus 85 deg C - with vapour return	1151
Minus 85 deg C - without vapour return	1151

Ammonia minus 20 deg C - with vapour return	N/A
Minus 20 deg C - without vapour return	N/A
Minus 10 deg C - with vapour return	N/A
Minus 10 deg C - without vapour return	N/A
0 deg C - with vapour return	N/A
0 deg C - without vapour return	N/A

VCM minus 10 deg C - with vapour return	2017
Minus 10 deg C - without vapour return	2017
0 deg C - with vapour return	1983
0 deg C - without vapour return	1983
10 deg C - with vapour return	1949
10 deg C - without vapour return	1949
20 deg C - with vapour return	1913
20 deg C - without vapour return	1913

4.14 **Special remarks:**

B5 DISCHARGING - GENERAL

Cargo Pumps

5.1	Type of Pumps	Wärtsilä Svanehøj AS DW 200/200-3K+1
5.2	Number of pumps per tank	2
5.3	Rate per Pump	350
5.4	At Delivery Head mlc	120
5.5	Maximum density	992

Booster Pump

5.6	Type of Booster Pumps	Wärtsilä Svanehøj AS NMB 150c
5.7	Number of pumps	2
5.8	Rate per Pump	500
5.9	At Delivery Head mlc	120
5.10	Maximum density	690

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): 18

Fully Refrigerated

Manifold Back Press 1 kP/cm2, with vapour return	14
Manifold Back Press 1 kP/cm2, without vapour return	14
Manifold Back Press 5 kP/cm2, with vapour return	14
Manifold Back Press 5 kP/cm2, without vapour return	14
Manifold Back Press 10 kP/cm2, with vapour return	
Manifold Back Press 10 kP/cm2, without vapour return	

Pressurised

Manifold Back Press 1 kP/cm2, with vapour return	14
Manifold Back Press 1 kP/cm2, without vapour return	14
Manifold Back Press 5 kP/cm2, with vapour return	14
Manifold Back Press 5 kP/cm2, without vapour return	14
Manifold Back Press 10 kP/cm2, with vapour return	
Manifold Back Press 10 kP/cm2, without vapour return	

B7 UNPUMPABLES

7.1	Tank number / location	1	0.5
	Tank number / location	2	0.5
	Tank number / location	3	0.5
	Tank number / location		
	Tank number / location		
	Tank number / location		
	Tank number / location		
	Tank number / location		
	Total		1.5

B8 VAPORISING UNPUMPABLES

8.1 Process used: Vaporizing / Hot Gas

Time to vaporise liquid unpumpables remaining after full cargo discharge of:

8.2	Butane	4
8.3	Propane	4
8.4	Butadiene	4
8.5	Propylene	4
8.6	Ethylene	4
8.7	Ammonia	N/A
8.8	Vinyl Chloride Monomer	4
8.9	Propylene Oxide	N/A

B9 RELIQUEFACTION PLANT

9.1	Plant Design Conditions - air temperature	45
9.3	Plant Design Conditions - sea temperature	32

	Plant Type	Wartsila - Hamworthy
9.4	Is the plant two stage/direct? (for warm cargoes)	Yes
9.5	Is the plant three stage/direct? (for propane and propylene)	Yes
9.6	Is the plant simple cascade?	Yes
9.7	Coolant type	R-1270 (propylene)
	Compressors	
9.8	Compressor type	Reciprocating
9.8.1	Compressor makers name	Burckhardt Compression 3K140-3D_1
9.9	Number of compressors	2
9.10	Capacity per unit, 1st / 2nd / 3rd stage (swept volume)	1913 / 1089 / 348
9.11	Are they Oil Free?	Yes

B11 CARGO TEMPERATURE LOWERING CAPABILITY (AT SEA WITH SEA TEMPERATURE +20C)

	Time taken to lower the temperature of:	
11.1	**C-Propane** from -40 deg C to - 42 deg C*	39
11.2	**C-Propane** from -30 deg C to - 42 deg C*	190
11.3	**C-Propane** from -38 deg C to - 42deg C	74
11.4	**C-Propane** from +20 deg C to -0.50 deg C	N/A
11.5	**C-Propane** from -5 deg C to -20 deg C*	98
11.6	**N-Butane** from +5 deg C to-0.5 deg C*	77
11.7	**N-Butane** from +10 deg C to-0.5 deg C	135
11.8	**N-Butane** from +10 deg C to -5 deg C	N/A
11.9	**Butadiene** From +18 deg C to -5 deg C*	224
11.10	**Propylene** From -40 deg C to -47 deg C*	129
11.11	**Ethylene** From -99 deg C to -103 deg C	113
11.12	**Ammonia** From -16 deg C to -33 deg C	N/A
11.13	**Vinyl Chloride Monomer** From -5 deg C to -13 deg C*	95

*Temperature is changed to make suitable tank and suction pressures.

B12 INERT GAS AND NITROGEN

	Main IG Plant	
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	
	Nitrogen plant	
12.7	Type of System	Nitrogen Generator, Oxymat Nitromat N X3000
12.8	Purity N2	95.0 %
12.9	Capacity	1650 M3/Hr
	Purity N2	99.5%
	Capacity	1000 M3/Hr
	Purity N2	99.8%

12.10	Capacity	630 M3/Hr
12.11	Used for	Inerting and gas freeing

Nitrogen

12.12	Liquid storage capacity	600
12.13	Daily boil-off loss	N/A
12.14	Maximum supply pressure	1.0
12.15	Supply capacity	N/A
12.16	Used for	Nitrogen padding

B13 CARGO TANK INERTING/DE-INERTING

13.1	Time taken to inert from fresh air to under 5% O2 at minus 25 degree C?	36
13.2	Time taken to inert from cargo vapour to fully inert at minus 25 degrees dewpoint when IG density is **less** than product?	N/A
	Time taken to inert from cargo vapour to fully inert at minus 25 degrees dewpoint when IG density is **greater** than product?	N/A

B14 GAS FREEING TO FRESH AIR

14.1	Plant used	Nitrogen Plant
14.2	Time taken from fully inert condition to fully breathable fresh air?	28

B15 CHANGING CARGO GRADES

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

	Hours	Inert Gas (Air)
From Propane to Butane	160	83 000 Nm3
From Propane to Butadiene	160	83 000 Nm3
From Propane to Ethylene	160	83 000 Nm3
From Propane to Ammonia	N/A	N/A
From Propane to Vinyl Chloride Monomer	160	83 000 Nm3
From Propane to Propylene Oxide	N/A	N/A
From Butane to Propane	160	83 000 Nm3
From Butane to Butadiene	160	83 000 Nm3
From Butane to Ethylene	160	83 000 Nm3
From Butane to Ammonia	N/A	N/A
From Butane to Vinyl Chloride Monomer	160	83 000 Nm3
From Butane to Propylene Oxide	N/A	N/A
From Butadiene to Propane	160	83 000 Nm3
From Butadiene to Butane	160	83 000 Nm3
From Butadiene to Ethylene	160	83 000 Nm3
From Butadiene to Ammonia	N/A	N/A
From Butadiene to Vinyl Chloride Monomer	160	83 000 Nm3
From Butadiene to Propylene Oxide	N/A	N/A
From Ethylene to Propane	160	83 000 Nm3
From Ethylene to Butane	160	83 000 Nm3
From Ethylene to Butadiene	160	83 000 Nm3
From Ethylene to Ammonia	N/A	N/A
From Ethylene to Vinyl Chloride Monomer	160	83 000 Nm3
From Ethylene to Propylene Oxide	N/A	N/A
From Ammonia to Propane	N/A	N/A
From Ammonia to Butane	N/A	N/A
From Ammonia to Butadiene	N/A	N/A
From Ammonia to Ethylene	N/A	N/A
From Ammonia to Vinyl Chloride Monomer	N/A	N/A
From Ammonia to Propylene Oxide	N/A	N/A

From Vinyl Chloride Monomer to Propane	160	83 000 Nm3
From Vinyl Chloride Monomer to Butane	160	83 000 Nm3
From Vinyl Chloride Monomer to Butadiene	160	83 000 Nm3
From Vinyl Chloride Monomer to Ammonia	N/A	N/A
From Vinyl Chloride Monomer to Ethylene	160	83 000 Nm3
From Vinyl Chloride Monomer to Propylene Oxide	N/A	N/A
From Propylene Oxide to Propane	N/A	N/A
From Propylene Oxide to Butane	N/A	N/A
From Propylene Oxide to Butadiene	N/A	N/A
From Propylene Oxide to Ethylene	N/A	N/A
From Propylene Oxide to Vinyl Chloride Monomer	N/A	N/A
From Propylene Oxide to Ammonia	N/A	N/A

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

All operation can be carried out at sea but have to load small parcel for gassing up/ coolong down purpose.

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	**Propane** - Quantity of Coolant Required	123
	Propane - Time required to cooldown cargo tanks from ambient temperature with vapour return line	6
	Propane - Time required to cooldown cargo tanks from ambient temperature without vapour return line	N/A
17.2	**Butane** - Quantity of Coolant Required	N/A
	Butane - Time required to cooldown cargo tanks from ambient temperature with vapour return line	N/A
	Butane - Time required to cooldown cargo tanks from ambient temperature without vapour return line	N/A
17.3	**Butadiene** - Quantity of Coolant Required	45
	Butadiene - Time required to cooldown cargo tanks from ambient temperature with vapour return line	2
	Butadiene - Time required to cooldown cargo tanks from ambient temperature without vapour return line	N/A
17.4	**Propylene** - Quantity of Coolant Required	128
	Propylene - Time required to cooldown cargo tanks from ambient temperature without vapour return line	6
	Propylene - Time required to cooldown cargo tanks from ambient temperature with vapour return line	N/A
17.5	**Ethylene** - Quantity of Coolant Required	155
	Ethylene - Time required to cooldown cargo tanks from ambient temperature with vapour return line	8
	Ethylene - Time required to cooldown cargo tanks from ambient temperature without vapour return line	N/A
17.6	**Ammonia** - Quantity of Coolant Required	N/A
	Ammonia - Time required to cooldown cargo tanks from ambient temperature with vapour return line	N/A
	Ammonia - Time required to cooldown cargo tanks from ambient temperature without vapour return line	N/A

17.7	**VCM** - Quantity of Coolant Required	73
	VCM - Time required to cooldown cargo tanks from ambient temperature without vapour return line	3
	VCM - Time required to cooldown cargo tanks from ambient temperature with vapour return line	N/A

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 - **Propane**	3000
18.4	Liquid Supply Rate	9.5
18.5	Delivery Temperature	-42
18.6	Capacity per unit - **Ammonia**	N/A
18.7	Liquid Supply Rate	N/A
18.8	Delivery Temperature	N/A
18.9	Capacity per unit - **Nitrogen**	N/A
18.10	Liquid Supply Rate	N/A
18.11	Delivery Temperature	N/A

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	U-tubes, welded in tube plate
20.2	Number Fitted	1
20.3	Heating Medium	Seawater
20.4	Discharge rates with sea water at 15 degrees C to raise product temperature of **Propane** from -42 degrees C to -5 degrees C	500
20.5	Discharge rates with sea water at 15 degrees C to raise product temperature of **Ammonia** from -33 degrees C to 0 degrees C	N/A

B21 HYDRATE CONTROL

21.1	Type of Depressant?	Ethanol
21.1.1	Freezing point temperature?	-114
21.2	Quantity of Depressant Carried?	200
21.3	Means of injection?	Portable Pump
	Name any other system used	N/A

B22 CARGO MEASUREMENT

Level Gauges

22.1	Are level gauges local or remote?		Local
22.2	Name of manufacture	HSH BV	Konsberg AS
22.3	Type	Float	Radar
22.4	Rated Accuracy		1
22.5	Certifying Authority	SGS	

Temperature Gauges

22.6	Name of manufacture	Kongsberg Maritime AS
22.7	Type	PT-100
22.8	Rated Accuracy	0.1
22.9	Certifying Authority	SGS

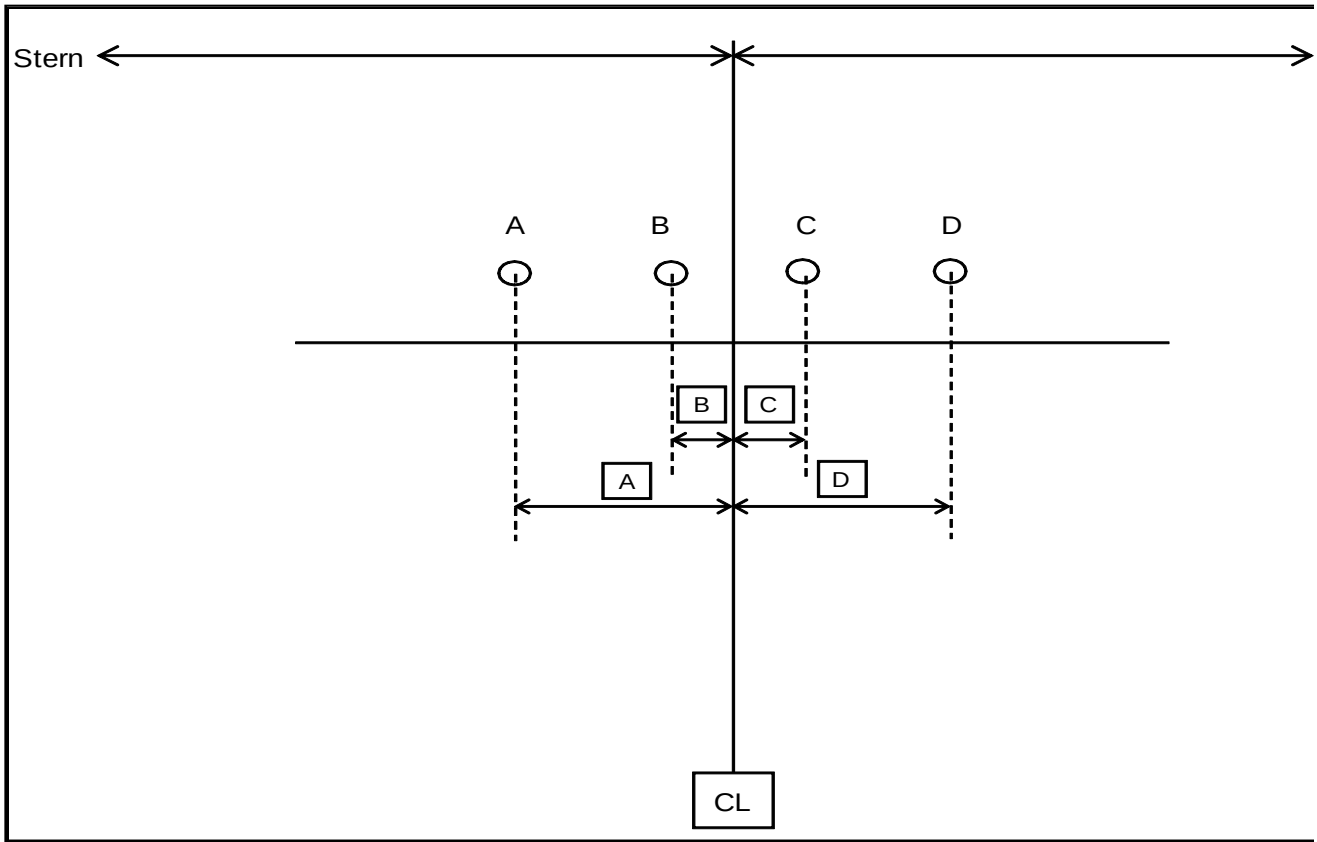
	Pressure Gauges	
22.10	Name of manufacture	Kongsberg Maritime Ship Systems AS
22.11	Type	GT402F3C6L00
22.12	Rated Accuracy	0.45
22.13	Certifying Authority	SGS
	Oxygen Analyser	
22.14	Name of manufacture	Riken Keiki
22.15	Type	GX-8000
22.15.1	What is the lowest level measurable?	0%
	Fixed Gas Analyser	
22.16	Name of manufacture	Omicron
22.17	Type	OGS 3.11
	Cargo Tank Calibrations	
22.18	Are Cargo tank calibration tables available?	Yes
22.19	Name of Measuring Company	SGS
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?	No
22.22.2	Tables established to "other" (state what other)	No
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

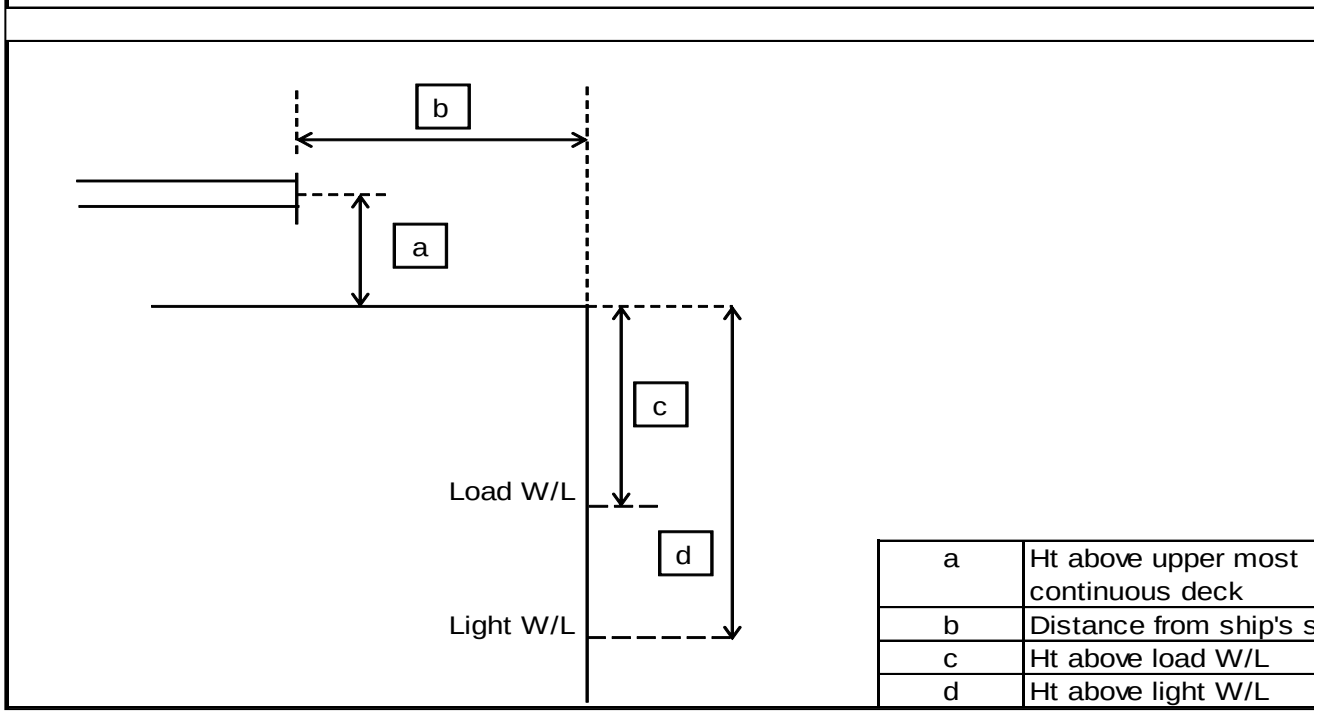
B23 CARGO SAMPLING

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:	N/A
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	Thread, female connection
	Size of sample connection	1/2"

B24 CARGO MANIFOLD

Manifold arrangement diagram





a	Ht above upper most continuous deck
b	Distance from ship's s
c	Ht above load W/L
d	Ht above light W/L

Center of manifold to bow	96.40
Center of manifold to stern	83.90

Liquid line L1 (D)

Distance from bow	92.65
Distance from stern	87.65
Distance from manifold centerline (D)	3750
Size and rating	DN300 / ANSI B16.5 Cl.300
Type	RF
Height above uppermost continuous deck	2150
Distance from ship's side	4125

Height above load waterline	10.56
Height above light waterline	13.44
Vapour line V1 (C)	
Distance from bow	95.15
Distance from stern	85.15
Distance from manifold centerline (C)	1250
Size and rating	DN200 / ANSI B16.5 Cl.300
Type	RF
Height above uppermost continuous deck	2150
Distance from ship's side	4125
Height above load waterline	10.56
Height above light waterline	13.44
Vapour line V2 (B)	
Distance from bow	97.65
Distance from stern	82.65
Distance from manifold centerline (B)	1250
Size and rating	DN200 / ANSI B16.5 Cl.300
Type	RF
Height above uppermost continuous deck	2150
Distance from ship's side	4125
Height above load waterline	10.56
Height above light waterline	13.44
Liquid line L2 (A)	
Distance from bow	100.15
Distance from stern	80.15
Distance from manifold centerline (A)	3750
Size and rating	DN300 / ANSI B16.5 Cl.300
Type	RF
Height above uppermost continuous deck	2150
Distance from ship's side	4125
Height above load waterline	10.56
Height above light waterline	13.44
Liquid line L3	
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 V3	
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	10
	Flange rating of ANSI Class 300 reducer	
	Size of ANSI Class 300 reducer	DN 150 / DN 300
	Length of ANSI Class 300 reducer	650
25.2	Number of ANSI Class 300 to Class 150 reducers carried onboard	10
	Flange rating of ANSI Class 300 to Class 150 reducer	
	Size of ANSI Class 300 to Class 150 reducer	DN 150 / DN 300
	Length of ANSI Class 300 to Class 150 reducer	650
25.3	Number of ANSI Class 150 reducers carried onboard	0
	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?	Yes
26.2	What is the type of connection used?	5-pin Plug
26.3	Are ESD hoses or cables available on board?	Yes
	If yes, length of pneumatic	N/A
	If yes, length of electrical	30.00
	If yes, length of fiber optic	25.00
26.4	Is there a connection available for a telephone line?	Yes
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	Butterfly
	Closing time in seconds	26
	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 %	99.70

B27 MANIFOLD DERRICK/CRANE

27.1	Is manifold derrick provided	No
27.2	Is manifold crane provided	Yes
27.3	Is lifting equipment same for port and starboard?	Yes
	If no, then stipulate details	N/A
27.4	State SWL at maximum outreach	6
27.4.1	Maximum outreach of lifting equipment	11.70

B28 STORES DERRICK/CRANE

28.1	State location	Aft P+S/Side
	SWL	2

B29 SISTER VESSEL(S)

29.1	Name of vessel
	JS Ineos Insight
	JS Ineos Ingenuity
	JS Ineos Intrepid
	JS Ineos Ispiration
	JS Ineos Independence

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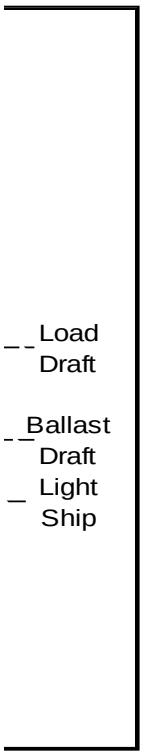

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Bar

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Cubic metres
Cubic metres
Tonnes
Tonnes
Tonnes

m3/h

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kN
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M/Min

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Deg. C
Bar gauge

Bar gauge
Bar gauge
Bar gauge

Bar gauge
Bar gauge
Kg/m3
Deg Cel / Hour

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m3/hr
mlc
kg/m3

m3/hr
mlc
kg/m3

Hours

Hours
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Deg. C
Deg. C

m3/hr

Hours
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LTR

Bar gauge

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Tons

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Tons

Tons

Hours

Tons

Hours

N/A

Tons

Hours

Tons

Hours

m3/h
m3/h
degC

m3/h

Deg. C
Ltr

mm

deg.C

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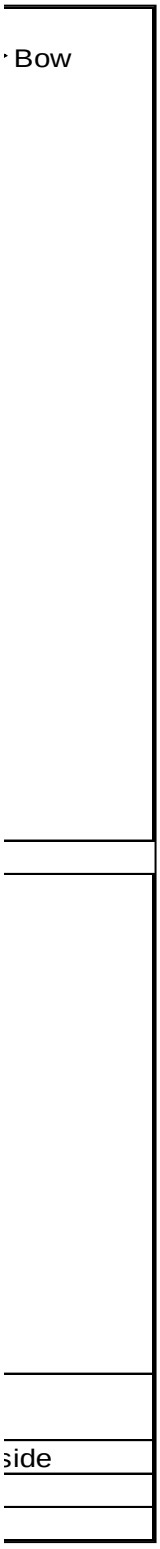

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