VESSEL PARTICULARS (FORM C)

LPG/C GAS MILANO

Specifications of the vessel and the gas installation which are representations by the Owners.

(A) VESSEL'S CHARACTERISTICS PREAMBLE

Name Owner Flag Build Date on Service Class	 : GAS MILANO : ZEALAND TRADE LTD. : MARSHALL ISLANDS : FUKUOKA SHIPBUILDING CO. LTD JAPAN : 16TH JULY 1997 : LLOYDS REGISTER, 100A1, LIQUIFIED GAS CARRIER, SHIP TYPE 2 PG, LPG INDEPENDENT TANK TYPE C, MAX PRESSURE 18.0KG/CM2 AND MINIMUM TEMPERATURE ZERO DEGREES CENTIGRADE 				
GT International	: 4402 mt	Suez: Panama:	5062.76 mt 3758.00 mt		
NT International	: 1321 mt	Suez: Panama:	4099.67 mt 3758.00 mt		
Is vessel built according to		USCG Regulations: RINA Regulations: Japanese regulations:	YES no YES		
Has vessel received		USCG approval: RINA approval:	NO NO		
HULL LOA LBP Breadth Depth Summer DWT Summer Draft IMO	 99.00 M 92.90 M 18.20 M 7.80 M 3800 MT 5.064 M 9151149 	OFFICIAL NR:	7565		
		56 <i>0</i> / E 1111			

Estimated draft with full cargo and full bunkers are as follows

Product		Draft Fore' (m) Draft Aft' (m) Draft Mean (m)		Draft Mean (m)	Corresponding Deadweight (t)
Propane	(98%)	3.81	5.07	4.44	2933
Butadiene	(98%)	4.25	5.19	4.72	3329
	ship's stability, weight & draft)		5.33	5.05	3796

Propeller immersion:

At draft 5.07	At	m correspond :	98.30%
At draft 5.19	At	m correspond :	102.30%
At draft 5.33	At m	correspond :	106.80%

COMMUNICATION EQUIPMENT

Call letter		: V7UY3
Radio Station normally w	vatched	: Ch.16 and DSC Ch. 70
Radio MF/HF NBDP		: JRC, JSS 720
Radio MF/HFTEL/DSC		: JRC, NCU-247A
VHF		:JRC, JHS-32A
Satellite Communication	Inmarsat 'C'	: 431179611
	Phone	:
	Email	: gasmilano@petroxi.co

MACHINERY

Main Engine x 1	Type and make Service power No. Of Cylinders Cyl Bore x Stroke Grade of fuel used	 MAKITA MITSUI MAN B+W 7526MC 3242PS AT 237 RPM 2 Stroke single acting crosshead type direct reversible Marine diesel engine with exc. Turbocharger 380cst
Auxiliaries	Type and make (Electrical) (Mechanical) Grade of fuel used No off	YANMAR 6LAAL-UTN 240KW/300KVA @ 1200RPM MDO 2
Emergency Generator	Type No off	F6L912/W, MITSUI-DEUTZ 1 x 60KVA/47KW
Bow Thruster	Type: Power:	N/A
Boiler	Type Evaporation Max Design Pressure Feed Water Temp No off	MKSC 14-600/350 OIL FIRED SIDE: 600 KG/HR 10.5 KG/CM2 60°C 1
Exhaust Economiser	Type Evaporation No off	
Air Compressors (Main)	Type / Capacity No off	VERTICAL 2 STAGE WATER-COOLED / 32.5 M3/HR MODEL: MS92-A 1
Air Compressors (Emergency)	Type / Capacity No off	
Fuel Oil Purifier	Type No off Capacity	MMPX304SGP-11-60, ALFA LAVAL 2
Lub Oil Purifier	Type No off Capacity	MMPX304SGP-11-60, ALFA LAVAL 1

Evaporator	Type Capacity	JWP-26-C80/100, ALFA LAVAL 6.0 T/Day
Fresh Water Sterilizer	Туре	L-N10F
	Capacity	1000 L/H
Fresh Water Mineraliser	Type / Capacity	
Waster Oil Incinerator (IMO MEPC 76 (40))	Туре	BGW-10
	Capacity	98,000 KCLA/H
Oily Water Separator	Type	HMS-100
	Capacity	1 M3/HR
Sewage Treatment	Туре	SBT-25
plant	Capacity	1.0 m3
Hot Water Set (Calorifier unit)	No off	1
Steering Gear	Type Duty Capacity Hydraulic pump unit	R21-140V TO 19.6 Mpa / 200 kgf/cm2 KAWASAKI TYPE RV712-HS

SPEED in Ballast / Laden

Upto Beaufort scale 4 and max significant wave height of 1.25m (all details "about" defined as 0.5knot less and +/-5% consumption respectively) 1 Normal service speed

1.Normal service speed	: About 11.5 KIS
2.Eco speed (min RPM Blower will not start)	: About 10.5 KTS

CONSUMPTION / DAY

1.NORMAL SERVICE SPEED Main Engine Auxiliary Engine	HFO MGO	Ballast : About 9.0 MT : About 0.7 MT	 	Lader HFO MGO	N About 9.5 MT About 0.7 MT
2.ECO SPEED (min RPM Blower will not s Main Engine Auxiliary Engine	tart) HFO MGO	:About 6.5 MT :About 0.7 MT	/ /	HFO MGO	About 7.0 MT About 0.7 MT
At Sea - with N2 Generator operation		: N/A			
In port - idle/Loading (including Boiler)		: HFO About 0.5 MT	1	MGO	About 1.2 MT
In port - discharging with 2 cargo pumps <u>Notes:</u>		: HFO About 0.5 MT	1	MGO	About 1.7 MT

1. Speed and consumption figures at sea, are best estimated basis daily weather conditions are up to Beaufort scale 4 – max. significant wave height 1.25 m, without effect of sea currents or swell, and vessel en-route under a steady course, with a net sea passage duration of at least 24 hrs.

2. Consumption figures at port, are subject to port movements, port and/or harbour, terminal requirements, for the safe manoeuvring, approach, inland navigation, and port stay of the vessel throughout her call.

Permanent bunker capacity (100%)	10% expansion margin	HFO - ABT 408MTS bss SG 0.98	DO - ABT 126MTS basis SG 0.86
Fresh Water	: 158.62 CBM		
Sludge Tank Capacity	: 7.60 m³		
Bildge Tank Capacity	: 7.08 m³	3	

(B) CARGO INSTALLATIONS

1. Transportable products and respective quantities, calculated in accordance with IMO maximum filling formula. (Tonnes)

	100% (CBM)	98% (CBM)		
NO.1 CARGO TANK	2508.440	2458.271		
NO.2 CARGO TANK	2509.909	2459.711		
TOTAL	5018.349	4917.982		
	SPSV	Ref. Temp. (deg.C)	Density (bss on	Corresponding Quantity
	(KG/CM2)		interpolated value taken from cargo handling manual) at (Ref. Temp.)	(MT - In Air)
Propane	17.65	45.0	0.4670	2296.70
Propylene	17.65	45.0	0.4694	2308.50
Butane/Propane Mixture	17.65	45.0	0.4924	2421.61
I-Butane	7.0	45.0	0.5233	2573.58
N-Butane	7.0	45.0	0.5491	2700.46
Butylene	7.0	45.0	0.5552	2730.46
Butadiene	7.0	45.0	0.5859	2881.45
V.C.M.	7.0	45.0	0.8608	3160**

*tanks weight limitation of 1700 mts per tank, subject to complying with criteria (ship stability, deadweight, etc.) **VCM quantity according to cargo manual/loadicator allowance and basis maximum bunkers, fw and no ballast

Note(1): In case of USCG, propylene, propane and B/P mixtures are not to be carried except the vapor pressure of B/P mixtures is not more than 12.75 bar g, 13.0 kg/cm2 @ 45 C

Note(2): On and after the pressure value in parentheses is shown as a conversion value Mixing ratio of above mentioned B/P mixtures is as follows: Butane 35 wt% and propane 65 wt%

2. Other tranportable products N/A

	SPSV	Ref. Temp. (deg.C)	Density at (Ref.	Corresponding Quantity
Raffinate 1				
Raffinate 2				

3. TANKS

3.1	Design pressure (Vapour) - LR-IGC	:	18.0KG/CM2
	- USCG	:	
3.2	Valve setting	:	7.0/18.0KG/CM2
3.3	Maximum vacuum obtainable	:	Atmospheric
3.4	Maximum temperature acceptable	:	45°C
3.5	Minimum temperature acceptable	:	0°C
3.6	Hydrostatic Test Pressure	:	20 bar g (2.648 Mpa)

4. LOADING RATE (TONS/HOUR) - For Full Cargo Parcels

•	,				
Ex-atmospheric storage	with gas	:	1 tank	:	300 CBM/HR
Return			2 tanks	:	600 CBM/HR

Remarks: SG AT 0 DEG C

* Based on maximum velocity of 6.5 meters/sec except VCM, and 4.0- meters/sec for VCM in the liquid piping.

* If cargo temperature is less than 0°C, shore heater to be used.

* Loading by shore pump only, proper size gas return line to be connected.

* Subject to both ship and shore tanks being under favourable conditions.

5. CA	ARGO PUMPS	
5.1	Туре	: DEEPWELL PUMP - 4 STAGE ELECTRIC
	Make	: SHINKO IND. LTD
	How many	: 2 (1 EACH TANK)
	Maximum specific gravity	: 0.946 (VCM AT 0°C)
5.2	Capacity (CBM/Hour)	: 300M3/HR AT 110 METERS WATER COLUMN AT BUTANE 250M3/HR AT 120 METERS WATER COLUMN AT VCM
	Two speed or variable speed Rated kW (each)	: 120 KW
	Working pressure maximum	: 22.0 kg/cm2
5.3	Location	: Near aft end each tank by shore crane when gas free
5.4	Booster pumps	: N/A
	Туре	:
	Maker	:
5.5	Capacity (CBM/Hour)	: N/A
	Working pressure	:
5.6	Location	: N/A
5.7	Time to discharge a full liquid cargo using	all pumps against back pressure at pump
0	1 bar	: about 12.8 hours for LPG
	5 bars	: about 18.1 hours for LPG
	10 bars	:
5.8	Nominal back pressure when working	: about 1 bar
0.0	In series corresponding head	: N/A
	Maximum back pressure	: about 5 bars
	Nominal pressure at rail (propane)	: about 13 bar at 20 deg.C of cargo temperature
5.9	What amount of cargo remains in tanks af	fter completion numping before stripping:
0.0	- liquid	: about 0.1 per one tank
	- vapour	: about 0.01 ton per one tank for LPG
6.51 6.1	RIPPING Stripping system, if any	: Nil
0.1	Supping system, if any	. 180
6.2	Time required to remove all traces of liqui - LPG	d cargo as stated in 5.9 for: :About 0.2 hours
	ARGO COMPRESSORS	
7.1	Туре	: Vertical single stage, water cooled, double acting driven by electric motor, oil free.
	Make	: TANABE PNEUMATIC MACHINERY CO. LTD
	How many	: 2
	Piston displacement	: 460 M3/HR
	Rated Kw	: 75 kw
	Stroke Max discharge pressure	: 177.8 mm : 20 KG/CM2
	Pressure differential	: 7 KG/CM2
	No of Revolutions	: 540 RPM
7.0		
7.2 7.3	Are compressors oil free Can they reliquefy VCM without risk	: YES : NO
7.3 7.4	State time to bring full cargo of butane	: N/A
	to atmospheric pressure from	
		5

8. IN	ERT GAS SYSTEM	NONE		
8.1	Does the vesse use inert gas ?	: N/A		
	If so, state utilization and quantities	:		
8.2	Can the vessel produce inert gas ?	: N/A		
	If so, state type and composition of gas pro	oduce		
	Discharge Capacity	: N/A		
8.3	Maximum production obtainable			
8.4	NOTE: Above quantities obtained at engin	-	C Stat	e if there are storage
	facilities for inert gas onboard	: N/A		
	- Size - Pressure	: N/A		
	- Pressure	: N/A		
8.5	State if any shore supply of nitrogen may b	-		
	- For what purpose	: N/A		
	- what quantities	: N/A		
	S FREEING			
9.1	State method used giving all details	•		go in tank, nitrogen to be pumped
		-	-	ne. Mixed gas inside the tanks
				through liquid line, after gas I be done through upper and
		lower sample points.	Should	be done through upper and
9.2	State time required including stripping	: about 12 hours		
40.0				
	HANGING GRADE Butadiene, Propylene and VCM all require	shore nitrogen in tanks	bofor	a loading, replacing either
10.1	previous cargo, ship inert gas or air accor	-	Deloie	e loading, replacing either
	In case of Butadiene and VCM, the instruc		sed pe	erson of the port
	should be followed. Time required:	about 48 hours		·
10.2	Can this operation be carried out at sea?		:	NO
10.2	Can the ship measure the number of ppm i	n vanaur phasa 2	:	YES
10.5	Can the ship measure the number of ppinn	in vapour priase ?	•	123
10.4	Has vessel deck tank for changing grade/o	cooling operations ?	:	NO
10.5	Deck tanks	: NIL		
	Capacity	:		
	Purpose	:		
11. C	OOLING BEFORE LOADING	: N/A		
12. C	ARGO HEATER	NONE		
12.1	Туре	:		
12.2	Inside Diameter	:		
	Overall length	:		
12.5	Cargo flow rate	:		
	Min inlet temp	:		
	Min inlet temp Min Outlet Temp			
12.7	Min inlet temp Min Outlet Temp Required Sea water capacity			
12.7 12.8	Min inlet temp Min Outlet Temp Required Sea water capacity Design Pressure			
12.7 12.8 12.9	Min inlet temp Min Outlet Temp Required Sea water capacity Design Pressure Hydrostatic Test pressure			
12.7 12.8 12.9	Min inlet temp Min Outlet Temp Required Sea water capacity Design Pressure			
12.7 12.8 12.9 12.10	Min inlet temp Min Outlet Temp Required Sea water capacity Design Pressure Hydrostatic Test pressure	: : : : : : vrought from atmospheri	c pres	sure
12.7 12.8 12.9 12.10	Min inlet temp Min Outlet Temp Required Sea water capacity Design Pressure Hydrostatic Test pressure Tightness test pressure	rought from atmospheric about 200 Mt/hr	c pres	sure

13. CARGO VAPORIZER

In case vapour gas is needed to feed compressors, can vessel produce its own if no shore available: N/A

14. R	EFRIGERATING APPARATUS		
14.1	Is it independent of cargo ?	:	N/A
	If so, state cooling agents	:	N/A
14.2	What minimum temperature can be maintained	:	N/A
14.3	What time required at sea to lower by 1 C the full cargo of	:	N/A
15. M	EASURING APPARATUS		
	What gauges on board ?		
	Туре	:	Float type level gauge
	Location	:	At each on cargo tank dome

16. SAMPLES

State how tank atmosphere samples can be taken and where from ?

GAS SAMPLING IN TANK (VAPOR ZONE) CAN BE DONE BY OPENING THE 1/2 NEEDLE VALVE CONNECTED TO THE PRESSURE GAUGE NOZZLE ON THE TANK DOME.

	Standard of fitting ?		:	YES 1	/2 NEEDLE
16.2	Same question for cargo		:	ТВА	
16.3	Are sample bottles available on board ?		:	NO	
17. C	ARGO LINES				
17.1	Is ship fitted with a port and starboard car	rgo manifold:	:	YES	
17.2	Position of cargo manifold				
	- bow to manifold no.1		:	44.00	Μ
	- bow to manifold no.2		:	46.50	Μ
	 bow to mid-point manifold 		:	45.30	Μ
	 stern to mid-point manifold 		:	53.70	Μ
	- main deck to center of manifold		:	0.90	Μ
	- main deck to top of rail		:	0.63	М
	- manifold to ship's rail		:	2.20	Μ
	- cargo manifold to cargo manifold		:	2.50	М
	- cargo manifold to vapour manifold		:	1.25	Μ
	- distance from ship side		:	2.40	Μ
17.3	Liquid line	- flange-size	:	6	Inch
		- Туре	:	150	MM ANSI 300
	Gas line	- flange-size	:	5	Inch
		- Туре	:	125	MM ANSI 300
17.4	What reducers on board ?				
	For liquid line (low temperature)	: 1 pc 6x8x300 / 2 pcs 6 1 pc 6x4x150	x5x300) / 2 pcs	6x4x300
	For vapour line (normal temperature)	: 1 pc 5x6x150 / 1 pc 5x	5x150	/ 1 nc 5	x4x150
		1 pc 5x4x300 / 1 pc 5x 1 pc 5x3x300			
175	Is ship fitted with stern discharge ?	NO			
17.5	- Liquid line - diameter	: N/A			
	- Flange - size	: N/A : N/A			
	- TYPE	: N/A : N/A			
		· • • • / / \			

18. HOSES	
Are serviceable hoses available on board	d? None
18.1 Length	:
Diameter	:
Flange-size	:
Туре	:
Bending radius	:
19.2 Minimum temperature accordule	
18.2 Minimum temperature accepable Maximum pressure acceptable	:
Maximum pressure acceptable	
18.3 For what products are hoses suitable	:
19. DERRICKS	
- Hose cranes - Where situated	: DAVIT ARM ONLY : NEAR MANIFOLD
	: PORT 2.0 TONS / STBD 0.9TON
- Lifting capacity - Working radius	: 2 METERS
	. Z METERS
20. SPECIAL FACILITIES	
20.1 How many grades can be segregated	: No segregation - only 2 grades can be carried

: N/A

: YES

20.2 How many cooled :

20.3 Can vessel sail with slack cargo tanks