



CORRIGENDUM #1 DATED 06/06/2019

SUPPLY OF KNOCKOUT DRUM

Tender No :AGCL/BD/PMC-GHT/KOD/2019/08

Dated: 15/05/2019



Sl. No.	Clause No.	Page No.	Description	Amendment/ Addition/ Modification/ Deletion	Details
1	7.6	9	Bid Submission date and time : 06/06/2019 till 1430 HRS. IST at VCS"s office	Amendment	Bid Submission date and time : 13/06/2019 till 1430 HRS. IST on E-tendering website of Assam Government (http://www.assamtenders.gov.in)
2	7.7	9	Un-Priced bid opening date : 06/06/2019 at 1500 HRS. IST at VCS"s office Time	Amendment	Un-Priced bid opening date : 13/06/2019 at 1500 HRS. IST on E-tendering website of Assam Government (http://www.assamtenders.gov.in)
2	Technical specification,3.1	34 of 148	PROCESS DATA SHEET OF KOD FOR NAMBAR	Amendment	Please refer Annexure-01

ANNEXURE-01



ENERGISING QUALITY

VCS Quality Services Pvt. Ltd. (PMC)
VCS Project Consultants Pvt Ltd (Engg.)

PROJECT NUMBER : 1009



Client Job Number 1009

Total Sheets 4




**PROCESS DATA SHEET FOR KOD
AT NAMBAR GGS**

Document no.	1009	NA	PC	PDS	1001
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Assam Gas Company Ltd.

NAMBAR –GOLAGHAT– NUMALIGARH AREA GAS PIPELINE PROJECT

REV	DATE	DESCRIPTION	PREP	CHKD	APPR
D1	03.04.2019	Issued For Design	VK	CSn	CSn
C1	11.03.2019	Issued For Client Review	VK	CSn	CSn

VCS Project Consultants Pvt Ltd Offices 707 & 708, Tower 1, Assotech Business Cresterra, Sec 135, Expressway, Noida 201301		PROCESS DATA SHEET FOR KOD AT NAMBAR GGS		PAGE	2 OF 4
				SHEET	1 OF 3
OWNER: Assam Gas Company Ltd.			CONTRACT No.: VCS-1009		
CLIENT: Assam Gas Company Ltd.			DOCUMENT No.: 1009-NA-PC-PDS-1001		
PROJECT: Nambur-Golaghat-Numaligarh Area Gas Pipeline Project			ITEM No.: 1009-NA-KOD-1001		
AREA: Nambur GGS			DESCRIPTION: Knock Out Drum		
GENERAL	Location	Nambur GGS		Orientation	Vertical
	Top head/End type as appl.	{ 2:1 Semi Ellipsoidal (Note-10) }		Support method	-
	Bottom head as appl.	2:1 Semi Ellipsoidal 		Petroleum Class	Zone-1,Gr. IIA /IIB, T3
	Joint efficiency/Radiography	1/100%		Design code	ASME Section - VIII, DIV I
	Insulation type/thickness	-		Ext. fire	-
	Surface treatment, external	Suitable Paint		P&ID Ref.	1009-NA-PC-PID-1001
FLUID DATA		Units	Space I	Space II	Space III
	Space Name	-	Vessel		
	Liquid handled	-	HC liquid + Water		
	Vapour space medium	-	HC Gas (Note-1)		
	Corrosive/Erosive due to	-	CO2 & Water		
	Solids content	-	-		
CAPACITY & BREATHING	Flammable/Explosive/Toxic	-	Yes/Yes/No		
	Nominal volume required	m ³	0.116 (Note-2)		
	Degree of filling or Ullage	%	-		
	Gross Volume	m ³	1.4		
	Heating/cooling area	-	-		
	Dimension sketch ref. (ID X T/T)	-	Refer Sheet 3 of 3		
OPERATING CONDITIONS	Thermal in-/out breathing 	-	-		
	Pump in-/out rate	-	-		
	Op. pressure, max., @ temp.	kg/cm ² g	2.5 @ 20 - 40°C		
	Op. pressure, norm. @ temp.	kg/cm ² g	-		
	Op. pressure, min./vac., @ temp.	kg/cm ² g	1.5 @ 20 - 40°C		
	Abnormal condition note ref.	-	-		
DESIGN & CONSTRUCTION DATA	Process description note ref.	-	-		
	Design press./vac. @ TOP & AT	kg/cm ² g	19 / FV		
	Design temperature	° C	-29 / 65		
	Relief valve case(s)	-	Fire Case		
	Relief valve set pr. @ temp.	kg/cm ² g	19		
	Test pressure @ temp.	-	-		
FLUID PROPERTIES	Spl.process test/heat treatm.	-	-		
	Basic MOC & Corr.Allow.	-	CS, 3mm		
	Surface treatment, internal	-	By Vendor		
	Int. lining type, thickness	-	-		
	Liquid Density @ ref.P,T...	Kg/m ³	625 - 1011		
	Liq. Viscosity @ ref.P,T...	cP	0.22 - 1.00		
OPERATING CONDITIONS	Gas Molecular Weight	-	21.11 - 21.83 		
	Gas Compressibility @ref.P,T	-	0.9854 - 0.9919		
Process Description, Internals/Externals required : details or ref.docs.				Sketch	
This KOD is used to separate HC liquid + Water expected to be coming along with Natural operation.				REFER SHEET 3 OF 3	
HC : Hydrocarbon, CD :Continuous Drainer, HLL/LLL : High / Low Liquid level					
No.	Nozzle Description	Size/Length	Rating/Pipe class		
N1	Gas Inlet	8"	150#/15HC		
N2	Gas Outlet	8"	150#/15HC		
N3	Closed Drain Connection	2"	150#/15HC		
N4	Utility Connection	2"	150#/15HC		
N5,N6	Level Instrument Stand Pipe	2",2"	150#/15HC		
N7	Gas return from CD	2"	150#/15HC		
N8	Pressure Guage	2"	150#/15HC		
N9	Pressure Safety Valve	2"	150#/15HC		
N10	Spare Connection	2"	150#/15HC		
Notes					
1. For Hydrocarbon Gas composition refer sheet 2 of 3					
2. Liquid hold-up value is in between Low (LLL) liquid level to High (HLL) liquid level.					
3. Hydrocarbon liquid residence time shall be 15 minutes for liquid phase on maximum flow between LLL to HLL					
4. Vapor flow rate = 2331 Kg/hr (max), Liquid flow rate = 76.81 Kg/hr (max) (Note - 6)					
REV	REVISION DESCRIPTION	DATE	PREPD	CHKD	APPD
D1	Issued For Design	03.04.2019	VK	CSn	CSn
C1	Issued For Client Review	11.03.2019	VK	CSn	CSn

OWNER: Assam Gas Company Ltd.	PROJECT: Nambar-Golaghat-Numaligarh Area Gas Pipeline Project
CLIENT: Assam Gas Company Ltd.	AREA: Nambar GGS
DOCUMENT No.: 1009-NA-PC-PDS-1001	ITEM No.: 1009-NA-KOD-1001
	CONTRACT NO.: VCS-1009
	DESCRIPTION: Knock Out Drum

INLET GAS COMPOSITION

Overall Inlet Composition	Max water Case	Max Condensate Case
Constituent	Mole fraction	Mole fraction
Methane	0.7815	0.8103
Ethane	0.0760	0.0788
Propane	0.0460	0.0477
i-Butane	0.0079	0.0082
n-Butane	0.0151	0.0156
i-Pentane	0.0061	0.0063
n-Pentane	0.0038	0.0040
CO2	0.0037	0.0039
Nitrogen	0.0017	0.0018
n-Hexane	0.0131	0.0233
H2O	0.0450	0.0000

Notes

5. KOD internals shall be designed by vendor to meet separator performance guarantee. The separator shall be provided with mix Extractor, Vortex Breaker and half open pipe as minimum.
6. When liquid Flow is 76.81 kg/hr, vapour flow will be 2254 kg/hr.
When liquid Flow is 31.47 kg/hr, vapour flow will be 2300 kg/hr.
7. Vendor shall provide the sizing calculation & Pr. Drop details across KOD.
8. KOD shall be designed for all operation scenarios :
 - a. High Pressure High Temperature (HPHT)
 - b. High Pressure Low Temperature (HPHT)
 - c. Low Pressure High Temperature (HPHT)
 - d. Low Pressure Low Temperature (HPHT)
9. KOD shall be designed to achieve performance criteria as : 99% removal of particles of 10 microns & above.
10. Suitable arrangement / cover shall be made available for removal of demister during maintenance.



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PROJECT: Nambar-Golaghat-Numaligarh Area Gas Pipeline Project

CLIENT: Assam Gas Company Ltd.

AREA: Nambar GGS

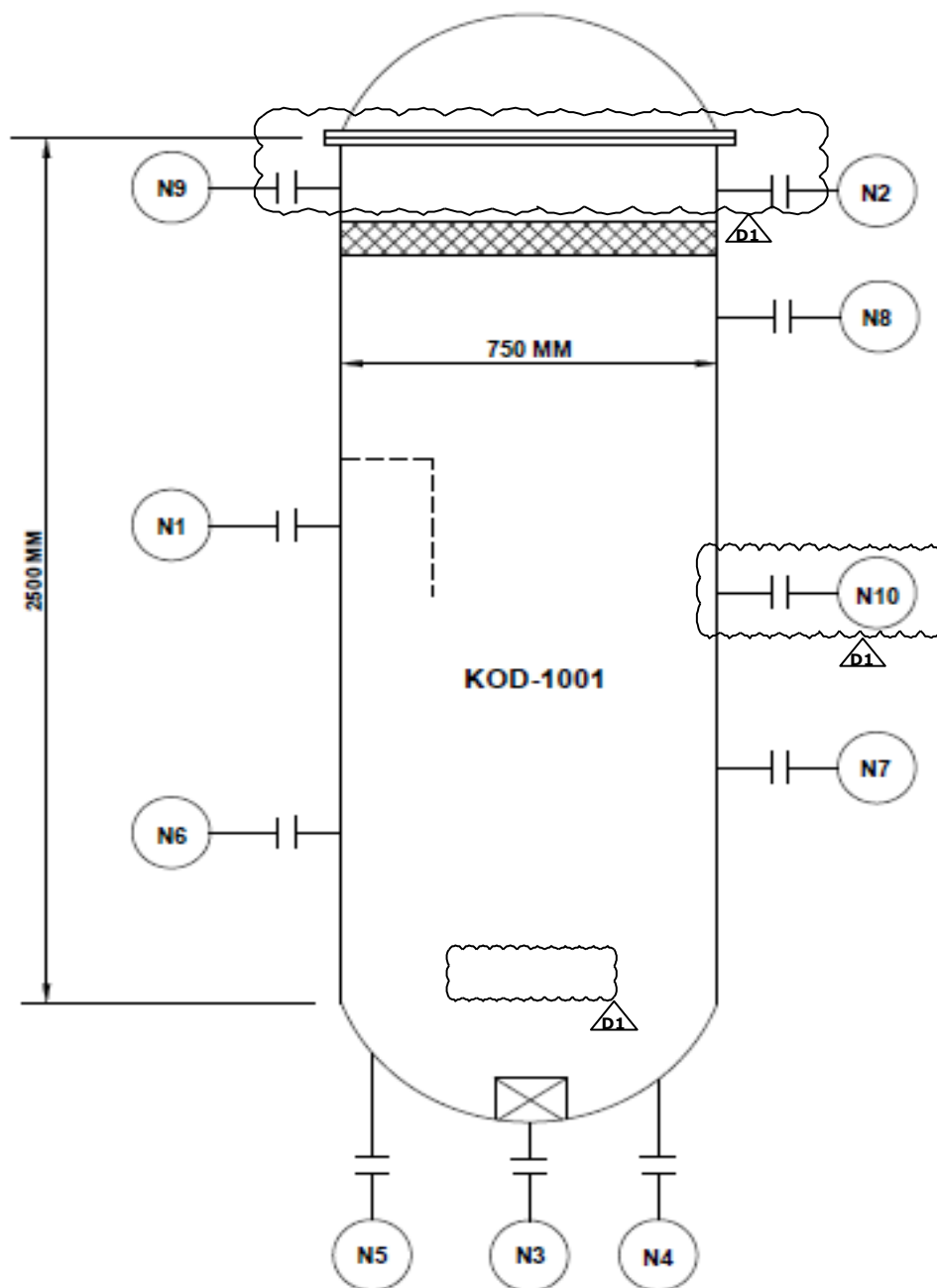
CONTRACT NO.: VCS-1009

DOCUMENT No.: 1009-NA-PC-PDS-1001

ITEM No.: 1009-NA-KOD-1001

DESCRIPTION: Knock Out Drum

Sketch



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