

LPG TANKER

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

FORM C WITH DATA / INFORMATION AVAILABLE AS OF 27th Sept 2017

Specifications of the vessel and the gas installations are believed to be correct as per design specifications and capacities, but not guaranteed, and consequently Owners are not to be held accountable for such.

We further reserve our rights for normal wear and tear on cargo equipment in respect of loading-, discharging-, cooling-rates and time for changing cargo grades etc., including but not limited to capacity of cargo re-heaters, compressors, pumps and other equipment, as described in this form-C as these descriptions, as described above, refers to design capacities.

INDEX

	GENERAL INFORMATION	PAGE
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
	CARGO SYSTEMS	
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	
B29	Sister Vessel(s)	

**SECTION A
GENERAL INFORMATION**

A1 PRINCIPAL SHIP PARTICULARS

1.1	Date questionnaire completed	27/9/2017
1.2	Name of vessel	ORIENTAL KING
1.3	LR/IMO number	9804253
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	HONGKONG SAR
1.9	Port of Registry	HONGKONG SAR
1.10	Official number	HK-4865
1.11	Call sign	VRQZ7
1.12	INMARSAT F77 number	870-773-804-204
1.13	Vessel's telephone number (V Sat)	65-31638810 / 65-31638811
1.13.1	Vessel's mobile number	
1.14	Vessel's fax number	870-783-930-981
1.15	Vessel's telex number	
1.16	Vessel's E-mail address	master.vrqz7@globeemail.com
1.17	INMARSAT C number	447 708 128
		447 708 129
1.18	Vessel's MMSI number	477 112 900
1.19	Type of vessel	LPG CARRIER

OWNERSHIP AND OPERATION

1.20	Registered Owner	BETA NAVIGATION CORPORATION LTD.
	Full address	Room 1802, Harbour Centre, 25, Harbour Road, Wanchai Hong Kong
	Office telephone number	(852) 2827 4828
	Office telex number	
	Office fax number	(852)28270018
	Office Email address	shipmt@uniqueship.com
	Contact person	Mr. Anil Arora
	Contact person after hours telephone number	(852) 9302 2790
1.21	Name of technical operator (If different from above)	Anglo Eastern Shipmanagement (S) Pte Ltd
	Full Address	200 Cantonment Road Southpoint #16-02 Singapore (089763)
	Office telephone number	Tel: +65 62243119
	Office telex number	
	Office fax number	Fax: +65 62243995
	Office Email address	
	Contact person (Designated Person Ashore)	ops.a@angloeastern.com ; unique.tech@angloeastern.com;
	Contact person after hours telephone number	PREM ALLENCHERRY +65-97386542
	Emergency callout number	+65-97210918
	Emergency callout pager number	
	Contact details for person responsible for oil spill response	PREM ALLENCHERRY
	Number of years controlled by technical operator	0

Years

1.22	Total number of ships operated by this Operator	130	
1.23	Number of years ship owned	0	Years
1.23.1	Name of commercial operator (If different from above)	BW Gas LPG Chartering Limited,	
	Full Address	Clarendon House, 2 Church Street, Hamilton, HM11, Bermuda.	
	Office telephone number	Tel : +65-6705-5588.	
	Office telex number		
	Office fax number		
	Office Email address	fleetops@bwlpq.com	
	Contact person	Jimmy Lum	
	Contact person after hours telephone number	+65-9670-8561	
	Emergency callout number		
	Emergency callout pager number		
	Number of years controlled by commercial operator	0	Years

BUILDER

1.24	Builder	Hyundai Heavy Industries co., Ltd	
1.25	Name of yard vessel built at	Ulsan Shipyard, Korea	
1.26	Hull number	2928	
1.27	Date keel laid	30/Dec/15	
1.28	Date launched	27/Jul/17	
1.29	Date delivered	29/Sep/17	
1.30	Date of completion of major hull changes, - if any.	-	
1.31	If changes were made, what changes were made and at which yard were they carried out	NA	

CLASSIFICATION

1.32	Classification society	DNV-GL	
1.33	Class Notation	+1A1, Liquefied Gas Carrier, Ship Type 2G(-52 °C, 610KG/m3, 0.275 bar), E0, BIS, TMON, COAT-PSPC(B), BWM-T, BWM-E(s), NAUTICUS(Newbuilding), Recyclable Scrubber ready (H, M, Misc)	
1.34	If Classification society changed, name of previous society	-	
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	
	RINA	NO	
	Other: _____	NO	
1.37	IMO certification		
	Certificate of fitness - IGC	YES	
	Certificate - A328	NO	
	Certificate - A329	NO	
	Letter of Compliance	YES	
	Issued by	DNV-GL	
1.38	Unattended Machinery Space Certificate	YES	
1.39	Net Registered Tonnage	18643	
1.40	Gross Registered Tonnage	48008	
1.41	Suez Net Tonnage - Canal Tonnage	44652.82	
	Suez Gross Tonnage	50827.24	
1.42	Panama Net Tonnage - Canal Tonnage	39583	
	Panama Gross Tonnage		

A2 HULL DIMENSIONS

2.1	Length overall (LOA)	225.13	Metres
2.2	Length between perpendiculars (LBP)	220.00	Metres
2.3	Distance bow to bridge	187.18	Metres
2.4	Distance bridge front - mid point manifold	75.80	Metres
2.5	Distance bow to mid-point manifold	109.27	Metres
2.6	Extreme breadth	36.63	Metres
2.7	Extreme depth	22.22	Metres
2.8	Summer draught(Ext.)	12.02	Metres
2.9	Corresponding Summer deadweight	54373	Tonnes
2.10	Light displacement	19371	Tonnes
2.11	Loaded displacement (Summer deadweight)	73744	Tonnes
2.12	Cargo tanks cubic capacity - 100%	84098.913	Cubic metres
2.12.1	Deck tank(s) cubic capacity - 100%	-	Cubic metres
2.12.2	Cargo tanks cubic capacity - 98%	82416.936	Cubic metres
2.12.3	Deck tank(s) cubic capacity - 99%	-	Cubic metres
2.13	Distance from keel to highest point (Tilted/Untilted)	49.65/48.54	Metres
2.14	Air draught (normal ballast condition) (Tilted/Untilted)	42.11/41.0	Metres

A3 IMMERSION

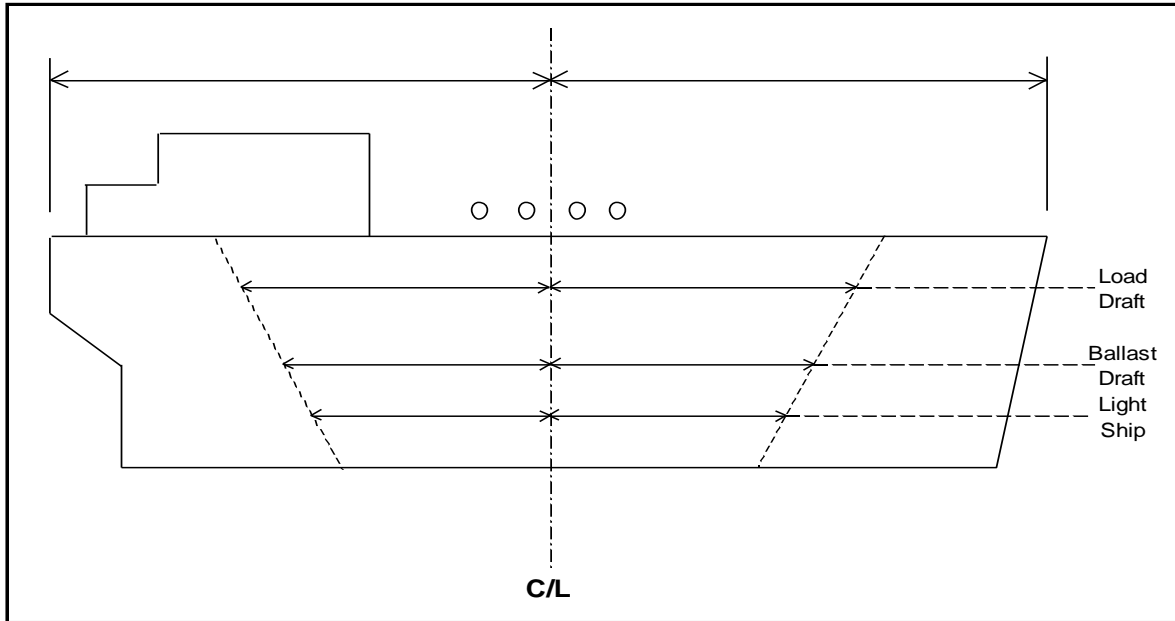
Tonnes / cm @ metres draught			
3.1	TPC - in normal ballast condition	6.86m	64.0 TONS
	TPC - in loaded condition (summer deadweight)	12.02m	70.9 TONS

A4 LOADED PARTICULARS

	Propane	Butane	
4.1	Cargo grade	0.5075	0.5780
4.2	Density @ 15C	47625.0	48977.0
4.3	Cargo loadable - 98 %	1867.7	1867.7
4.4	Bunkers - FO - 85%	425.0	425.0
4.5	Bunkers - GO - 85%	463.4	463.4
4.6	Fresh water	118.2	118.2
4.7	Stores & spares	151	151
4.8	Lub oil - 85%	600	600
4.9	Ballast	51391.5	52870.7
4.10	Deadweight	10.645	10.988
4.11	Draught - forward	12.337	12.437
	Draught - aft	11.491	11.713
	Draught - mean		

	Butadiene	Propylene	
		0.608	
		49993.0	Tonnes
		1867.7	Tonnes
		425.0	Tonnes
		463.4	Tonnes
		118.2	Tonnes
		151	Tonnes
		600	Tonnes
		53653.3	Tonnes
		11.170	Metres
		12.490	Metres
		11.830	Metres

A5 PARALLEL MID-BODY DIMENSIONS



5.1	Light ship	39.390	Metres
5.2	Forward to mid-point manifold - light ship	9.050	Metres
5.3	Aft to mid-point manifold - light ship	30.340	Metres
5.4	Normal ballast	87.520	Metres
5.5	Forward to mid-point manifold - normal ballast	40.830	Metres
5.6	Aft to mid-point manifold - normal ballast	46.690	Metres
5.7	Loaded SDWT	103.550	Metres
5.8	Forward to mid-point manifold - loaded SDWT	43.840	Metres
5.9	Aft to mid-point manifold - loaded SDWT	59.710	Metres

A6 BUNKER CAPACITIES (As per Capacity & Deadweight Plan)

	Grade	Capacity @ 100% CUM	
Main engine	HFO	2287.8	CUM
Auxiliary engine(s)			
Other: _____	MGO(INCL IGG)	588.2	CUM

A7 FUEL CONSUMPTION DETAILS

		Grade	
7.1	At sea - normal service speed	Heavy Fuel oil	Tonnes/day
		Diesel oil	Tonnes/day
		Gas oil	Tonnes/day
7.2	At sea - normal service speed - while conditioning cargo (Cooling down condition)	Heavy Fuel oil	Tonnes/day
		Diesel oil	Tonnes/day
		Gas oil	Tonnes/day
7.3	In port - loading	Heavy Fuel oil	Tonnes/day
		Diesel oil	Tonnes/day
		Gas oil	Tonnes/day
7.4	In port - discharging	Heavy Fuel oil	Tonnes/day
		Diesel oil	Tonnes/day
		Gas oil	Tonnes/day
7.5	In port - idle/cargo conditioning	Heavy Fuel oil	Tonnes/day
		Diesel oil	Tonnes/day
		Gas oil	Tonnes/day

A7 SPEED/CONSUMPTION

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

--

A8 MAIN ENGINE PARTICULARS

8.1	Main engine make and type	Hyundai-MAN B&W 6G60ME-C9.5	
8.2	Number of units	1	
8.3	Maximum continuous rating (MRC) per engine	kW @ RPM	
		12400	92.2
8.4	Total available power	12400 kW	
8.5	Normal service power	11160 kW	

A9 AUXILIARY PLANTS

9.1	Make and type of auxiliary generators / engines	Hyundai HiMSEN 7H21/32	
9.2	Number of units	3	
9.3	Maximum generator output per unit	RPM	Kilowatts
	Unit no. 1	900	1400
	Unit no. 2	900	1400
	Unit no. 3	900	1400
9.4	Shaft generator	-	
9.5	Total available power	3570	
9.6	Emergency generator	1800	160
9.7	Emergency fire pump - type	Centrifugal single stage pump	
	Delivery pressure	10 Bar	
	Motive power	45 Kilowatts	
	If electrical, - indicate power required	-	
9.8	Steering gear - type	4 Rams, Hydraulic type	
	Indicate power required to steer the vessel with one pump unit	45 Kilowatts	

A10 POWER/SPEED INFORMATION - SEA TRIAL DATA

10.1	Trial data	kW	
		MRC	
		Speed	
		Draught	
10.2	Normal service speed	kW	
		MRC	
		Speed	
		Draught	11.6m (Design Draft)

A11 THRUSTERS

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

A12 FRESH WATER

12.1	Capacity of distilled tanks		Tonnes
12.2	Capacity of domestic tanks	463.4	Tonnes
12.3	Daily consumption	9	Tonnes
			Tonnes
12.4	Daily evaporator capacity	20	Tonnes

A13 BALLAST CAPACITIES AND PUMPS

Tank	Capacity (m3)	Number
13.1 Fore peak (including FWD WBT Center)	1694	2
13.2 Wing and or side tanks	17721.1	8
13.3 Double bottom tanks		
13.4 Aft peak	1153.5	1
13.5 Other:		
13.6 Total	20568.6	11

13.7 Ballast pump make and type	SHIN SHIN MACHINERY / Centrifugal	
13.8 Number of pumps	2	
13.9 Total capacity	800	M3/hour
13.10 Location	E/R FLOOR FWD	
13.11 Control location	CARGO CONTROL ROOM	

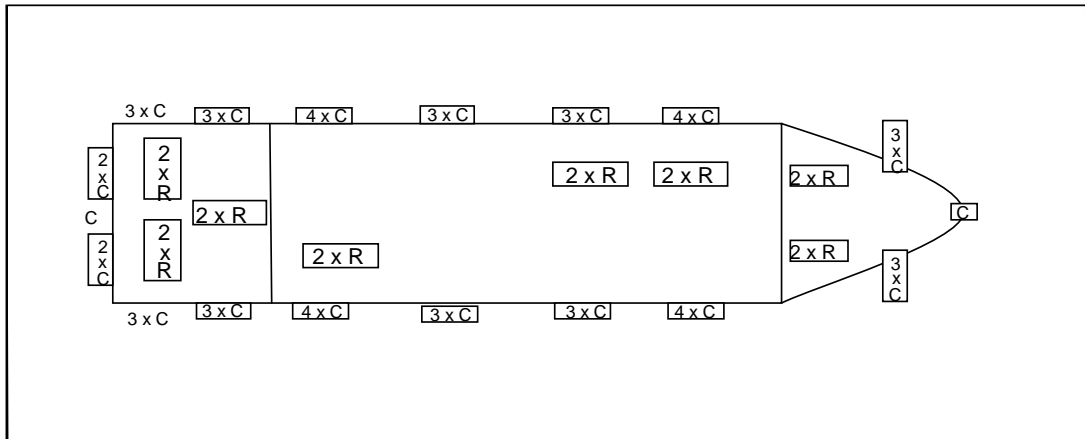
A14 MOORING EQUIPMENT

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) Foreship - Number
 Diameter
 Material
 Length
 Breaking Strength
Mooring Ropes (On Drums) Forward Main Deck - Number
 Diameter
 Material
 Length
 Breaking Strength

	4	
	35	mm.
GALV STEEL WIRE ROPE(IWRC)	220	Metres
	84	TON
	4	
	35	mm.
GALV STEEL WIRE ROPE(IWRC)	220	Metres
	84	TON

Mooring Ropes (On Drums) Aft Main Deck - Number

Diameter	2	
	35	mm.
Material	GALV STEEL WIRE ROPE(IWRC)	
Length	220	Metres
Breaking Strength	84	TON

Mooring Ropes (On Drums) Sunken - Number

Diameter	6	
	35	mm.
Material	GALV STEEL WIRE ROPE(IWRC)	
Length	220	Metres
Breaking Strength	84	TON

OTHER MOORING LINES

Mooring Ropes not on Drums - Number

Diameter	N/A	
	N/A	mm.
Material	N/A	
Length	N/A	Metres
Breaking Strength	N/A	KN

Fire Wires - Number

Diameter	2	
	35	mm.
Material	GALV STEEL WIRE ROPE(IWRC)	
Length	45	Metres
Breaking Strength	84	TON

14.2

MOORING WINCHES

Forecastle - Number

Single Drum or Double Drums	2(with Windlass)	
Split Drums Y/N	DOUBLE DRUM	
Motive Power	Y	
Heaving Power	HYD.	
Brake Capacity	196	KN
Hauling Speed	823.2	KN
	15	Metres/Min.

Forward Main Deck - Number

Single Drum or Double Drums	2	
Split Drums Y/N	DOUBLE DRUM	
Motive Power	Y	
Heaving Power	HYD.	
Brake Capacity	196	KN
Hauling Speed	823.2	KN
	15	Metres/Min.

Aft Main Deck - Number

Single Drum or Double Drums	1	
Split Drums Y/N	DOUBLE DRUM	
Motive Power	Y	
Heaving Power	HYD.	
Brake Capacity	196	KN
Hauling Speed	823.2	KN
	15	Metres/Min.

Poop - Number

Single Drum or Double Drums	3	
Split Drums Y/N	DOUBLE DRUM	
Motive Power	Y	
Heaving Power	HYD.	
Brake Capacity	196	KN
Hauling Speed	823.2	KN
	15	Metres/Min.

14.3

ANCHORS AND WINDLASS

Windlass motive power(e.g. steam, hydraulic)	HYD.	
Hauling power	387.1	KN
Brake holding power	2323	KN
Anchor type	HHP TYPE	
Weight	9175	Kg

Is spare anchor carried	N/A	
Cable diameter	84	mm.
Number of shackles port cable	12	
Number of shackles starboard cable	13	

14.4 **TOWING ARRANGEMENTS**

Is the vessel fitted with a Towing Bracket Aft?	YES	
If Yes, state SWL	204	Tonnes
Is Towing chain provided	YES	
Dimensions of Towing wire rope/Retrieval wire	80/14	mm.
Diameter		
Length	100000/10000	mm.

14.5 **WINDAGE**

Windage on ballast draught	End-on	1119.5	Squaremetres
	Lateral	4402.7	Squaremetres

A15 NAVIGATIONAL EQUIPMENT

15.1	Magnetic compass		YES
15.2	Off Course Alarm - Magnetic compass		YES
15.3	Gyro compass	Number of Units	YES
			2
15.4	Off Course Alarm - Gyro compass		YES
15.5	Gyro (Bridge) Repeaters (incl. both Wings)	Number of Units	YES
			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		YES
15.13	Depth sounder without recorder		N/A
15.14	Speed/distance indicator		YES
15.15	Doppler log		YES
15.16	Docking approach Doppler		YES
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		N/A
15.22	Thruster(s) indicator (on Control Panel)		N/A
15.23	Rate of turn indicator		YES
15.24	Radio direction finder		N/A
15.25	Navtex receiver		YES
15.26	GPS		N/A
15.26.1	DGPS		YES
15.27	Transit SATNAV		N/A
15.28	Decca navigator		N/A
15.29	Omega		N/A
15.30	Loran C		N/A
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?		NO

15.38	Is bridge equipped with a 'Dead-Man' alarm?		YES
15.39	What chart outfit coverage is provided	World-wide	YES
		Limited	
		If limited, - please indicate area(s) covered	
15.40	Formal chart correction system in use		N/A
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		A3
16.3	Transponder (SART)		YES
16.4	EPIRB		YES
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?		8
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		N/A
16.15	Can vessel transmit the helicopter homing signal on 410 kHz?		NO
16.16	Full set of Radio List publications		YES

B3 CARGO TANK CAPACITIES(PRELIMINARY)

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

1 P+S	
18,008.673	m3
17,648.500	m3
10,489	Tonnes
-1.5	Deg. C
10,199	Tonnes
-41.5	Deg. C
	Tonnes
	Deg. C
10,700	Tonnes
-47	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

2 P+S	
22,565.614	m3
22,114.302	m3
13,139	Tonnes
-1.5	Deg. C
12,776	Tonnes
-41.5	Deg. C
	Tonnes
	Deg. C
13,409	Tonnes
-47	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

3 P+S	
22,549.580	m3
22,098.588	m3
13,142	Tonnes
-1.5	Deg. C
12,779	Tonnes
-41.5	Deg. C
	Tonnes
	Deg. C
13,409	Tonnes
-47	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C
	Tonnes
	Deg. C

Deck tank number 1 - capacity (100%)

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

	m3
	m3
	Tonnes
	Tonnes
	Tonnes
	Tonnes
	Tonnes

Deck tank number 2 - capacity (100%)

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

	m3
	m3
	Tonnes
	Tonnes
	Tonnes
	Tonnes
	Tonnes

B4 LOADING RATES (PRELIMINARY)

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

Butane - with vapour return
Butane - without vapour return
Propane - with vapour return
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

2,830	Tonnes/Hr.
2,830	Tonnes/Hr.
2,700	Tonnes/Hr.
2,700	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
2,700	Tonnes/Hr.
2,700	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.
	Tonnes/Hr.

4.8 **From Pressure Storage**

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

	Tonnes/Hr.
130	Tonnes/Hr.
	Tonnes/Hr.
80	Tonnes/Hr.
	Tonnes/Hr.
50	Tonnes/Hr.

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
10 deg C - without vapour return
20 deg C - with vapour return
20 deg C - without vapour return

	Tonnes/Hr.
86	Tonnes/Hr.
	Tonnes/Hr.
47	Tonnes/Hr.
	Tonnes/Hr.
32	Tonnes/Hr.
	Tonnes/Hr.
26	Tonnes/Hr.
	Tonnes/Hr.
21	Tonnes/Hr.
	Tonnes/Hr.
17	Tonnes/Hr.

Butadiene 0 deg C - with vapour return		Tonnes/Hr.
0 deg C - without vapour return		Tonnes/Hr.
10 deg C - with vapour return		Tonnes/Hr.
10 deg C - without vapour return		Tonnes/Hr.
20 deg C - with vapour return		Tonnes/Hr.
20 deg C - without vapour return		Tonnes/Hr.

Propylene minus 30 deg C - with vapour return		Tonnes/Hr.
Minus 30 deg C - without vapour return	86	Tonnes/Hr.
Minus 20 deg C - with vapour return		Tonnes/Hr.
Minus 20 deg C - without vapour return	47	Tonnes/Hr.
Minus 10 deg C - with vapour return		Tonnes/Hr.
Minus 10 deg C - without vapour return	32	Tonnes/Hr.
0 deg C - with vapour return		Tonnes/Hr.
0 deg C - without vapour return	26	Tonnes/Hr.
10 deg C - with vapour return		Tonnes/Hr.
10 deg C - without vapour return	21	Tonnes/Hr.
20 deg C - with vapour return		Tonnes/Hr.
20 deg C - without vapour return	17	Tonnes/Hr.

Ethylene minus 100 deg C - with vapour return		Tonnes/Hr.
Minus 100 deg C - without vapour return		Tonnes/Hr.
Minus 95 deg C - with vapour return		Tonnes/Hr.
Minus 95 deg C - without vapour return		Tonnes/Hr.
Minus 90 deg C - with vapour return		Tonnes/Hr.
Minus 90 deg C - without vapour return		Tonnes/Hr.
Minus 85 deg C - with vapour return		Tonnes/Hr.
Minus 85 deg C - without vapour return		Tonnes/Hr.

Ammonia minus 20 deg C - with vapour return		Tonnes/Hr.
Minus 20 deg C - without vapour return		Tonnes/Hr.
Minus 10 deg C - with vapour return		Tonnes/Hr.
Minus 10 deg C - without vapour return		Tonnes/Hr.
0 deg C - with vapour return		Tonnes/Hr.
0 deg C - without vapour return		Tonnes/Hr.

VCM minus 10 deg C - with vapour return		Tonnes/Hr.
Minus 10 deg C - without vapour return		Tonnes/Hr.
0 deg C - with vapour return		Tonnes/Hr.
0 deg C - without vapour return		Tonnes/Hr.
10 deg C - with vapour return		Tonnes/Hr.
10 deg C - without vapour return		Tonnes/Hr.
20 deg C - with vapour return		Tonnes/Hr.
20 deg C - without vapour return		Tonnes/Hr.

4.14

Special remarks:

B5 DISCHARGING - GENERAL

Cargo Pumps

5.1	Type of Pumps	Vertical Deepwell	
5.2	Number of pumps per tank	2	
5.3	Rate per Pump	600	m3/hr
5.4	At Delivery Head mlc	120	mlc
5.5	Maximum density	610	Kg/m3

- 5.6 **Booster Pump**
 5.7 Type of Booster Pumps
 5.8 Number of pumps
 5.9 Rate per Pump
 5.10 At Delivery Head m/c
 5.10 Maximum density

Horizontal Centrifugal	
1	
600	m3/hr
115	m/c
610	Kg/m3

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

See Operation Manual

B6 DISCHARGE PERFORMANCE

Full Cargo Discharge Times (using all cargo pumps)

Fully Refrigerated

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

18	Hours
18	Hours
18	Hours
18	Hours
137	Hours
137	Hours

Pressurised

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

137	Hours
137	Hours
137	Hours
137	Hours
137	Hours
137	Hours

B7 UNPUMPABLES

- 7.1 Tank number = 1 / location
 Tank number = 2 / location
 Tank number = 3 / location
 Tank number = 4 / location
 Total 4 Cargo Tanks

24	m3
30	m3
30	m3
27	m3
111	m3

B8 VAPORISING UNPUMPABLES(PRELIMINARY)

- 8.1 Process used
 Time to vaporise liquid unpumpables remaining after full cargo discharge of:

Hot Gas/Puddle Heating

- 8.2 Butane
 8.3 Propane
 8.4 Butadiene
 8.5 Propylene
 8.6 Ethylene
 8.7 Ammonia
 8.8 Vinyl Chloride Monomer
 8.9 Propylene Oxide

36	Hours
30	Hours
	Hours
30	Hours
	Hours
	Hours
	Hours
	Hours

B9 RELIQUEFACTION PLANT

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

50	Deg. C
36	Deg. C

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

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

Cargo grade change operations applicable for Propylene cannot be carried out at sea since they require Nitrogen supply from shore terminal.

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	850	m3
	Propane - Time required to cooldown cargo tanks from ambient temperature with vapour return line	50	Hours
	Propane - Time required to cooldown cargo tanks from ambient temperature without vapour return line	50	Hours
17.2	Butane - Quantity of Coolant Required	650	m3
	Butane - Time required to cooldown cargo tanks from ambient temperature with vapour return line	24	Hours
	Butane - Time required to cooldown cargo tanks from ambient temperature without vapour return line	24	Hrs.
17.3	Butadiene - Quantity of Coolant Required		m3
	Butadiene - Time required to cooldown cargo tanks from ambient temperature with vapour return line		Hours
	Butadiene - Time required to cooldown cargo tanks from ambient temperature without vapour return line		Hours
17.4	Propylene - Quantity of Coolant Required	850	m3
	Propylene - Time required to cooldown cargo tanks from ambient temperature without vapour return line	50	Hours
	Propylene - Time required to cooldown cargo tanks from ambient temperature with vapour return line	50	Hours
17.5	Ethylene - Quantity of Coolant Required		m3
	Ethylene - Time required to cooldown cargo tanks from ambient temperature with vapour return line		Hours
	Ethylene - Time required to cooldown cargo tanks from ambient temperature without vapour return line		Hrs.
17.6	Ammonia - Quantity of Coolant Required		m3
	Ammonia - Time required to cooldown cargo tanks from ambient temperature with vapour return line		Hours
	Ammonia - Time required to cooldown cargo tanks from ambient temperature without vapour return line		Hours

17.7	VCM - Quantity of Coolant Required		m3
	VCM - Time required to cooldown cargo tanks from ambient temperature without vapour return line		Hours
	VCM - Time required to cooldown cargo tanks from ambient temperature with vapour return line		Hours

B18 VAPORISER

18.1	Type of Vaporiser	Shell and Tube	
18.2	Number of Vaporisers fitted	1	
18.3	Capacity per unit - Propane	4,800	m3/hr Vap
18.4	Liquid Supply Rate	16.1	m3/hr Liq
18.5	Delivery Temperature	0	Deg. C
18.6	Capacity per unit - Ammonia		m3/hr Vap
18.7	Liquid Supply Rate		m3/hr Liq
18.8	Delivery Temperature		Deg. C
18.9	Capacity per unit - Nitrogen		m3/hr Vap
18.10	Liquid Supply Rate		m3/hr Liq
18.11	Delivery Temperature		Deg. C

B19 BLOWER

19.1	Type of Blower	Centrifugal	
19.2	Rated Capacity	10,000	m3/hr
19.3	Delivery Pressure	12	Kp/cm2

B20 CARGO RE-HEATER

20.1	Type of Re-Heater	Shell and Tube type	
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 0 degrees C	588	m3/hr
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	Not Applicable	m3/hr

B21 HYDRATE CONTROL

21.1	Type of Depressant?	Ethanol	
21.1.1	Freezing point temperature?	-114.1	Deg. C
21.2	Quantity of Depressant Carried?	200	Ltr.
21.3	Means of injection?	At pump discharge	
	Name any other system used	Hot Gas	

B22 CARGO MEASUREMENT

Level Gauges

22.1	Are level gauges local or remote?	Remote	
22.2	Name of manufacture	Kongsberg Maritime	
22.3	Type	Radar Beam Type	
22.4	Rated Accuracy	1.4	mm.
22.5	Certifying Authority	SGS	

Temperature Gauges

22.6	Name of manufacture	Emerson (Rosemount)	
22.7	Type	PT100, Electronic	
22.8	Rated Accuracy	0.5	Deg. C
22.9	Certifying Authority	SGS	

Pressure Gauges

22.10	Name of manufacture	ABB	
22.11	Type	PT100, Electronic	
22.12	Rated Accuracy	0.33	%
22.13	Certifying Authority	SGS	

Oxygen Analyser

22.14	Name of manufacture	Hitech Instruments	
22.15	Type	Galvanic cell	
22.15.1	What is the lowest level measurable?	0.01	% vol

Fixed Gas Analyser

22.16	Name of manufacture	Consillium	
22.17	Type	Infrared sensor	
22.18	Are Cargo tank calibration tables available?	Yes	
22.19	Name of Measuring Company	SGS	
22.20	Name of Certifying Authority	DNV GL	
22.21	Calibration calculated to cm?	Yes	
22.21.1	Calibration calculated to 1/2 cm?	Yes	
22.22	Tables established to cm?	Yes	
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?	N/A	

B23 CARGO SAMPLING

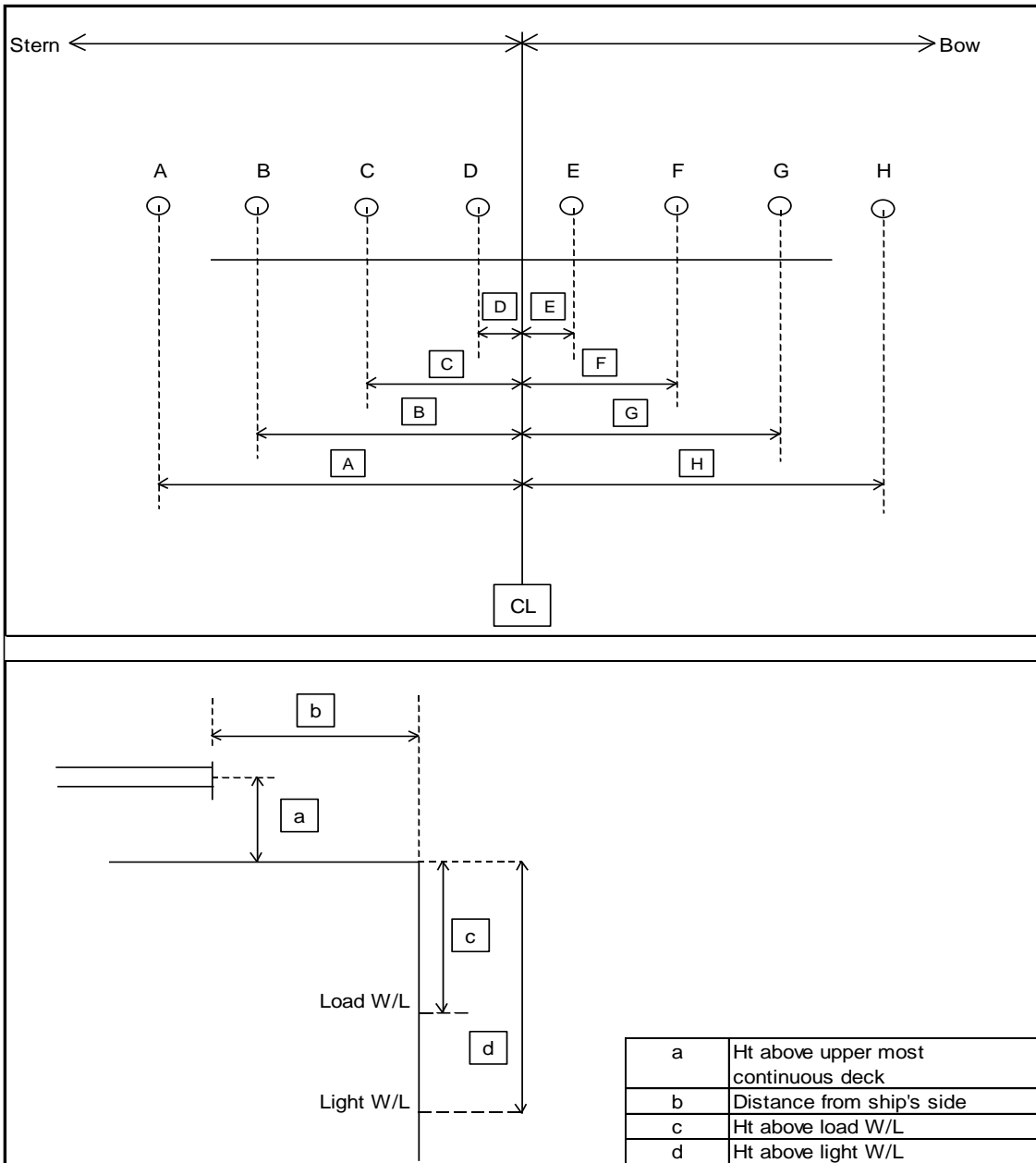
23.1	May cargo samples be obtained from the levels; top, middle and bottom in all cargo tanks?	YES Vapour only
------	---	-----------------

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

23.2	Can samples be drawn from tank vapour outlet?	YES
	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	screw type, Closed Loop Sampling
	Size of sample connection	1/2"

B24 CARGO MANIFOLD

Manifold arrangement diagram



Center of manifold to bow
 Center of manifold to stern
 Dimension A
 Dimension B
 Dimension C
 Dimension D
 Dimension E
 Dimension F
 Dimension G
 Dimension H

109.27	M.
115.86	M.
7625	mm.
5625	mm.
3375	mm.
1125	mm.
1125	mm.
3375	mm.
5625	mm.
7625	mm.

Pipe Flange A - duty	F.O	
Pipe Flange A - rating	#150	
Pipe Flange A - size	200A	
Pipe Flange A raised or flat face	Flat	
Pipe Flange B - duty	LIQUID	
Pipe Flange B - rating	#300	
Pipe Flange B - size	14"	
Pipe Flange B raised or flat face	Raised	
Pipe Flange C - duty	VAPOUR	
Pipe Flange C - rating	#150	
Pipe Flange C - size	10"	
Pipe Flange C raised or flat face	Raised	
Pipe Flange D - duty	VAPOUR	
Pipe Flange D - rating	#150	
Pipe Flange D - size	10"	
Pipe Flange D raised or flat face	Raised	
Pipe Flange E - duty	LIQUID	
Pipe Flange E - rating	#300	
Pipe Flange E - size	14"	
Pipe Flange E raised or flat face	Raised	
Pipe Flange F - duty	LIQUID	
Pipe Flange F - rating	#300	
Pipe Flange F - size	14"	
Pipe Flange F raised or flat face	Raised	
Pipe Flange G - duty	VAPOUR	
Pipe Flange G - rating	#150	
Pipe Flange G - size	10"	
Pipe Flange G raised or flat face	Raised	
Pipe Flange H - duty	F.O	
Pipe Flange H - rating	#150	
Pipe Flange H - size	200A	
Pipe Flange H raised or flat face	Flat	
Height above uppermost continuous deck	1901	mm.
Distance from ship side	4400	mm.
Height above load waterline	1201	mm.
Height above light waterline (Ballast cond.(dep))	16973	mm.

Manifold Arrangement Located on Top of Compressor

Distance from rail of compressor room/platform to presentation flanges		mm.
Distance from deck of compressor room/platform/try to centre of manifold		mm.

B25 CARGO MANIFOLD REDUCERS

25.1	Number of ANSI Class 300 reducers carried onboard	8	
	Flange rating of ANSI Class 300 reducer	#300	bar
	Size of ANSI Class 300 reducer	14x16 (2) 14x12 (2) 14x10 (2) 14x8 (2)	inch
	Length of ANSI Class 300 reducer	625	mm.
25.2	Number of ANSI Class 300 to Class 150 reducers carried onboard	10	
	Flange rating of ANSI Class 300 to Class 150 reducer	#300 #150	bar
	Size of ANSI Class 300 to Class 150 reducer	14x16 (2) 14x14 (2) 14x12 (2) 14x10 (2) 14x8 (2)	inch
	Length of ANSI Class 300 to Class 150 reducer	625	mm.
25.3	Number of ANSI Class 150 reducers carried onboard	6	
	Flange rating of Class 150 reducer	#150	bar
	Size of ANSI Class 150 reducer	10x12 (2) 10x8 (2) 10x6 (2)	inch
	Length of ANSI Class 150 reducer	520	mm.

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?	SIGTTO Pin type	
26.3	Are ESD hoses or cables available on board?	YES	
	If yes, length of pneumatic		mm.
	If yes, length of electrical	30000	mm.
	If yes, length of fiber optic		mm.
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	28	secs
	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	NO	
27.2	Is manifold crane provided	YES	
27.3	Is lifting equipment same for port and starboard?	YES	
	If no, then stipulate details	SHIP CENTER ONLY	
27.4	State SWL at maximum outreach	10	Tonnes
27.4.1	Maximum outreach of lifting equipment	6.7 (from ship side)	Metres

B28 STORES DERRICK/CRANE

28.1	State location	Accommodation Aft Port & Stbd	
	SWL	04 t / 02 t	Tonnes

B29 SISTER VESSEL(S)

29.1	Name of vessel	Oriental Jubilee	