LAST UPDATE:
FEB2015

FORM C GAS

SYN ZAURA

MODEL

Form C gas

Index

A1 PRINCIPAL SHIP PARTICULARS

1.1	Name of Ship	SYN ZAURA
1.2	Previous Name(s)	VAL BADIA
1.3	Builder	CANTIERE NAVALE DI PESARO
1.4	Date of delivery	10 January 2000
1.5	Classification Society and No.	R.I.N.A n° 76384
1.6	Gross Registered Tonnage	3819
1.7	Net registered Tonnage	1145
1.8	Suez Tonnage Gross/Net	4235
1.9	Panama tonnage Gross/Net	
1.10	Registered Owner	SYNERGAS S.R.L.
	Address	VIA RIVIERA DI CHIAIA , 287 NAPOLI (ITALY)
	Telephone	+39 081 9637177
	Telex/fax	+39 081 3313110
1.11	Manager or Operator	SYNERGAS S.R.L.
	Address	VIA RIVIERA DI CHIAIA , 287 NAPOLI (ITALY)
	Telephone	+39 081 9637177
	Telex/fax	+39 081 3313110
1.12	Flag	ITALIANA
1.13	Port of registry	AUGUSTA
1.14	Official No.	25 R.I.
1.15	Call Sign	I B J F
1.16	Immarsat No.	00870 773168939 (FBB)
1.17	LR/IMO No.	91987837
1.18	Was the ship built in accordance with the following regulations	
	IMO	YES
	USCG	YES
	RINA	YES
	OTHER	BV
1.19	IMO Certification	
	Certificate of Fitness IGC	YES (2G)
	A328	NO
	A329	NO
	Letter of Compliance	BY RINA
1.20	Date questionnaire compiled	25 Feb 2015

A2 HULL DIMENSIONS

2.1	Length overall	95,20
2.2	Length between perpendiculars	86
2.3	Extreme breadth	15,5
2.4	Extreme depth	8
2.5	Summer draught	6,5
2.6	Corresponding deadweight	4175
2.7	Light Ship displacement	2266,23
2.8	Load displacement (summer)	6442
2.9	Cargo tank cubic capacity (100%)	4007.10
2.10	Distance from keel to top antenna	31
2.11	Air draught (with normal ballast)	25,45

A3 BALLAST PARTICULARS

3.1	Permanent Ballast		0
3.2	Ballast quantity		1688.89 cbm (100%)
3.3	Bunkers, stores, etc.		15
3.4	Draught	- Forward	3,35
		- Aft	5,55
		- Mean	4,45

A4 IMMERSION

4.1	TPC at normal draught	12,3
4.2	TPC at loaded draught	

A5 LOADED PARTICULARS

5.1	Cargo			**BUTANE-0,5°**	**PROPANE-41°**	**AMMONIA-**	**VCM-14°**
5.2	Density			0,600	0,580	0,680	0,970
5.3	Cargo	98%	tons	2350	2270	2660	3400
5.4	Bunkers	95%	IFO	185	185	185	185
5.5	GASOIL	98%		75	75	75	75
5.6	Fresh water			10	10	10	10
5.7	Stores/spares			20	20	20	20
5.8	Lub oil	98%		30	30	30	30
5.9	Ballast			840	840	790	393
5.10	Deadweight			3510	3430	3770	**4113**
5.11	Draught		- Forward	5,93	5,83	6,13	6,42
			- Aft	6,07	6,04	6,29	6,58
			- Mean	6,00	5,93	6,21	**6,50**

5.1	Cargo			**BUTADIENE-3°**	**PROPYLENE-46°**
5.2	Density			0,650	0,610
5.3	Cargo	98%	tons	2545	2390
5.4	Bunkers	95%	IFO	185	185
5.5	GASOIL	98%		75	75
5.6	Fresh water			10	10
5.7	Stores/spares			20	20
5.8	Lub oil	98%		30	30
5.9	Ballast			840	840
5.10	Deadweight			3705	3550
5.11	Draught		- Forward	6,17	5,98
			- Aft	6,17	6,08
			- Mean	6,17	6,03

A6 PARALLEL MID-BODY DIMENSIONS

PARALLEL MID BODY DIAGRAM	
LIGHT SHIP PARALLEL BODY LENGH	43 Metres
LIGHT SHIP PARALLEL BODY LENGH- BOW TO MID POINT MANIFOLD	18Metres
LIGHT SHIP PARALLEL BODY LENGH- STERN TO MID POINT MANIFOLD	25Metres
NORMAL BALLAST PARALLEL BODY LENGH	49Metres
NORMAL BALLAST PARALLEL BODY LENGH- BOW TO MID POINT MANIFOLD	21 Metres
NORMAL BALLAST PARALLEL BODY LENGH- STERN TO MID POINT MANIFOLD	28Metres
PARALLEL BODY LENGTH AT SUMMER DEADWEIGHT (SDWT)	59Metres
PARALLEL BODY LENGTH (SDWT) BOW TO MANIFOLD	26Metres
PARALLEL BODY LENGTH (SDWT) STERN TO MID POINT MANIFOLD	23Metres

A7 BUNKER CAPACITIES

7.1	M.E. Fuel Oil	Grade	
		Capacity 98%	280.58 cbm
7.2	Diesel Oil Grade	Capacity 98%	93.31 cbm

A8 FUEL CONSUMPTION DETAILS

8.1	At sea (normal service speed)	FO	9 ton/day
		GO	0,9 ton/day
8.2	At sea (normal service speed) while conditioning cargo	FO	9 ton/day
		GO	0,9 ton/day
8.3	In port, loading	FO	ton/day
		GO	3 ton/day
8.4	In port, discharging	FO	ton/day
		GO	3 ton/day
8.5	In port, idle	FO	ton/day
		GO	1,1 ton/day

A9 MAIN ENGINE PARTICULARS

9.1	Main engine make and type	MAN 9L28-32 A
9.2	No. of units	1
9.3	Maximum continuous rating (MCR) per engine	750 rpm
9.4	Total available power	2205 Kw
9.5	Normal service power (ECR)	13 nodi

A10 AUXILIARY PLANT

10.1	Make and type of auxiliary generators	MAN D 2840 LE
10.2	No. of units	3
10.3	Maximum generator output per unit	360 kilowatts
10.4	Shaft generator	Kilowatts
10.5	Emergency generator	120 kilowatts
10.6	Total available power	1080 kilowatts

A11 POWER/SPEED INFORMATION

11.1	Trial data	BHP	
		MCR	SHP
		Speed	14,5 Knots
		Draught	6,40 M
11.2	Normal service speed		1800
		BHP	
		MCR	SHP
		Speed	Knots

A12 THRUSTERS

12.1	Make and type	ULSTEIN 45 TV
12.2	No. Installed	1
12.3	Location and rated bollard pull	

A13 FRESH WATER

13.1	Capacity of distilled tanks	0.49 Cbm
13.2	Capacity of domestic tanks	71.72 Cbm
13.3	Daily consumption distilled domestic	3 tons
13.4	Daily evaporator production	5 tons

A14 BALLAST CAPACITIES AND PUMPS

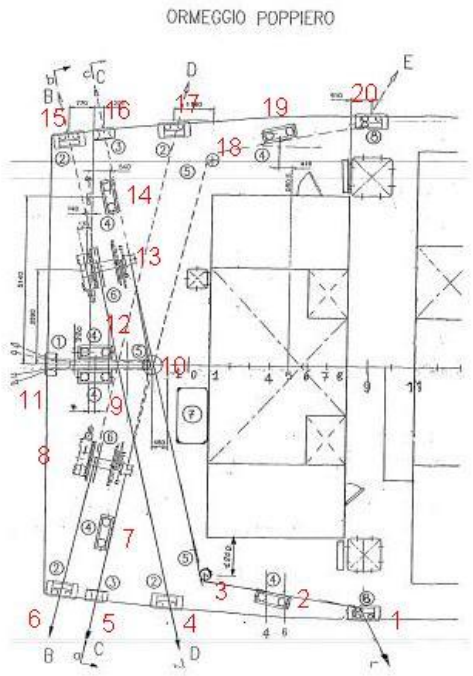
Fill the following table

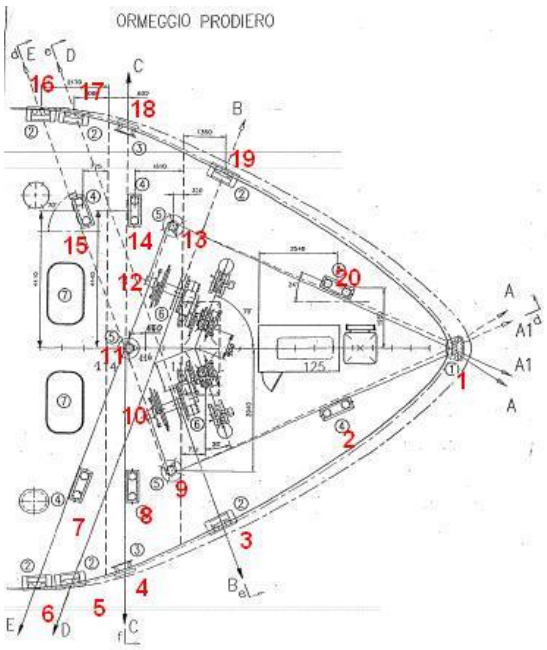
		Tank	**Capacity CBM**	**CBM**
14.1		Fore peak	14	
14.2		Wing or side tanks	1 p/s-108 , 2 p/s-224 , 3 p/s-286 ,	
14.3			4 p/s-314 , 5 p/s-314 , 6p/s-224	
14.4		Aft peak	42 m	
14.5		Other (deep tank)	56m	
14.6		Total	1688m	
14.7	Ballast pump make and type	(2) CENTRIFUGAL SINGLE STAGE		
14.8	No. of Pumps	3		
14.9	Total capacity	750 cbm/hr		
14.10	Location	E.R.		
14.11	Control Location	C.C.R.		

A15 MOORING EQUIPMENT

15.1 Ropes and Wires.

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





15.2 Mooring Winches

	No	Motive power (steam,hydraul)	Heaving power	Brake Capacity	Hauling speed
Forecastle	2	Hydraulic	51Kn	5	9 mt/min
Poop	2	Hydraulic	51Kn	5	12 mt/min

15.3 Anchors and Windlasses

Windlass motive Power (steam, hydraulic)	Hydraulic
Hauling power	92 Kn
Brake holding capacity	25 Tonnes
Date of last test	Genn. 2007
Anchor type	NAF (HHP) 1980 material GS 45
Weight	2,1 Tonnes
Is spare carried	
Cable diameter	Type U3 40 Mm
No of schackles port	8
No of schackles starboard	9

15.4 Windage

Windage on ballast draught	150 M2
Windage full loaded	750 M2

A16 NAVIGATIONAL EQUIPMENT

Is the following equipment fitted :		YES	NO
16.1	Magnetic compass	X	
16.2	Gyro compass and repeaters	X (2 gyro)	
16.3	Radars	X	
16.4	Radar plotting equipment	X	
16.5	Arpa	X	
16.6	Echo sounder	X	
16.7	Speed/Distance indicator	X	
16.8	Doppler log		X
16.9	Rudder angle, RPM, controllable pitch and Thrusters indicators	X	
16.10	Rate of turn indicator		X
16.11	Radio D.F.		X
16.12	Navtex receivers	X	
16.13	Satellite navigator	X	
16.14	Decca navigator		X
16.15	Loran C		X
16.16	Sextants	X	
16.17	Signal lamp (aldis)	X	
16.18	Course recorder	X	
16.19	Engine order printer		X
16.20	What chart outfit coverage is provided if limited, indicate areas covered	ECDIS no limitations	
16.21	Formal chart correction system in use		

A17 COMMUNICATION EQUIPMENT

Is the following equipment fitted :

		YES	NO
17.1	Is ship with GMDSS	X	
17.2	Radio telegraph main transmitter including facility to transmit on radio telephone distress frequency		X
17.3	Radio telegraph main receiver including facility to receive on radio telephone distress frequency		X
17.4	Radio telephone distress frequency watch receiver	X	
17.5	Main radio antenna	X	
17.6	Radio telegraph reserve transmitter		X
17.7	Radio telegraph reserve receiver		X
17.8	Reserve radio antenna	X	
17.9	Are the main and reserve installation electrically separate and electrically independent of each other	X	
17.10	Radio telegraph auto alarm		X
17.11	2182 KHZ bridge watch receiver	X	
17.12	Alarm signal generating device	X	
17.13	VHF radio	X	
17.14	Inmarsat satellite communications system	X	
	if yes, state identification number	424764530 , 424764630	
17.15	Telex	X	
	if yes, state identification number		
17.16	Telex	X	
	if yes, state identification number		
17.17	Weatherfax	X	
17.18	Epirbs	X	
17.19	At least three survival craft two-way radio telephone apparatus	X	
17.20	Emergency lifeboat transmitter	X	
17.21	Full set of publications	X	
17.22	Satellite Epirb	X	
17.23	VHF Epirb	X	
17.24	Radio transponder for survival craft	X	

SECTION

B

B1 CARGO - GENERAL INFORMATION

1.1	List products which the ship is certified to carry	Ammonia Anhydrous, Butadiene, Butane, Butylenes, Vinyl Cloride, Butadiene and (C4) hydrocarbon mixtures, Butane-Propane mixtures, Propane, Propylene
1.2	Minimum allowable tank temp.	Minus 48°C
1.3	Maximum permissible tank	8 Bar
1.4	List grades which can be	2 grades (only one refrigerated)
1.5	List grades which can be loaded	2 grades
1.6	State natural tank segregation.	2 grades can be carried by the use of flanges swing elbows and removal
1.7	Number of products, (gas) that can be conditioned by reliquefaction simultaneously	one

B2 CARGO TANKS

2.1	No. and type of cargo tanks	2 independent type “C” – Carbon/Manganese steel(6%)
2.2	Maximum allowable relief valve setting	8 bar
2.3	Safety valve set pressure - if variable give range for pilot valve	5/8 Bar
2.4	Maximum vacuum	- 0,25 kg/cm2
2.5	Maximum cargo density	0,972 kg/cm2
2.6	Maximum rate of cool-down	10 DEGREES °C/hr
2.7	State any limitations regarding partially filled tanks	N/A
2.8	State allowable combinations of filled and empty tanks	N/A

B3 CARGO TANK CAPACITIES

Complete the following table

TANK	Capacity CBM 100%	Capacity CBM 98%	PROPANE Tonnes - 42.8°C	AMMONIA Tonnes -33°C	BUTANE Tonnes -0,5°C	VCM Tonnes - 13,4°C
1	1955,20	1916.10	1113,61	1309,12	1150,03	
2	2051,90	2010.86	1166,57	1371,37	1204,71	
3						
4						
5						
6						
TOTALS						

B4 LOADING RATES

		PRODUCT	RATE (Tonnes/hr) With vapour	RATE (Tonnes/hr) Without return
4.1	From refrigerated storage			
4.2		BUTANE	350	300
4.3		PROPANE	250	200
4.4		AMMONIA	350	300
4.5		ETHYLENE		
4.6				
4.7				

		PRODUCT	RATE (Tonnes/hr) With vapour	RATE (Tonnes/hr) Without return
4.8	From pressure storage			
4.9		BUTANE 0-30°C	300	250
4.10		PROPANE 0°C	250	200
4.11		10° C	200	150
4.12		20° C	150	100
4.13		30° C	100	50

B5 DISCHARGING - GENERAL

Cargo pumps

5.1	Type of pumps	DEEP WELL
5.2	Number per tank	1
5.3	Rate (per pump)	250 m/hrs
5.4	Delivery head	120 metres liquid column
5.5	Maximum density	0,972 kg/cu metres
	Booster pumps	
5.6	Type of pump	only 1 centrifugal booster (horizontal)
5.7	Number	1
5.8	Rate (per pump)	250 m/hrs
5.9	Delivery head	120 mt liquid column
5.10	Maximum density	0,68 kg/cu metres

B6 DISCHARGE PERFORMANCES

Full cargo discharge times (using all main pumps)

		MANIFOLD	Hours	
6.1	From refrigerated	**BACK PRESSURE**	**With vapour**	**Without return**
6.2		1 bar	8	8
6.3		5 bar	8	8
6.4		10 bar	13	13

		MANIFOLD	Hours	
6.5	Pressurized	**BACK PRESSURE**	**With vapour**	**Without return**
6.6		**1 bar**	**8**	**8**
6.7		**5 bar**	**8**	**8**
6.8		**10 bar**	**13**	**13**

B7 UMPUMPABLES

	TANK NO.	1	2	3	4	5	6	TOTAL TONNES
7.1	Vapour	0,7	0,8					**1,5**
7.2	Liquid							
7.3						**Total quantity**		

B8 VAPORISING UNPUMPABLES

8.1	Process used	
	Time to vaporise liquid unpumpables remaining after full cargo discharge :	
8.2	- Propane	1 Hrs
8.3	- Butane	5 Hrs
8.4	- Ammonia	Hrs
8.5	-	- Hrs
8.6	-	- hrs
8.7	-	- hrs

B9 RELIQUEFACTION PLANT

9.1	Plant design conditions	Air temperature °C 45 degrees Sea temperature ° C 32 degrees
	Plant type :	
9.2	Single stage/direct	No
9.3	Two stage/direct	Yes
9.4	Simple cascade	No
9.5	Coolant type	SEA WATER
	Compressors	RECIPROCATING
9.6	Type	SULZER
9.7	Number	2
9.8	Capacity (per unit)	360 cu.metres/hrs
9.9	Are they oil-free	yes

B10 COOLING CAPACITY

State cooling capacity (in Kcal/hr) for :

10.1	Propane	@ -42°C	80000 Kcal/hr
10.2		@ -20°C	200000 Kcal/hr
10.3		@ - 5°C	380000 Kcal/hr
10.4	Butane	@ - 5°C	0 Kcal/hr
10.5		@ 0°C	0 Kcal/hr
10.6		@ 0°C	110000 Kcal/hr

B11 CARGO TEMPERATURE LOWERING CAPABILITY (AT SEA)

Time taken to lower the temperature of:

11.1	Propane from	10°C to -42°C	165 Hrs
11.2		-5°C to -42°C	150 Hrs
11.3		-38°C to -42°C	36 Hrs
11.4		+20°C to -0.5°C	24 Hrs
11.5		+10°C to -0.5°C	12 Hrs
11.6	Butane from	+20°C to -0.5°C	90 Hrs
11.7		+ 10°C to -0.5°C	52 Hrs
11.8		+10°C to -5°C	52 Hrs
11.9	from 12 degrees	to-48 degrees	183 Hrs
11.10	from 1 degrees	to-12 degrees	24 Hrs

B12 INERT GAS

Main inert gas and nitrogen plant

12.1	Type of system	OIL FIRED
12.2	Capacity	350 Cbm/hr
12.3	Composition of inert gas	OXIGEN 0,5 % - CO2 14 %
12.4	Dewpoint	- 40 DEGREES°C
12.5	Used for	INERTING - PURGING CARGO TANK AND VOID SPACES
	Nitrogen	NIL
12.6	No of bottles	NA
12.7	Capacity (each one)	NA ltrs
12.8	Used for	NA

B13 CARGO TANK INERTING/DE-INERTING

13.1	Time taken from fresh air to under 5% 02 at -25°C dewpoint		45 hrs
	Time taken from cargo vapour to fully inert at -25°C dewpoint		
13.2	When :	Inert gas density less than product	57 hrs
		Inert gas density greater than product	57 hrs

B14 GAS FREEING TO FRESH AIR

14.1	Plant used	cargo comp.-air blower dry air pl.
14.2	Time taken from fully inerted condition to fully breathable fresh air	20 hrs

B15 CHANGING CARGO GRADES

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

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

B16 DECK TANK CAPACITY

16.1	Propane capacity	1916 Cbm
16.2	Butane capacity	2008 Cbm
16.3	Ammonia capacity	Cbm
16.4	Nitrogen capacity	Ncm

B17 PRE-LOADING COOLDOWN

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

	PRODUCT	QUANTITY REQUIRED	TIME With return line	TIME Without return
17.1	ETHYLENE			
17.2	PROPANE	35 cu.metres	6 hrs	30 hrs
17.3	BUTANE	20	3	12
17.4	AMMONIA	20	5	15
17.5	VINYL	20	3	12

B18 VAPORISER

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

B19 BLOWER

19.1	Type of blower	1
19.2	Rated capacity	3500 cbm/hr
19.3	Delivery pressure	5 kg/cm2

B20 CARGO RE-HEATER

20.1	Type of re-heater	SHELL / TUBE
20.2	Number fitted	1
20.3	Heating medium	SEA WATER
	Discharge rates with sea water at 15°C to raise product temperature:	
20.4	for propane from -42°C to -5°C	220 cbm/hr
20.5	for ammonia from -33°C to 0°C	140 cbm/hr

B21 HYDRATE CONTROL

21.1	Freezing point temperature of Depressant	-97 DEGREES°C
21.2	Quantity of Depressant carried	
21.3	Means of injection	

B22 CARGO MEASUREMENT

	LEVEL GAUGES	
21.1	Are level gauges local or remote	YES
21.2	Manufacturer	enraf henri system nonius ua 806 m
21.3	Type	FLOAT
21.4	Rated accuracy	10 MILLIMETERS
21.5	Certifying authority	
	TEMPERATURE GAUGES	
22.6	Manufacturer	ABB
22.7	Type	DIGITAL
22.8	Rated accuracy	0 DEGREES C°
22.9	Certifying authority	R.I.N.A.
	PRESSURE GAUGES	
22.10	Manufacturer	ABB
22.11	Type	DIGITAL
22.12	Rated accuracy	0 BAR
22.13	Certifying authority	R.I.N.A.
	OXYGEN ANALYSER	
22.14	Manufacturer	MSA
22.15	Type	245 RA
	FIXED GAS DETECTOR	
22.16	Manufacturer	vessel fitted with open comp. room
22.17	Type	N/A
22.18	No of points detected	
	PORTABLE GAS DETECTOR	
22.19	Number	TWO
22.20	Manufacturer	
22.21	Type	
	TOXIC GAS INDICATOR	
22.22	Number	
22.23	Type	
	TOXIC GAS INDICATOR TUBES	
22.24	Number	
22.25	Products	
22.26	Exp.dates	

B23 CARGO SAMPLING

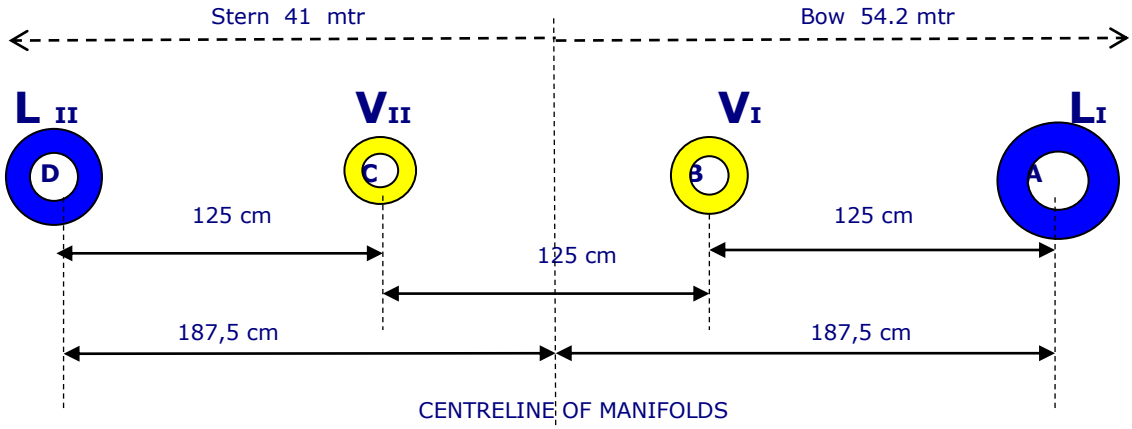
23.1 Fill the following table

CARGO TANKS	SAMPLE POINTS TOP	MIDDLE	BOTTOM
1	YES	YES	YES
2	YES	YES	YES
3			
4			
5			
6			

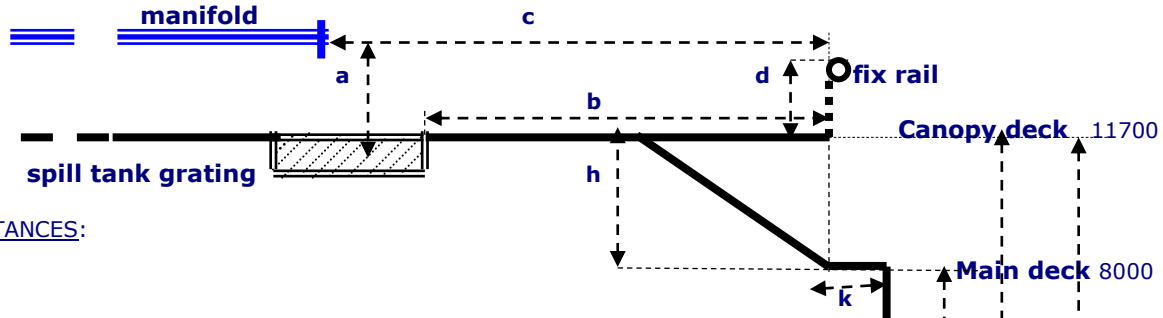
23.2	Can sample be drawn from:	
	- Tank vapour outlet	YES
	- Manifold liquid line	YES
	- Manifold vapour line	YES
	- Pump discharge line	YES
23.3	State connection type and size	BALL VALVE

B24 CARGO MANIFOLD ARRANGEMENTS

CARGO MANIFOLDS



Pipe Flange	Duty	Rating	Size	Raised (R) or Flat (F) face
A	Liquid system I	Ansi **300**	**8"**	R
B	Vapour " I	Ansi **150**	**4"**	R
C	Vapour " II	Ansi **150**	**4"**	R
D	Liquid system II	Ansi **300**	**8"**	R



DISTANCES:

a: spill tank grating to manifold		1.20 mtr
b: spill tank grating to ship's rail		1.40 mtr
c: manifold to ship's rail		1.85 mtr
d: continuous deck to top of rail		0.92 mtr
e: height above summer load W/L		5.20 mtr
f: height above normal ballast W/L	mean 4.80	6.90 mtr
g: summer draft		6.50 mtr
h: distance from main deck to upper deck		3.70 mtr
k: side ship to rail		1.05 mtr
i : freeboard at summer load		1.51 mtr

note: length of manifold's reducers = 0.5 mtr

B25 CARGO MANIFOLD REDUCERS

Quantity			Lenght
1	From 4" 150 ASA	To 6" 150 ASA	49.5 cm
1	From 4" 150 ASA	To 5" 150 ASA	49.5 cm
1	From 8" 300 ASA	To 4" 150 ASA	50,5 cm
1	From 4" 150 ASA	To 4" 300 ASA	30,0 cm
1	From 4" 150 ASA	To 4" 300 ASA	48,5 cm
4	From 4" 150 ASA	To 4" 150 ASA	49.5 cm
3	From 8" 300 ASA	To 8" 300 ASA	49.5 cm
1	From 8" 300 ASA	To 4" 300 ASA	50,5 cm
1	From 4" 150 ASA	To 3" 150 ASA	49,5 cm
1	From 8" 300 ASA	To 6" 300 ASA	49,5 cm
1	From 2" 150 ASA	To 4" 150 ASA	39,5 cm

B26 MANIFOLD DERRICK/CRANE

26.1	Is Manifold Derrick provided	NIL
26.2	Is Manifold Crane provided	YES
26.3	Is lifting equipment same port and starboard	NIL
	If not give details	CENTRAL CRANE IS USED FOR BOTH MANIFOLDS
26.4	State SWL at maximum outreach	14,72 KN