

VESSEL PARTICULARS (FORM C)
GAS SIKOUSIS
(Last updated 28/05/2010)

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

(A) VESSEL'S CHARACTERISTICS

PREAMBLE

Name : **GAS SIKOUSIS**
Owner : **GASTECH INC.**
Flag : **MARSHALL ISLANDS**
Build : **NAIKAI ZOSEN CORPORATION INNOSHIMA SHIPYARD**
Date on Service : **25 May 2006**
Class : **100A1 Liquefied Gas Carrier, Ship type 2PG**
LPG, in independent tanks type C, Max SG 0.948
Maximum Vapour Pressure 16.96 Bar
Minimum Temperature 0deg C
LI LMC

GRT International : **3434** Suez : **3929.78 T**
Panama : **NA**

NRT International : **1031** Suez : **2920.59**
Panama : **NA**

Is vessel build according to USCG regulations? : **NA**
RINA regulations? : **NA**
Japanese regulation? : **NA**

Has vessel received USCG approval? : **NA**
RINA approval? : **NA**

HULL

LOA : **95.3 M**
LBP : **88.3 M**
Breadth : **16.5 M**
Depth : **7.25 M**
Summer Draft : **5.50 M corresponding to Summer DWT = 4002 T**
Multiple Draft : **NA M corresponding to Multiple DWT = NA**
Lightship : **2091.19 MTS**

Estimated draft with full cargo and full bunkers are as follows.

Product	Draft Fore' (m)	Draft Aft' (m)	Draft Mean (m)	Corresponding Deadweight (t)
Butane (98%)	3.40	5.57	4.49	2,722
Butadiene (98%)	9.86	5.65	4.76	3,067
VCM (56%)	5.01	5.92	5.48	3,980

Propeller immersion :

At draft At 5.00 m correspond. : **119.5 %**
At draft At 5.25 m correspond. : **125 %**
At draft At 5.50 m correspond. : **131 %**

COMMUNICATION EQUIPMENT

Call letter : V7ME6
Radio Station normally watched : YES
Radio MF/HF NBDP : YES , FURUNO FS-2570
Radio MF/HFTEL/DSC : YES , AS ABOVE
VHF : YES , FURUNO
Satellite Communication **Inmarsat 'C'** : TLX 453832632
Inmarsat 'FLEET' : TEL : +870-764-893-634
: FAX : +870-764-893-636
E mail : gassikousis@pcpublic.bjles.net

MACHINERY

Main Engine x 1

- Type and make : SINGLE ACTING, 4 STROKE, TRUNK PISTON TYPE, DIRECT REVERSIBLE MARINE DIESEL ENGINE WITH TURBO CHARGER AND AIR COOLER.
AKASAKA DIESEL LIMITED
- Service power : MCR :2,647Kw(3,600PS) x 240min¹
- No of Cylinders : 6
- Cyl Bore x Stroke : 410 mm X 800 mm
- Grade of fuel used : IFO 380 CST

Auxiliaries

- Type and make (Electrical) : SINGLE ACTING, 4 STROKE TRUNK PISTON TYPE NON REVERSIBLE MARINE DIESEL ENGINE WITH TURBO CHARGER AND AIR COOLER
YANMAR CO.,LTD./6NY16L-SN
- (Mechanical) : 400 KW
- Grade of fuel used : MGO
- No off : 02 SETS

Emergency Gen

- Type : MITZUI ZOSEN MACHINERY & SERVICE, INC. F3L912
- No off : 01 SET

Bow Thruster

- Type : Power: : KAMOME PROPELLER CO., LTD. TCB-55MA
204KW/ 273HP

Boiler

- Type : NA
- Evaporation : NA
- Max Design Pressure : NA
- Feed Water Temp : NA
- No off : NA

Exhaust Economiser

- Type : NA
- Evaporation : NA
- No off : NA

Air Compressors (Main)	Type / Capacity No off	SANWA IRON WORKS MODEL: 3S20A PRESSURE 2.94 MPA 02 SETS
Air Compressors (Emergency)	Type No off	MODEL: S5A 01 SET
Fuel Oil Purifier	Type No off Capacity	MITSUBISHI KAKOKI KAISHA, LTD: SJ10G 02 1300 L/H
Lub Oil Purifier	Type No off Capacity	MITSUBISHI KAKOKI KAISHA, LTD: SJ30G 01 3600 L/H
Evaporator	Type Capacity	NA NA
Fresh Water Sterilizer	Type Capacity	HARIZON CO. LTD. MODEL: L43714 NA
Fresh Water Mineraliser	Type / Capacity	NA
Waste Oil Incinerator (IMO MEPC 76 (40))	Type Capacity	MIURA PROTEC. CO. LTD. MODEL:BGW 20N 24.3 L/h , WASTE OIL
Oily Water Separator	Type Capacity	HEISHIN PUMP WORKS CO. LTD.: HSF-200 2.0 m3 / h
Sewage Treatment plant	Type Capacity	TAIKO KIKAI INDUSTRIES CO. LTD. 4m3/h
Hot Water Set (Calorifier unit)	No off	01 SET
Steering Gear	Type Duty Capacity Hydraulic pump unit	TOKIMEC: SP-W12-100S(PL56) WORKING PRESSURE : 17 MPA 02 SETS

**Speed
UP TO BEAUFORT SCALE 4, DOUGLAS SEA 3
About: 12.7 KTS**

CONSUMPTION/ DAY

		AT SEA	AT PORT
Main Engine	HFO	ABOUT 10.3 MT	NIL
Auxiliary Engine	DO	1.36 MT AT SEA	IDLE/LOADING 1.24MT/DAY DISCH 1.76T/DAY

Permanent bunker
capacity (100%)

HFO : 450 M3
MGO : 140 M3
Fresh Water : 272 MT

(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	1793	1757.1		
NO.2 CARGO TANK	1793	1757.1		
TOTAL	3586	3514.2		
	SPSV (bar g)	Ref. Temp. (deg. C.)	Density at (Ref. Temp.)	Corresponding Quantity (MT)
Propane	17.65	45.0	0.459	1604
Propylene	17.65	45.0	0.470	1644
B/P Mixture	17.65	45.0	0.487	1702
I-Butane	17.65	45.0	0.526	1840
N-Butane	17.65	45.0	0.548	1916
Butylene	17.65	45.0	0.565	1976
Butadiene	17.65	45.0	0.588	2056
V.C.M.	17.65	45.0	0.872	3050
Isoprene	17.65	45.0	0.656	2294
Pentane	17.65	45.0	0.600	2098
Pentene	17.65	45.0	0.611	2136

Note: Mixing ratio of above mentioned B/P mixture is as Butane 35 wt% and Propane 65 wt%.

2. Other transportable products N/A

	SPSV	Ref. Temp. (°C.)	Density at Ref. Temp.	Corresponding Quantity (MT)
Raffinate 1				
Raffinate 2				
C4				

3. TANKS

- 3.1 Design pressure (Vapour) – BV-IGC : 17.65 bar g (1.77 MPag)
- USCG : 12.75 bar g (1.27 MPag)
- 3.2 Valve setting : 17.65 bar g (1.77 MPag) / 12.75 bar g
- 3.3 Maximum vacuum obtainable : 0 bar g
- 3.5 Maximum temperature acceptable : 45 °C
- 3.6 Minimum temperature acceptable : 0 °C
- 3.7 Hydrostatic Test Pressure : 27.0 bar g (2.66 MPag)

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

- Ex-atmospheric storage with gas : 1 tank : 320 m3 / h
Return : 2 tanks : 570 m3/ h

Remarks:

* Based on maximum velocity of 5.0 metres/sec in the liquid pipings.

* If cargo temperature is less than 0 °C, then cargo heater to be used with sea water capacity of 420 m3/h

* Loading shall be performed with Shore pump only.

* Gas Return shall be of proper size.

* Subject to both the vessel's tanks and shore tanks under favourable condition.

5. CARGO PUMPS

5.1	Type	:	VERTICAL CENTRIFUGAL MULTI-STAGE ELECTRIC MOTOR DRIVEN DEEPWELL PUMP
	Make	:	NIIGATA WORTHINGTON CO.,LTD.
	How many	:	02
	Maximum specific gravity	:	0.948
5.2	Capacity (CMB/Hour)	:	300 m3/h X 120 m (SG 0.601) 250 m3/h X 128 m (SG 0.948)
	Two speed or variable speed	:	Single speed
	Rated kW (each)	:	120 kw
	Working pressure maximum	:	22 Bar g
5.3	Location	:	CARGO TANK TOP, 1 PUMP EACH CARGO TANK
	Removable	:	NOT
5.4	Booster pumps	:	NA
	Type	:	NA
	Maker	:	NA
5.5	Capacity (CMB/Hour)	:	NA
	Working pressure	:	NA
5.6	Location	:	NA
5.7	Time to discharge a full liquid cargo using all pumps against back pressure at pump	:	
	1 bar	:	about 07 hours for LPG
	5 bars	:	about 14 hours for LPG
	10 bars	:	-----
5.8	Nominal back pressure when working	:	about 5 bar
	In series corresponding head	:	N/A
	Maximum back pressure	:	about 10 bar
	Nominal pressure	:	about 1 bar when pump running
5.9	What amount of cargo remains in tanks after completion pumping before stripping:	:	
	- liquid	:	NIL
	- vapour	:	about 10 MT per one tank for LPG

6. STRIPPING

6.1	Stripping system, if any	:	Nil
6.2	Time required to remove all traces of liquid cargo as stated in 5.9 for:	:	
	- LPG	:	NA

7. CARGO COMPRESSORS

7.1	Type	:	VERTICAL WATER COOLED 1 STAGE DOUBLE ACTING OIL LESS TYPE
	Make	:	TANABE PNEUMATIC MACHINERY CO. LTD
	How many	:	02 SETS
	Piston displacement	:	460 m3/h

Rated Kw	75 KW
Stroke	177.8 mm
Max discharge pressure	20 Bar g
Pressure differential	Normal 4.0 Bar / Maximum 7.0 Bar at single action
No of Revolutions	540 rpm
7.2	Are compressors oil free : YES
7.3	Can they reliquefy VCM without risk : No, they can compress VCM vapour but can not Reliquefy it.
7.4	State time to bring full cargo of butane to atmospheric pressure from :

8. INERT GAS SYSTEM

8.1 Does the vessel use inert gas? : NO
If so, state utilization and quantities :

8.2 Can the vessel produce inert gas? : NO
If so, state type and composition of gas produce:

Discharge Capacity NA

8.3 Maximum production obtainable NA

NOTE:- Above quantities obtained at engine room temperature 45° C
8.4 State if there are storage facilities for inert gas onboard: N/A
- Size : N/A
- Pressure : N/A

8.5 State if any shore supply of nitrogen may be required: : NO
- for what purpose : N/A
- what quantities : N/A

9. GAS FREEING

9.1 State method used giving all details : N2 supplied from shore

9.2 State time required including stripping : 36 hours

10. CHANGING GRADE

10.1 From completion discharge of cargo Propane, time required in hours and inert gas in CBM required to reach a tank and gas installation atmosphere of less than 100 ppm of Propane in Vapour phase.
Time required: ABOUT 48 HRS / N2 7,172 m3 per tank.

10.2 Can this operation be carried out at sea? : NO N2 OR IG PLANT FITTED

10.3 Can the ship measure the number of ppm in vapour phase? : NO

10.4 Has vessel deck tank for changing grade/cooling operations? : NO

10.5 Deck tanks : **NIL**
Capacity : **NA**
Purpose : **NA**

11. COOLING BEFORE LOADING : **NA**

12. CARGO HEATER

12.1 Type : **SHELL & TUBE**
12.2 Inside Diameter **650 mm**
12.3 Overall length **6000 mm**
12.4 Cargo flow rate **150 m3/ h (Propane)**
12.5 Min Inlet Temp **-48 deg. C**
12.6 Min Outlet Temp **0 deg. C**
12.7 Required Sea water Capacity **420 m3/ h with 16 deg C**
12.8 Design Pressure **20.0 Bar**
12.9 Hydrostatic Test Pressure **30.0 Bar**
12.10 Tightness Test Pressure **20.0 Bar**

12.0 State discharging rate for propane to be brought from atmospheric pressure:
Loading rate for Propane – **45 ° C up to not less than 0° C: about 150 m3/hr : (as per manual)**

13. CARGO VAPORIZER

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

No

14. REFRIGERATING APPARATUS : **NA**

14.1 Is it independent of cargo? : **NA**
Is so, state cooling agents : **NA**

14.2 What minimum temperature can be maintained : **NA**

14.3 What time required at sea to lower by 1°C the full cargo of : **NA**

15. MEASURING APPARATUS

What gauges on board? **Float type level gauge**
Type : **M-LMZ/M-LDI , intrinsically safe type**
Location : **At each cargo tank dome**
Back-up : **Slip Tube type Level Gauge**
Type **SG-3UB**
Location : **Two per one cargo tank, at dome**

16. SAMPLES

16.1 State how tank atmosphere samples can be taken and where from?
From slip tubes at tank dome.

Standard of fitting? : **NO**

16.2 Same question for cargo : **BY SAMPLING LINE , WITH STANDARD FITTING**

16.3 Are sample bottles available on board? : **NO**

17. CARGO LINES

17.1 Is ship fitted with a port and starboard cargo manifold? : **Yes**

17.2 Position of cargo manifold

- distance from stern (AP) (S / P)	:	52.9	M
- distance form stem (FP) (S / P)	:	42.4	M
- height above deck	:	0.90	m for Liquid manifold
- distance from ship's rail	:	2.15	M
- underside keel to manifold	:	8.15	M

17.3 Liquid line

- flange-size	:	8 inch.
- type	:	300 ANSI 300 lb

Gas line

- flange-size	:	5 inch.
- type	:	150 ANSI 300 lb

17.4 What reducers on board? :

For Liquid line (low temperature)

8" ANSI 300 lb x 6" ANSI 300 lb - 01 SET

8" ANSI 300 lb x 5" ANSI 300 lb - 01 SET

8" ANSI 300 lb x 4" ANSI 300 lb - 01 SET

8" ANSI 300 lb x 3" ANSI 300 lb - 01 SET

8" ANSI 300 lb x 8" JIS 20K - 01 SET

8" ANSI 300 lb x 6" JIS 20K - 01 SET

8" ANSI 300 lb x 4" JIS 20K - 01 SET

8" ANSI 300 lb x 8" ANSI 150lb - 01 SET

8" ANSI 300 lb x 6" ANSI 150lb - 01 SET

For Vapor line (normal temp.)

5" ANSI 300 lb x 8" ANSI 300 lb - 01 SET

5" ANSI 300 lb x 6" ANSI 300 lb - 01 SET

5" ANSI 300 lb x 4" ANSI 300 lb - 01 SET

5" ANSI 300 lb x 3" ANSI 300 lb - 01 SET

5" ANSI 300 lb x 6" ANSI 150 lb - 01 SET

5" ANSI 300 lb x 3" ANSI 150 lb - 01 SET

5" ANSI 300 lb x 3" JIS 20K - 01 SET

5" ANSI 300 lb x 4" JIS 10K - 01 SET

5" ANSI 300 lb x 3" JIS 10K - 01 SET

17.5 Is ship fitted with stern discharge? **No**

- Liquid line - diameter	:	N/A
- flange – size	:	N/A
- type	:	N/A

18. HOSES

Are serviceable hoses available on board? : **None**

18.1 :

Length	:	NA
Diameter	:	NA
Flange-size	:	NA
Type	:	NA
Bending radius	:	NA

18.2 Minimum temperature acceptable : **NA**
Maximum pressure acceptable : **NA**

18.3 For what products are hoses suitable? : **NA**

19. DERRICKS

- Hose cranes : **01**
- Where situated : **CENTRE BETWEEN 1 & 2 CARGO TKS.**
- Lifting capacity : **4.0 T**
- Working radius : **3.3 – 12.0 m**

20. SPECIAL FACILITIES

20.1 How many grades can be segregated? : **NO SEGREGATION CAPABILITY**

20.2 How many cooled? : **N/A**

20.3 Can vessel sail with slack cargo tanks? : **Yes**