

**GAS FORM C****Main particulars****2.1 PREAMBLE**

Ship's name	BW PINE
Owners	BW VLGC Limited Clarendon House, 2 Church Street, Hamilton, HM11, Bermuda
Flag – Registry	Isle of Man
Builder	Kawasaki Shipbuilding Corporation, Sakaide Japan
Delivery	31/03/2011
Class	Lloyd's Register
Class notation	Liquefied Gas Tanker, Ship Type 2G, Maximum Vapour Pressure 0.025 Mpa, Minimum Temperature -46 deg C, Design Ambient Temperature 5 deg C, IWS, LI UMS, SCM, RMC (LG)
IMO No.	9479929

GRT/NRT	
International	45812 / 13744
Suez	48033.72 / 42936.58
Panama	N/A

2.2 HULL

	Meters	Feet
LOA	226.00	741.47
LBP	222.00	728.35
Breadth	37.20	122.05
Depth	21.00	68.90
Keel to highest point	48.634	159.56

Max summer draft	11.234 meters	Corresponding deadweight	53028
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TPC fully loaded	72.2 @ 11.234 meters summer draft
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Mean draft with full bunkers and full cargo		
Specific Gravity	Mean draft	Corresponding DW
Butane 0.610	11.14 meters	53010
Propane 0.585	10.62 meters	48915



Communication equipment	
International call sign	2GXL2
Radio station	JRC NCU 331 GMDSS Communications Console
Satcom B	N/A
- Telephone	Inmarsat FBB phone: +870 773 909 664 Iridium phone: +8816 777 35756 Vsat phone: +47 8150 3097 / +65 3158 6470 Vsat phone: +65 3158 2987 / +47 8150 3146
- Telex	Inmarsat C: 423593752
- Telefax	(+)870 783 154 458
Satcom C	423593752
Cell phone	+47 9026 0699 only in port
MMSI	235101305
E-mail	pine@bwfleet.com

2.3 MACHINERY

Main Engine	
Kawasaki Man & B&W 7S60MC-C7	
Max Cont.	14,000 kW @ 94 RPM (18770 SHP)
Grade fuel used	IFO 380

Auxiliaries	
Diesel	3 x Type 8N21L-GV
Make	Yanmar
kW/RPM	3 x 1065 / 720 RPM
Grade fuel used	IFO 380 / MDO

Speed/Consumption*	
Guaranteed average loaded/ballast speed over 12 months	
Average consumption on Main Engine guaranteed speed	
Average consumption on auxiliaries	

*) Above based on 50/50 propane/butane and max force 5 Beaufort

Slow speed/consumption figures as guidance only	
Average loaded/ballast	Consumption
10 knots loaded	
10 knots ballast	

Average consumption in port	
Inert gas plant when operating	
Boiler consumption	

Permanent bunkers capacity (Excl. daily service tanks)		
HFO	2916.2 m ³ (100%)	2577.8 mt @ 90%
MDO	226.6 m ³ (100%)	175.2 mt @ 90%
GAS OIL	71.1 m ³ (100%)	54.4 mt @ 90%



2.4 CARGO INSTALLATION

Transportable products and respective quantities								
Tank No.	100 % m ³	98 % m ³	Butane 0.60 -2°C mt	Propane 0.58 -41.5°C mt				
1	15525.301	15214.795	9099	8793				
2	19883.738	19486.063	11654	11287				
3	19887.510	19489.760	11656	11289				
4	24859.919	24362.720	14570	14111				
Total	80156.468	78553.338	46978	45398				
Decktank capacity				N/A				
Transportable products and respective quantities								
<i>Other transportable products:</i>								

Scantlings of the cargo tanks are based on a maximum density of cargo of 605 kg/ m³.
Scantling draft is based on full cargo with a density of 605 kg/ m³.

Tank working pressure	
Maximum pressure	0.250 bar at sea
Minimum pressure	0.02 bar
Harbour condition	0.500 bar
Minimum temperature acceptable in tanks	- 46 °C

Loading rate - tons/hour	Loading rate without vapour return to shore when tanks are fully pre-cooled and the cargo is fully refrigerated. Butane = 2928 mt/hr, Propane = 2808 mt/hr
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2.5 CARGO PUMPS

Number and type	8 x centrifugal single-stage submerged 600 m ³ /hr at 100 mlc / Shinko SM 200
Location	In tanks
Max permissible specific gravity	0.61
Time for discharging full cargo using all pumps against no backpressure	Abt. 21 hrs
Cargo remaining onboard in cargo tanks after completion pumping	Abt. 201 mt
Total head when working in series with booster pump	190 mlc (SG = 0.61)
Booster pumps	1 x 500 m ³ /hr at 100 mlc Shinko Centrifugal HLA 200 – 3M



Number and type	4 x Burckhardt Compression 2K 160-2F1 (2-Stage Piston, Oil-Free)
Capacity	1070 m ³ /hr per unit

	Propane	Butane
Refrigeration Capacity	708,000 kcal/h or 2960 Mj/hr	960,000 kcal/h or 4000 Mj/hr
Suction pressure	0.1 bar	0.1 bar
Suction temperature	- 20 °C	10 °C

2.7 INERT GAS SYSTEM

Does the vessel use inert gas?	Yes
Utilization	Inerting & Gas Freeing of Cargo Tanks and Hold Spaces.

Does the vessel produce inert gas?	Yes
Type	Smit Gas GIN 5000-025 BUFD
Daily production	5000 m ³ /hr, 0.26 bar

Composition of inert gas	
Carbon dioxide	14%
Oxygen max.	0.05%
Carbon monoxide max.	<1000 ppm
Hydrogen max.	-
Nitrogen	Balance
Soot	0 Bach
Sulphur oxides max.	<50 ppm
Dewpoint	-10 °C

State if any shore supply of liquid nitrogen may be required	
No	
What quantity?	

2.8 GAS FREEING

Can this operation be carried out at sea?	Yes
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State method incl. all details	
For LPG	Boil Off Yes
	Inerting Yes
	Ventilating for Entry Yes
For NH₃	N/A

Advise time required and consumption of inert gas if any	
From LPG approximately	Abt. 48 hrs, 201,000 m ³
From NH₃ approximately	N/A

Is the vessel equipped with inert gas blower?	Yes
Capacity	5000 m ³ /hr

Ventilation fan	1 x 20000 m ³ /hr
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**2.9 CHANGING GRADE**

Can this operation be carried out at sea?	Yes. Changing from Propane to Butane and vice versa
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State method used and time required for changing from NH₃ to LPG and vice versa, to reach 50 ppm of previous cargo in tanks atmosphere, the tanks being dry and free of moisture (dewpoint plus 10 °C)

From NH₃ to LPG	N/A
Time required	

From LPG to NH₃	N/A
Time required	

Can vessel reduce in tank atmosphere and gas installation concentration of previous cargo below 50 ppm?	N/A
Method used, time required and extra shore supply if any	N/A
How can it be checked that no liquid gas remain onboard	By temperature sensor in the pump sump

2.10 CARGO HEATER

State discharging rate for propane with 2.5 mol % ethane to be brought from -42 °C to 0 °C at sea temperature of 15 °C	500 m ³ /hr
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2.11 CARGO VAPORIZER

In case of need of vapour gas during discharge, can vessel produce its own if no shore gas available?	Yes
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2.12 REFRIGERATING APPARATUS

Is it independent of cargo?	Yes
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2.13 MEASURING APPARATUS

What gauges onboard	Musasino M-LMZ
Location and type	2 in each tank (1 each side) / Magnetic Float Type
Number of temperature sensors/gauges pr tank	9 in total (4 each side + 1 in tank dome)
Number of pressure sensors/gauges pr tank	2 in each tank (1 each side)



Where can samples be taken?	By sample valve at each cargo pump discharge and at manifold
Are sample bottles available onboard?	Yes

2.15 CARGO LINES

(See also last page of this gas form C)

Is vessel fitted with midship manifolds	Yes
Distance from cargo manifold to bow	113.330 m
Distance from manifold to stern	112.570 m
Height cargo manifold above main deck	1.480 m
Height cargo manifold above waterline when in ballast	16.445
Height cargo manifold above waterline when loaded	11.246 m
Distance from shipside to manifold flange	3.800 m
Distance between loading and vapour return connections	2.400 m
Windage area in normal ballast condition	Lateral = 4534 m ²
Is vessel fitted with SPM chainstopper suitable for 76 mm chain.	Yes
Is vessel fitted with cruciform bollards/fairleads/padeyes in manifold area	Yes

Dimension of lines		
	Diameter	Flange size
Liquid	400A	16" ANSI 150 / 300
Gas Line	300A	12" ANSI 150
Booster Line	400A	16" ANSI 300
Fuel Oil Line	200A	8"
Diesel Oil Line	100A	4"

What reducers onboard			
Number	Diameter	Length	Pressure rating
2	16" - 12"	600 mm	300 x 150
2	16" - 12"	590 mm	150 x 150
4	12" - 8"	590 mm	150 x 150
1	16" - 12"	605 mm	300 x 300
2	12" - 14"	590 mm	150 x 150
2	12" - 12"	590 mm	150 x 150
1	12" - 10"	605 mm	300 x 300
2	12" - 10"	590 mm	150 x 150
2	12" - 8"	590 mm	150 x 150
2	10" - 8"	590 mm	150 x 150
1	12" - 8"	605 mm	300 x 300
2	10" - 14"	600 mm	300 x 300
1	12" - 8"	215 mm	150 x 300
1	10" - 8"	370 mm	150 x 150
1	12" - 8"	495 mm	150 x 150
1	8" - 8"	495 mm	150 x 150



2.16 **LIFTING DEVICE**

LPG/C “BW PINE”

Where situated	Aft	Amidship
Number and type	2 x Electric motor driven	1x Electro-hydraulic, single deck crane
Lifting capacity	Provision Crane Port = SWL 5T & Provision Crane Stbd. = SWL 1.5T	Hose Handling Crane SWL = 5T
Max. distance from ship's side of lifting hook	Port 5.500 mtrs / Stbd = 8.500 mtrs	5.900 mtrs

2.17 **HOSES**

For what products are hoses suitable	N/A
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Number	Length	Diameter	Working pressure	Flange

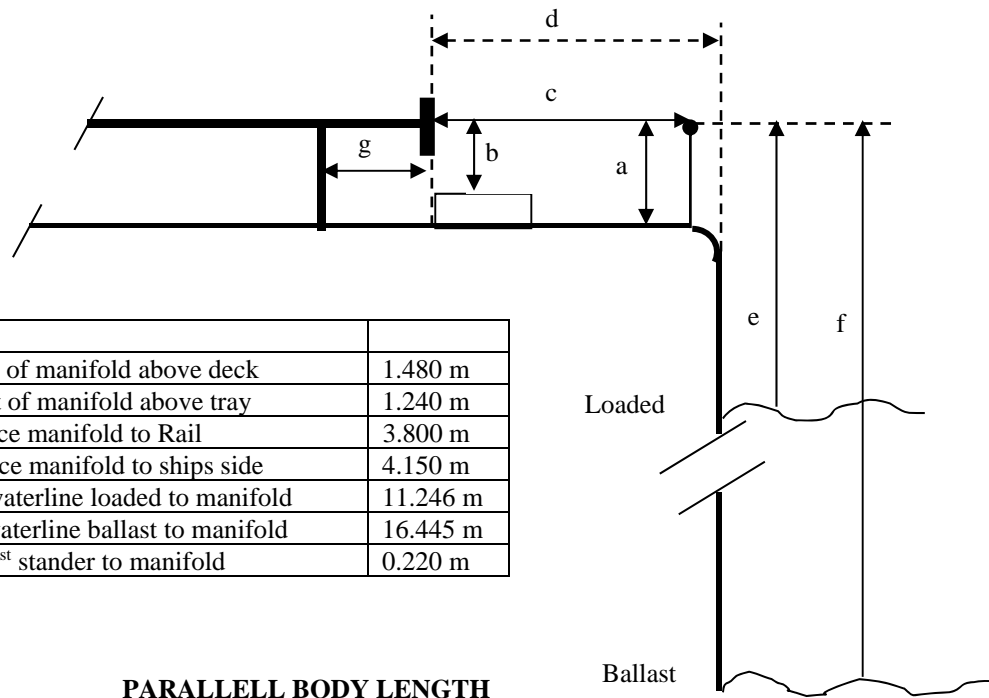
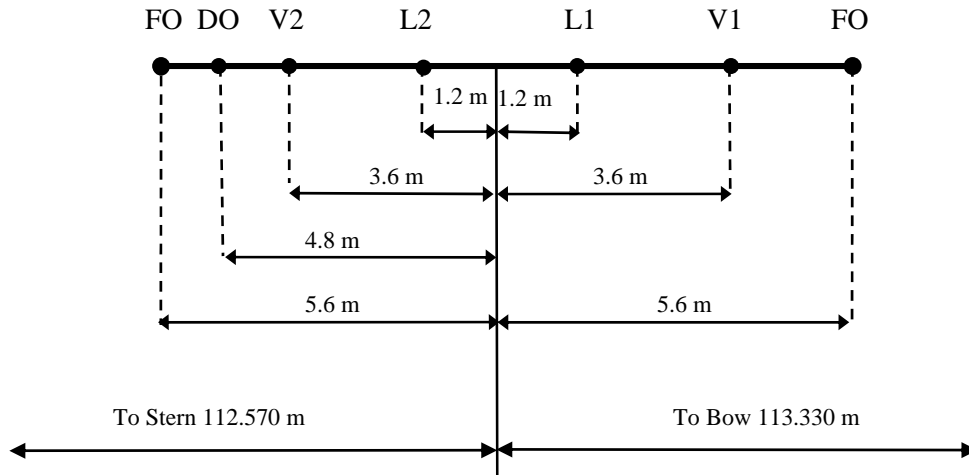
2.18 **SPECIAL FACILITIES**

How many grades can vessel segregate?	2
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Indicate systems	Any combination depending on safe stress, stability, draft & trim restrictions. Double valve segregation on liquid systems. Single valve on vapour systems.
Is vessel able to load/discharge two or more grades simultaneously?	Yes. Two (2) grades
Can vessel sail with slack tanks?	Yes. Depending on safe stress, stability, draft & trim.
Is vessel fitted with purge tank?	No



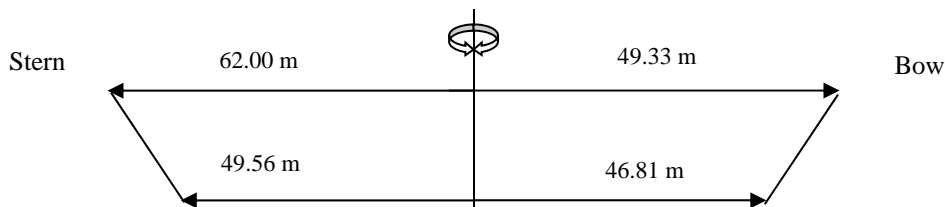
ARRANGEMENT OF CARGO MANIFOLD



a) Height of manifold above deck	1.480 m
b) Height of manifold above tray	1.240 m
c) Distance manifold to Rail	3.800 m
d) Distance manifold to ships side	4.150 m
e) Dist. waterline loaded to manifold	11.246 m
f) Dist. waterline ballast to manifold	16.445 m
g) Dist. 1 st stander to manifold	0.220 m

PARALLELL BODY LENGTH

LOADED CONDITION



BALLASTED CONDITION