

GAS FORM C
(BW Yushi)

MAIN PARTICULARS OF VESSELS/GAS FORM C

2.1 PREAMBLE

Verified: Date: 13-Feb-2020

Date Updated: 13-Feb-2020

Ship's name	BW YUSHI		
Owners	Grace Ocean Private Limited		
Flag – Registry	Singapore		
Builder	Mitsubishi Shipbuilding Co., Ltd.		
Delivery	13 Feb 2020		
Class	Nippon Kaiji Kyokai		
IMO No.	9810044		
GRT/NRT:			
International	GRT: 48122 T / NRT: 14437 T		
Suez	GRT: 50216.25 T // NRT: 44914.97 T		
Panama	39678 Tonne		
Is vessel approved?			
USCG	Yes		
IMO	Yes		

2.2 HULL

	Metres		Feet	
LOA	230.0		754.59	
LBP	219.0		718.50	
Breadth	36.60		120.08	
Depth	21.65		71.03	
Keel to highest point	46.67		153.12	
Max summer draft(equivalent)	11.575m(ext.)	Corresponding deadweight (mt)	54,823	
TPC fully loaded(mt)	71.0 tonne / cm at scantling draft			
Mean draft with full bunkers and full cargo				
Specific Gravity	Mean draft (m)		Corresponding DW(mt)	
1.025	11.39		53,758	

Communication Equipment

International call sign	9V5836
Radio station	563101300
Satcom FBB	+870 773281375
- Telephone (VSAT)	+65 3165 7120
- Telex	+65 3165 7121
Satcom C Telex	456603139
MMSI	563101300

E-mail	BWYushi@synergyship.com ;
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2.3 MACHINERY

Main Engine		
MAN Energy Solutions 7S60ME-C8.5		
Max Cont.	13000@100 RPM (MCR) and 11700@96.5 RPM (NCR)	
Grade fuel used	IFO 380 CST	
Auxiliaries		
Diesel	6EY22ALW	
Make	YANMAR	
kW/RPM	1370kW x 900RPM	
Grade fuel used	IFO 380 CST	
Speed/Consumption *)		
Guaranteed loaded speed over 12 months	16.6 Knots	
Consumption on guaranteed speed at design draft	Main Engine	
	Auxiliaries	
Permanent bunkers capacity (Excl. daily service tanks):		
HFO (100%)	3,335.5 m3	
GAS OIL (100% Full)	353.5 m3	
GAS OIL for an Inert gas generator	-	

2.4 CARGO INSTALLATION

Transportable products and respective quantities							
Tank No.	100 % m ³	98 % m ³	Propane at 0.58 -46°C mt	Butane 0.61 at -5°C mt			
1 (P)	9,644.823	9451.927	5,482	5,766			
1 (S)	9,644.823	9451.927	5,482	5,766			
2 (P)	10,981.730	10762.144	6,242	6,564			
2 (S)	10,981.730	10762.144	6,242	6,564			
3 (P)	10,983.037	10763.376	6,243	6,565			
3 (S)	10,983.037	10763.376	6,243	6,565			
4 (P)	10,048.129	9847.166	5,712	6,008			
4 (S)	10,048.129	9847.166	5,712	6,008			
Total	83,315.438	81649.128	47,358	49,806			
<i>Other transportable products: Butane/Propane Mixture, Commercial Propane (max. 5 mole% ethane in liquid phase)</i>							
Scantlings of the cargo tanks are based on a maximum density of cargo of 610 kg/m3.							
Tank working pressure							
Maximum pressure: MARVS – Sea: 0.28 Barg, Harbour: 0.57 Barg, Berth: 0.69 Barg							
Minimum pressure: -0.02 Bar							
Minimum temperature acceptable in tanks: -50 Deg Celsius							

Loading rate - tons/hour: 2550 MT/Hr – Using 8 Cargo pump and both Manifold line (At cargo density in standard atmosphere pressure) 0.5900

2.5 CARGO PUMPS

Number and type	1 each half tank (2 pumps in each tank) & Submersible Type
Location	Cargo Tank-Each Half
Max permissible specific gravity	0.6100
Time for discharging full cargo using all pumps against no backpressure	20 Hrs
Cargo remaining onboard in cargo tanks after completion pumping	About 400 MT – Coolant
Total head when working in series with booster pump	250 Meter;
Booster pumps	2 X 550 m ³ /Hr, Delivery Head : 150 Meter

2.6 CARGO COMPRESSORS

Make	Burckhardt	
Number and type	3K160-3K / 3 sets	
	C. Propane (max. 5 mole% ethane in the liquid phase)	Ammonia
Refrigeration Capacity	368kW / set	NA
Suction pressure	1.21 Bar A	NA

2.7 INERT GAS SYSTEM

Does the vessel use inert gas?	Yes
Utilization	For Inerting of Cargo Tanks & Hold space.
Does the vessel produce inert gas?	Yes
Type	GIN 3000-0.3 BUFD
Daily production	72,000 Nm ³ / day (3,000 Nm ³ /h)
Composition of inert gas	
Carbon dioxide	Approx. 13 vol %
Oxygen max.	1 vol %
Carbon monoxide max.	Max. 1000 ppm
Hydrogen max.	-
Nitrogen	Balance
Soot	-
Sulphur oxides max.	Normal 10 ppm

Dew point	Less than -10 deg.C
State if any shore supply of liquid nitrogen may be required - No	
For Purging Loading / Discharging Arms	
What quantity?	NA

2.8 GAS FREEING

Can this operation be carried out at sea?	Yes
State method incl. all details	
For LPG	<ol style="list-style-type: none"> 1. Start Inert gas generator. 2. Connect flexible hoses between inert gas main and ventilation line connection at each tank dome.
For LPG	<ol style="list-style-type: none"> 3. When IGG is running satisfactory, and producing gas with O₂ content of 0.5% - 1.5% by volume and a dew point of less than -10 °C, gradually admit the inert gas to top of cargo tank via ventilation line. 4. The admission of inert gas will begin to increase the tank pressure, which should then be maintained near atmospheric pressure by starting one or more cargo compressors or venting to atmosphere. 5. Continue inerting until the cargo vapour content is below 2% and also check the temperature of the tank atmosphere is at least 0 °C. 6. After the tanks have been inerted it will be necessary to inert all the remaining cargo piping systems and equipment. This is best accomplished by pressurising one or more cargo tanks to approximately 0.2 barg. 7. On completion of inerting, ventilation to be done using gas free fan.
For NH ₃	Not Applicable
Advise time required and consumption of inert gas if any ***does not include liquid freeing, ***	
From LPG approximately	36 Hrs for Inerting // 107900 m ³ of IG
From NH ₃ approximately	NA
Is the vessel equipped with inert gas blower?	Yes
Capacity	3000 m ³ /Hr
Ventilation fan	IGG Blower is used for ventilation

2.9 CHANGING GRADE

Can this operation be carried out at sea?	Yes
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State method used and time required for changing from NH ₃ to LPG and vice versa, to reach 50 ppm of previous cargo in tanks atmosphere, the tanks being dry and free of moisture (dew point plus 10 degrees C)	
From NH ₃ to LPG	NA
Time required	NA

From LPG to NH ₃	NA
Time required	NA
Can vessel reduce in tank atmosphere and gas installation concentration of previous cargo below 50 ppm?	NA
How can it be checked that no liquid gas remains onboard	Observation of cargo tank skin temperature at sump. Gas detection using sampling tube in cargo tanks at 0%, 50%, 100% levels.

2.10 CARGO HEATER

State discharging rate for propane to be brought from -42oC to 0oC at sea temperature of 15oC	550 m ³ /Hr About 320 MT/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?	No
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2.13 MEASURING APPARATUS

What gauges onboard	Level gauge, float type
Location and type	Cargo Tank, Make: Musashino Company Limited, Float Type

2.14 SAMPLES

Where can samples be taken?	Cargo tank hatch and Deck tank top
What is the location of sampling point	Top, Middle, Bottom for cargo tanks
Are sample bottles available on board?	No

2.15 CARGO LINES

(See also last page of this gas form C)

Is vessel fitted with midship manifolds	Yes
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Distance from cargo manifold to bow		115.5 Meter
Distance from manifold to stern		114.5 Meter
Height cargo manifold above deck		1770 mm
Height cargo manifold above waterline when in ballast		16561 mm
Height cargo manifold above waterline when loaded (at propane)		12161 mm
Distance from shipside to manifold flange		4000 mm
Distance between loading and vapour return connections		2250 mm
Is vessel fitted with stern discharge		No
Is vessel fitted with fore discharge		No
Dimension of lines		
	Diameter	Flange size
Liquid	16"	12" X 150 ASA
Gas Line	10"	08" X 150 ASA
Booster Line	16"	16" X 300 ASA - & Reducers as per shore connection requirement
What reducers onboard		
Number	Diameter	Pressure rating
Number Diameter Pressure rating:		
<u>300 ANSI TO 150 ANSI:</u>		
16" 300 ANSI X 16"X150 ANSI: 02 Nos		
16" 300 ANSI X 12"X150 ANSI: 06 Nos (Fixed)		
16" 300 ANSI X 10"X150 ANSI: 02 Nos		
16" 300 ANSI X 08"X150 ANSI: 02 Nos		
16" 300 ANSI X 06"X150 ANSI: 02 Nos		
<u>300 ANSI TO 300 ANSI:</u>		
16" 300 ANSI X 16"X300 ANSI: 02 Nos		
16" 300 ANSI X 12"X300 ANSI: 02 Nos		
16" 300 ANSI X 10"X300 ANSI: 02 Nos		
<u>150 ANSI TO 150 ANSI:</u>		
10" 150 ANSI X 12"X150 ANSI: 02 Nos		
10" 150 ANSI X 10"X150 ANSI: 02 Nos		
10" 150 ANSI X 08"X150 ANSI: 06 Nos (Fixed)		
10" 150 ANSI X 06"X150 ANSI: 02 Nos		

2.16 LIFTING DEVICE

Where situated	Aft	Amidship
Number and type	Provision Crane: Stbd: 1 X 5.0 T, Port: 1 X 0.9 Tonne	Hose Handling Crane
Lifting capacity	Stbd: 5.0 Tonne, Port : 0.9 Tonne	10 Tonne, When transferring personnel : 01 Tonne
Max. distance from ship's side of lifting hook when outboard	Stbd: 3.3 m, Port: 1.5 m	4.60 m

2.17 HOSES

For what products are hoses suitable		N/A		
Number	Length	Diameter	Working pressure	Flange
None				

2.18 SPECIAL FACILITIES

How many grades can vessel segregate?	2 Grade
Indicate systems	System-1 & System-2, all 16 combinations: PPPP, BBBB, BPPP, PBPP, PPBP, PPPB, PBBB, BPBB, BBPB, BBBP, PPBB, PBPB, BPBP, BBPP, BPPB, PBBP
Is vessel able to load/discharge two or more grades simultaneously?	Two Grade Simultaneously
Can vessel sail with slack tanks?	Yes
Is vessel fitted with purge tank?	No