



PETROVIETNAM GAS JOINT STOCK CORPORATION
PV GAS PROJECT MANAGEMENT COMPANY

PROJECT

PV GAS THI VAI LPG STORAGE TANKS PROJECT

PACKAGE

ENGINEERING, PROCUREMENT AND CONSTRUCTION (EPC)

**MECHANICAL DATASHEET FOR FIRE
WATER TANK**

PV GAS PMC

PTSC

0	05/04/23	Issued for Approval	TD.Hung	DT.Trung	NT.Son	NK.Dung		
A	24/02/23	Issued for review	TD.Hung	DT.Trung	NT.Son	NK.Dung		
Rev.	Date	Description	Prepared	Checked	Reviewed	PM	Reviewed	Checked
			PTSC				PV GAS PMC	



Document Number:

231375-03-DAS-002

**PETROVIETNAM TECHNICAL SERVICES
CORPORATION**

Number of pages: 5 pages
(Including cover sheet)

COMMENTS RESPONSE SHEET (CRS)

Drawing / Document Number, Title and Revision:

Transmittal Document Purpose:

Doc. No.	231375-03-DAS-002	Title:	Mechanical Datasheet for Fire Water Tank	Comment	Status
Rev. No.	A			Code	
Transmittal No.:	231375-08-COM-028			2	Approved with comment

No.	Comments	Confirmation / Explanation by Contractor
1	Size unit should be changed to NPS (inch)	- Noted and Incorporated
2	Should be separated into 02 water outlet nozzles	- As per current design, 2 fire water tank link together by 26 inch pipe. So it is considered one big tank and have 2 outlet nozzle already.
3	Change text Bold	- Noted and Incorporated
4	PTSC shall re-add the Water Drawoff Sump as per the requirements at FS DS and API 650	- Noted and Incorporated
5	PTSC to confirm/specify in accordance with the calculations.	- Noted and Incorporated
6	Please clarify the difference type with FS (self-support type) and confirm whether center column is added.	- As discussed, 1 centre column shall be added.
7	Add the note: "Drain nozzle (N8) is placed on drawoff sump wall under tank bottom"	- Noted and Incorporated
8	PTSC to provide Wall thickness calculation for Fire Water Tanks for reviewing.	Tank calculation shall be provided as vendor data part, and submit to Owner for reviewed / approved.

MECHANICAL DATASHEET FOR FIRE WATER TANK

1	Tag No. :	FT-8801A/B	Client:	PETROVIETNAM GAS CORPORATION
2	Service:	Fire Water	Plant Location:	THI VAI, BA RIA-VUNG TAU, VIETNAM
3	P & ID No. :	231375-01-PID-003	Manufacturer:	
4	Calculation Ref. :		Purchase Order No. :	
5	No. of Units:	Two (02)		
6	Service Description:	Fire Water Tank		
7	DESIGN INFORMATION			
8	Tank Capacity: Maximum:	3969 m ³	Net Working:	~3632 m ³
9	Overfill Protection:		mm	
10	Filling Rate:	151 m ³ /h	Emptying Rate:	2304 m ³ /h
11	Maximum Operating Temperature:	ATM °C	Operating / Design Pressure:	ATM Full Water kPag
12	Product Stored:	Fire Water	Design S.G.:	0.996 @ 17 °C
13	Design Metal Temperature:	65 °C	Vapour Pressure:	kPag @ °C
14	Design Basis:	☒ Standard API 650		
15		☐ Appendix A - Small Tanks		
16		☐ Appendix F - Small Internal Pressure	Pressure:	kPag Vacuum: kPag
17		☐ Appendix J - Shop Fabrication		
18		☐ Appendix K - Method for Large Tanks		
19	Roof Design:	☒ Basic Standard API 650	☐ Aluminium Dome (Appendix G)	
20		☐ Internal Floating (Appendix H)	☐ External Floating (Appendix C)	
21		☐ Frangible Roof Joint	☐ Other	
22	Roof Type:	☒ Cone ☐ Dome ☐ Floating ☐ Other		
23	Roof Support:	☐ Self Supporting ☒ Structural Support		
24	Cone Roof Slope:	1:16		
25	Roof Loads:	Uniform Live Load: 1 kPa	Insulation Load:	None kPa
26		Special Loads: kPa (provide sketch)		
27		Maximum Design Roof Temperature: 65 °C		
28		Gases in Vapour Space:		
29		Maximum Rainfall: mm/h	Snow Load:	None kg/m ²
30	Wind Load:	Velocity: 38 m/s (3-sec gust)	☒ Intermediate Wind Girder (Per Code)	
31	Earthquake Design:	☒ Yes (Appendix E) ☐ No		
32		Peak Ground Acceleration: 0.042	Zone Factor (Table E-2):	2.4
33		Importance Factor: 1.25	Site Coefficient (Table E-3):	D
34		☐ Roof Tie Rods		
35	Foundation Type:	☐ Earth ☒ Concrete Ringwall ☐ Stone Ringwall ☐ Concrete Pad ☐ Other		
36				
37	NOTES			
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3	P & ID No. : 231375-01-PID-003		Manufacturer:	
4	Calculation Ref. :		Purchase Order No.	
5	No. of Units: Two (02)			
6	Service Description: Fire Water Tank			
7	CONSTRUCTION DETAILS			
8	Tank Size: ID x Height: 17.5 x 17.0 m			
9	Number of Shell Courses: 9 *			
10				
11	Shell Course No.	Fab. Thickness (mm)	Corrosion Allowance (mm)	Material Specification
12				
13	1st	15 *	3	ASTM A36
14	2nd	14 *	3	ASTM A36
15	3rd	13 *	3	ASTM A36
16	4th	12 *	3	ASTM A36
17	5th	10 *	3	ASTM A36
18	6th	8 *	3	ASTM A36
19	7th	8 *	3	ASTM A36
20	8th	8 *	3	ASTM A36
21	9th	8 *	3	ASTM A36
22				
23	Item	Fab. Thickness (mm)	Corrosion Allowance (mm)	Material Specification
24				
25	Bottom Plate	9 *	3	ASTM A36
26	Annular Plate	Not Required *	3	ASTM A36
27	Roof	7 *	1.5	ASTM A36
28	Roof Framing	(NOTE 6)	1.5 (EACH SIDE)	ASTM A36
29	Columns	Note 7	3	ASTM A106 Gr.B
30	Nozzles on Shell		3	ASTM A106 Gr.B
31	Nozzles on Roof		3	ASTM A106 Gr.B
32	Flanges		3	ASTM A105 (Except manways)
33	Bolting			ASTM A 193 B7 / ASTM A 194 Grade 2H
34				
35	Tank Bottom: Seams: ☒ Lap ☐ Butt		Slope: ☐ To ☒ From Center	
36	Annular Plate: Minimum Width: Per Code mm		Minimum Thickness: Per Code mm	
37	Roof-to-Shell Detail: *		Top Angle Turned: ☐ In ☒ Out	
38	Roof Plate: Seams: ☒ Lap ☐ Butt			
39	Stress Relieving: ☐ Yes ☐ No ☒ As per Code			
40	Floating Roof Seals: ☐ Metallic ☐ Foam ☐ Wiper ☐ Secondary Seals			
41				
42	Coating System	Interior	Exterior	
43	Bottom	Per Project Specification (NOTE 2)	None	
44	Shell			
45	Roof		Per Project Specification (NOTE 2)	
46	Roof Framing			
47	Structural			
48				
49	Exterior Conditions: ☐ Mild ☒ Normal ☐ Severe ☐ Coastal ☐ Other Tropical Coastal Marine Environment			
50	Insulation: Thickness: Shell N/A mm		Roof N/A mm	
51	Type:			
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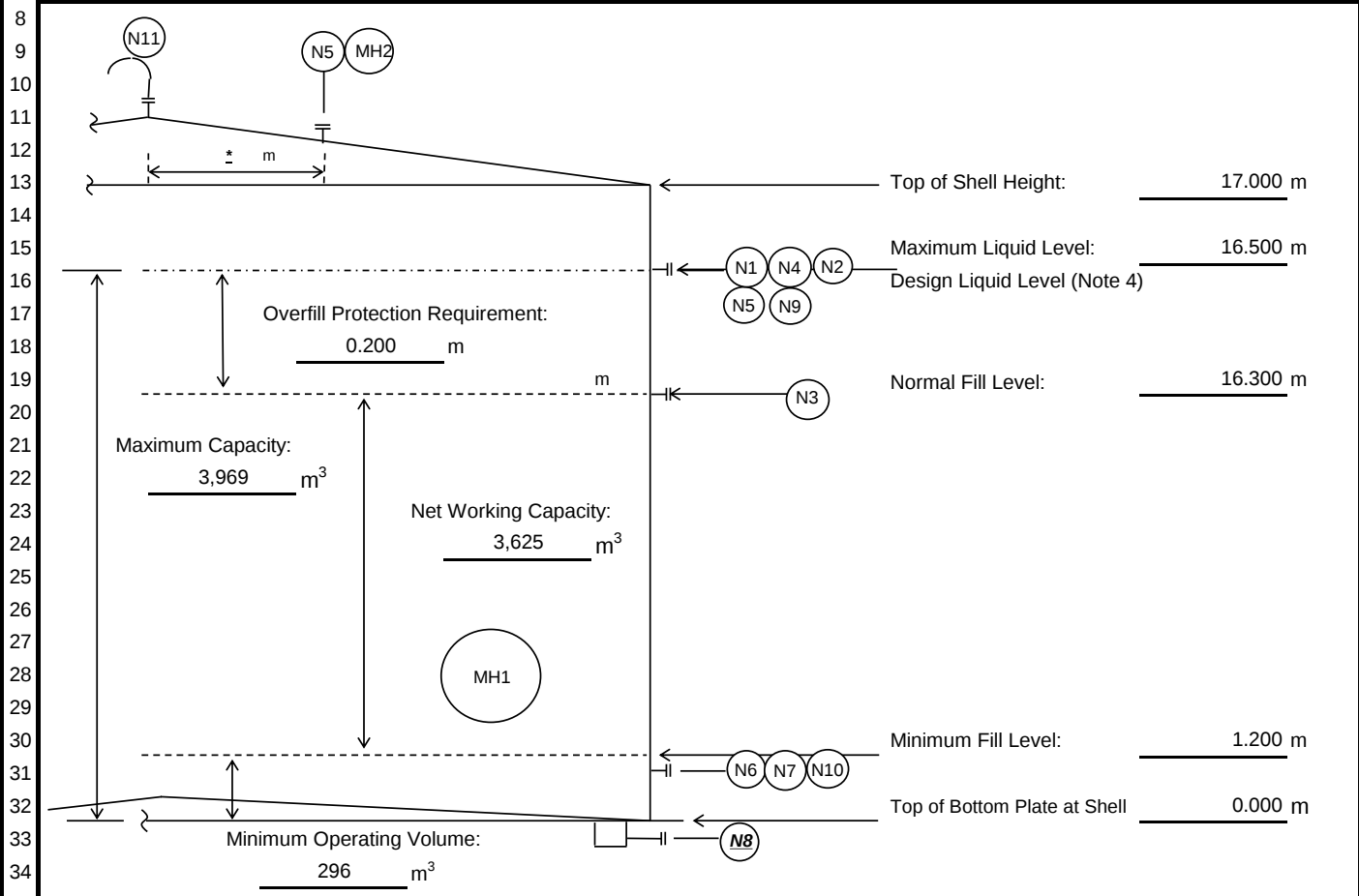
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4	Calculation Ref. :	Purchase Order No.						
5	No. of Units: Two (02)							
6	Service Description: Fire Water Tank							
7	APPURTENANCES							
8	Access: Stairway: ☒ Circular ☐ Straight ☐ Ladder Angle to Horizontal <u>Max. 45</u> °							
9	Roof Handrail ☒ Full Peripheral ☐ Local to Top of Stair Extent: _____ m Either side of Stair Top							
10	Walkway: Width: <u>Min. 750</u> mm Length <u>Min. 1</u> m							
11	☐ Top Wind Girder for Use as Walkway							
12	Stairs, Ladders, Handrails: ☒ Painted <u>Except stair treads and platform decking shall be hot dipped galvanized</u>							
13	☒ Galvanised ☐ Other _____							
14	Drawoff Sump: Diameter _____ Per Code _____ mm Location: ☐ Center ☒ Perimeter							
15	Bolted Door Sheet: ☐ Yes ☐ No (Appendix A Tanks ONLY) ☐ Raised ☐ Flush							
16	Scaffold Hitch: _____							
17	Internal Piping: Swing Line: _____ Suction Line: _____							
18	Heating Coil: ☐ Yes ☒ No Surface Area: _____ m ²							
19								
20	NOZZLE SCHEDULE							
21	Shell and Bottom							
22	Nozzle Mark	Number	Size (Inch)	Connection Type	Orient. N = 0°	Height (m)	Service	Remarks
23	N1	1	6	150# RF		16.500	Water Inlet	
24	N2	1	6	150# RF		16.500	Water Inlet	Float Valve Connection
25	N3	1	3	150# RF		*	Level Indicator/Trans.	
26	N4	1	16	150# RF		16.500	Pump Recirculation	
27	N6	1	24	150# RF		1.100	Water Outlet	
28	N7	1	6	150# RF		Min.	Fire Department Con.	
29	N8	1	4	150# RF		Min.	Drain	
30	N9	1	12	150# RF		16.500	Over Flow Line	
31	N10	1	26	150# RF		Min.	Tank Transfer	
32	MH1	1	24	API 650		0.900	Shell Manway	c/w Davit
33	Roof							
34	Nozzle Mark	Number	Size (NPS)	Connection Type	Orient. N = 0°	Radius (m)	Service	Remarks
35	N11	1	18	150# RF		Centre	Vent	c/w Bird Screen
36	N5	1	(*)	150# RF		*	Gauge Hatch	c/w Gauge Hatch Cover
37	MH2	1	24	API 650		*	Roof Manway	c/w Davit
38								
39								
40								
41								
42	INSPECTION AND TESTING							
43	Inspection By: ☒ Shop: <u>Shop fabricated sub-assemblies</u> ☒ Field: <u>Field erection and final assembly work</u>							
44	Weld Examination: ☒ Radiography: <u>Per Code</u>							
45	☒ Dye Penetrant: <u>Per Code</u> ☐ Ultrasonic: _____							
46	Leak Testing: ☒ Bottom: <u>Vacuum Test</u> ☐ Roof: _____							
47	☒ Shell: <u>Hydrostatic Test (Full Water)</u> ☒ Reinf. Pads <u>Pneumatic Test</u>							
48	Mill Test Reports: ☒ Yes ☐ No							
49	☒ Plate: <u>per Code & Specs</u> ☒ Structural Shapes: <u>per Code & Specs</u>							
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6	Service Description:	Fire Water Tank		

DIAGRAM



NOTES (cont.)

- (*) Denotes VENDOR to advise / confirm.
- Tank to be internal epoxy lined in accordance with project specification [231375-09-SPE-001](#).
- Vent size to be the larger of that required by API 2000 and NFPA 22 (Cross Sectional area equal to a minimum of one half the area of discharge pipe(s) or fill pipe whichever is larger). A corrosion resistant screen of 10mm mesh shall be provided to exclude birds and small animals. The gross open area of the mesh shall be at least equal to the area of the vent nozzle. The weather hood, if vent not of the swan neck type, shall be readily removeable.
- Tank design liquid level to be taken as centreline of overflow nozzle.
- Tank shall be design, fabricated, and tested in accordance with Specification for Atmospheric Storage Tank (Do. No. 231375-03-SPE-002).
- The cone roof is structural-support type with internal rafter is required.
- One centre column shall be added for the tank shell support.
- Drain nozzle (N8) is placed on drawoff sump wall under tank bottom