طرح نگهداشت و افزایش تولید 27 مخزن

DATA SHEET FOR ORIFICE PLATE / RESTRICTION ORIFICE

نگهداشت و افزایش تولید میدان نفتی بینک

D00	JUL.2022	IFC	P.Hajisadeghi	M.Fakharian	M.Mehrshad	
Rev.	**Date**	**Purpose of Issue / Status**	**Prepared by:**	**Checked by:**	**Approved by:**	**CLIENT Approval**

Class: 2 **CLIENT Doc. Number: F9Z-708934**

status:

IDC: Inter-Discipline Check

IFC: Issued For Comment

IFA: Issued For Approval

AFD: Approved For Design

AFC: Approved For Construction

AFP: Approved For Purchase

AFQ: Approved For Quotation

IFI: Issued For Information

AB-R: As-Built for CLIENT Review

AB-A: As-Built –Approved

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک DATA SHEET FOR ORIFICE PLATE / RESTRICTION ORIFICE	

شماره پیمان:	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
053 - 073 – 9184	BK	GCS	PEDCO	120	IN	DT	0013	D00	شماره صفحه: 2 از 8

REVISION RECORD SHEET

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REFERENCE DOCUMENTS :

Specification For Instrumentation	BK-GNRAL-PEDCO-000-IN-SP-0001
Process Basis Of Design	BK-GNRAL-PEDCO-000-PR-DB-0001
Piping Material Specification	BK-GCS-PEDCO-120-PI-SP-0001
Symbol & Legend For PFD and P&ID	BK-GCS-PEDCO-120-PR-PI-0001
P&ID - Gas Compression Inlet Gas Pipeline (Binak)	BK-GCS-PEDCO-120-PR-PI-0002
P&ID - Gas Compression Inlet Gas Pipeline (Golkhari)	BK-GCS-PEDCO-120-PR-PI-0003
P&ID - Slug Catcher System	BK-GCS-PEDCO-120-PR-PI-0004
P&ID - Gas Compression Inlet Knock Out Drum	BK-GCS-PEDCO-120-PR-PI-0005
P&ID - 1st Stage Gas Compression Suction Drums	BK-GCS-PEDCO-120-PR-PI-0006
P&ID - 1st Stage Gas Compression Compressors	BK-GCS-PEDCO-120-PR-PI-0007
P&ID - 1st Stage Gas Compression Air Coolers	BK-GCS-PEDCO-120-PR-PI-0008
P&ID - 2nd Stage Gas Compression Suction Drums	BK-GCS-PEDCO-120-PR-PI-0009
P&ID - 2nd Stage Gas Compression Compressors	BK-GCS-PEDCO-120-PR-PI-0010
P&ID - 2nd Stage Gas Compression Air Coolers	BK-GCS-PEDCO-120-PR-PI-0011
P&ID - 2nd Stage Gas Compression Discharge Drum	BK-GCS-PEDCO-120-PR-PI-0012
P&ID - Gas Compression Dehydration Package	BK-GCS-PEDCO-120-PR-PI-0013
P&ID - Lean Glycol Storage Tank	BK-GCS-PEDCO-120-PR-PI-0014
P&ID - Instrument & Plant Air System	BK-GCS-PEDCO-120-PR-PI-0015
P&ID - Nitrogen Generation System	BK-GCS-PEDCO-120-PR-PI-0016
P&ID - Close Drain System	BK-GCS-PEDCO-120-PR-PI-0017
P&ID - Corrosion Inhibitor Package	BK-GCS-PEDCO-120-PR-PI-0018
P&ID - Methanol Injection Package	BK-GCS-PEDCO-120-PR-PI-0019
P&ID - LP Flare System	BK-GCS-PEDCO-120-PR-PI-0020
P&ID - Oily Water Sewer	BK-GCS-PEDCO-120-PR-PI-0021
P&ID - Fuel Gas System	BK-GCS-PEDCO-120-PR-PI-0022
P&ID - Diesel Oil System	BK-GCS-PEDCO-120-PR-PI-0023
P&ID - Potable Water System	BK-GCS-PEDCO-120-PR-PI-0024
P&ID - Glycol Sump Drum	BK-GCS-PEDCO-120-PR-PI-0025
P&ID - Fire Water Network	BK-GCS-PEDCO-120-SA-PI-0001
P&ID - Total Flooding System For Extension of Existing Elect. Building	BK-GCS-PEDCO-120-SA-PI-0002

GENERAL NOTES:

1. Orifice plate and restriction orifice plates shall be stamped with manufacturer's name, tag no., bore size, line size/rating, plate material , plate thickness and the word 'upstream' on the upstream side of the paddle.

2. Bore sizing shall be done as per the full scale flow rate.

3.The calculation for orifice plates shall be produced in accordance with ISO 5167.

4. Data sheets shall be submitted for approval by purchaser. The orifice bore diameter shall be as per vendor's approved calculations.

5. Vendor shall provide certificate of compliance to NACE MR-0175 requirement for the instrument supplied, wherever specified.

6. Beta ratio limits shall be 0.2 to 0.7 For some cases where there is constraint vendor can size for beta ratio of More than 0.7 but however the beta ratio shall not exceed 0.75 as per ISO 5167. The orifice plate thickness shall be As per manufacturer's standard, however as a minimum shall be to ISO 5167 requirements

7. Vendor shall supply the orifice plate assembly complete with flanges, gasket, bolt&nuts and jack screws. All orifice flanges shall be as per ANSI B16.5 and orifice plates shall be supplied suitable for the same. Wherever 'FF' flange facing is indicated, the orifice plates shall be suitable for mounting between the flat faced flanges.

8. Orifice bore shall not be beveled for the restriction orifice plates.

9. IPS-D-IN-103 regarding Orifice Plate Fabrication to be followed by vendor.

10. Max acceptable noise level for orifice and restriction orifice plate is 85 dbA in 1m.

11. Environmental condition for field instrumentation of Binak Oilfield shall be considered as per the followings:

Maximum ambient temperature: 50 (°C)
Minimum ambient temperature: 5 (°C)
Maximum steel surface exposed to sun: 85 (°C)
Maximum summer dry bulb: 50 (°C)
DB/RH for Summer HVAC Design: 41 °C / 61 %
DB FOR Winter HVAC Design: 6 °C

Relative Humidity:

- Maximum Design relative humidity (%): 100
- Minimum Design relative humidity (%): 0

FLOW ELEMENT (ORIFICE PLATE)					
GENERAL	1	Tag No.		SEE PAGE 6	
	2	P&ID No.	Service	SEE PAGE 6	SEE PAGE 6
	3	Line Size	Schedule	SEE PAGE 6	SEE PAGE 6
	4	Piping Class		SEE PAGE 6	
	5	Nace Requirements		SEE PAGE 6	
	6				
PROCESS CONDITION	7	Fluid	Phase	SEE PAGE 6	SEE PAGE 6
	8	Design Temperature	Operating Temperature (°C)	SEE PAGE 6	SEE PAGE 6
	9	Design Pressure	Operating Pressure (bar-g)	SEE PAGE 6	SEE PAGE 6
	10	Minimum Flow Rate	Normal Flow Rate (kg/h)	SEE PAGE 6	SEE PAGE 6
	11	Maximum Flow Rate (kg/h)		SEE PAGE 6	
	12	Density (kg/m3)	Molecular Weight	SEE PAGE 6	SEE PAGE 6
	13	Viscosity	Gas Compressibility Factor	SEE PAGE 6	SEE PAGE 6
	14	Limit On Pressure Drop Across Flowmeter (bar)		SEE PAGE 6	
	15	Cp / Cv	Allowable Press. Drop	SEE PAGE 6	SEE PAGE 6
	16	Liquid Vapor Pressure (bara)		SEE PAGE 6	
ORIFICE PLATE	17	Type	Sub Type	Sharp Edge Orifice	Concentric with Flange Tappings
	18	Material		316L S.S	
	19	Flow Full Scale	Diff. Pressure Range	SEE PAGE 6	SEE PAGE 6
	20	Construction Standard		EN ISO 5167	
	21	Plate Thickness		SEE PAGE 6	
	22	Bore Diameter		SEE PAGE 6	
	23	Beta Ratio (d/D)		SEE PAGE 6	
	24	Drain / Vent Hole		Note 2	
	25				
ORIFICE FLANGE	26	Flange Type		Weld Neck Flanged Tap	
	27	Flange Size		SEE PAGE 6	
	28	Flange Rating		SEE PAGE 6	
	29	Flange Facing		SEE PAGE 6	
	30	FlangeTapping Size		1/2" NPT	
	31	Flange Material		SEE PAGE 6	
	32	Gasket Material		Spiral Wound, Thick.4 mm ,SS316 Winding with Stainless Steel Inner and Outer Rings, Graphite Filler, RF(125-250 AARH), ASME B16.20	
PURCHASING DATA	33	Model	Manufacture	VTA	VTA
	34	Supplier	Order	VTA	VTA
	35				

NOTES :

1) VTA :Vendor To Advice VTC: VENDOR TO CONFIRM
2) A weep hole flush at the bottom of the orifice run to be used for Gas Services and for liquid services at top of the pipe to prevent a build-up of condensate. The hole size is 0.125 in and to be as per standard. (VTC)

NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح‌الارض احداث ردیف تراکم گاز در ایستگاه جمع آوري بينك DATA SHEET FOR ORIFICE PLATE / RESTRICTION ORIFICE								
شمارهٔ پیمان: 9184 – 073 - 053	BK	GCS	PEDCO	120	IN	DT	0013	D00	شماره صفحه: 6 از 8

FLOW ELEMENT (ORIFICE PLATE)

Rev.	Item No.	Tag No.	P&ID No.	Service	Line Size	Schedule	Piping Class	Nace	Fluid	Phase	Temperature (°C)		Pressure (barg)		Flow Rate (Kg/h)			Density (Kg/m3) (Mix./Liq./Ga)	Specific Gravity (Mix)	Molecular Weight(Kg/Kgmol)	Viscosity(CP) (Gas/Liquid)	Allowable Press. Drop (Mbar)	Gas Compressibility Factor	Cp / Cv	Liquid Vapor Pressure (barg)	Max. Diff. Pressure Range (mbarg)	Plate Thickness (mm) (VTC)	Bore Diameter (mm) (VTC)	Beta Ratio (d/D) (VTC)	Flange Size	Flange Rating/Facing	Flange Material	Remark
											Design	Operating	Design	Operating	Min.	Normal	Max.																
	1	FE-2101	BK-GCS-PEDCO-120-PR-PI-0002	Gas Compression Inlet Gas Pipeline (Binak)	6"	80	AN07	YES	GAS	G	85	46.11	9	5.5	-	6564	7220	6.66	0.2297	26.36	0.011	170.7	0.97	1.23	141.7	250	3.175	83.99	0.55	6"	300# , RF	ASTM A105	
	2	FE-2102	BK-GCS-PEDCO-120-PR-PI-0003	Gas Compression Inlet Gas Pipeline (Golkhari)	8"	60	AN07	YES	GAS	G	85	32	9	5.5	-	11269	12396	6.214	0.2143	23.57	0.011	170.7	0.973	1.26	182.7	250	3.175	112.02	0.55	8"	300# , RF	ASTM A105	
	3	FE-2111	BK-GCS-PEDCO-120-PR-PI-0004 (3 of 3)	Slug Catcher System	3"	40	CN05	YES	GAS	G	85	20.6	22	19.67	-	7160	7874	716	0.716	18.03	0.632	209.1	0.014	1.15	-0.22	250	3.175	27.70	0.36	3"	300# , RF	ASTM A105	
	4	FE-2271	BK-GCS-PEDCO-120-PR-PI-0022	Fuel Gas System	2"	160	AN07	YES	GAS	G	85	36.78	9	4.9	-	506	556	5.771	0.199	24.52	0.011	186.5	-	1.25	168.1	250	3.175	24.45	0.48	2"	300# , RF	ASTM A105	
	5	FE-2211	BK-GCS-PEDCO-120-PR-PI-0016	Nitrogen Header	2"	40	AN01	No	NIT	G	85	60	12.5	8	-	50	54	1.583	0.0546	28.02	0.01	231.3	0.99	1.4	-	250	3.175	0.21	10.65	2"	300# , RF	ASTM A106 Gr.B	

Note:
(1) HC:HYDROCARBONE , L: LIQUID , G: GAS , M: MIXED
(2) Vendor shall calculate the bore size & beta for 2 phase orifice plates.
(3) BLANK PLATE to be supplied. The bore shall be drilled later by others.
(4) Flange with 1/2" NPT tapping, gasket, bolts & nuts shall be supplied by instr. Vendor.
(5) No of holes per flange for orifice plates to be specified by vendor.

FLOW ELEMENT (ORIFICE PLATE)					
GENERAL	1	Tag No.		SEE PAGE 8	
	2	P&ID No.	Service	SEE PAGE 8	SEE PAGE 8
	3	Line Size	Schedule	SEE PAGE 8	SEE PAGE 8
	4	Piping Class		SEE PAGE 8	
	5	Nace Requirements		SEE PAGE 8	
	6				
PROCESS CONDITION	7	Fluid	Phase	SEE PAGE 8	SEE PAGE 8
	8	Design Temperature	Operating Temperature (°C)	SEE PAGE 8	SEE PAGE 8
	9	Design Pressure	Operating Pressure (bar-g)	SEE PAGE 8	SEE PAGE 8
	10	Minimum Flow Rate	Normal Flow Rate (kg/h)	SEE PAGE 8	SEE PAGE 8
	11	Maximum Flow Rate (kg/h)		SEE PAGE 8	
	12	Density (kg/m3)	Molecular Weight	SEE PAGE 8	SEE PAGE 8
	13	Viscosity	Gas Compressibility Factor	SEE PAGE 8	SEE PAGE 8
	14	Limit On Pressure Drop Across Flowmeter (bar)		SEE PAGE 8	
	15	Cp / Cv		SEE PAGE 8	
	16	Liquid Vapor Pressure (bara)		SEE PAGE 8	
ORIFICE PLATE	17	Type	Sub Type	Restriction Device	VTA
	18	Material		316L S.S	
	19	Flow Full Scale	Diff. Pressure Range	SEE PAGE 8	SEE PAGE 8
	20	Construction Standard		EN ISO 5167	
	21	Plate Thickness		VTA	
	22	Bore Diameter		SEE PAGE 8	
	23	Beta Ratio (d/D)		SEE PAGE 8	
	24	Drain / Vent Hole		-	
	25				
ORIFICE FLANGE	26	Flange Type		BY Piping	
	27	Flange Size		SEE PAGE 8	
	28	Flange Rating		SEE PAGE 8	
	29	Flange Facing		SEE PAGE 8	
	30	Flange Material		SEE PAGE 8	
	31	Gasket Material		Spiral Wound, Thick.4 mm ,SS316 Winding with Stainless Steel Inner and Outer Rings, Graphite Filler, RF(125-250 AARH), ASME B16.20	
	32				
PURCHASING DATA	33	Model	Manufacture	VTA	VTA
	34	Supplier	Order	VTA	VTA
	35				

NOTES : VTA :VENDOR TO ADVISE
VTC: VENDOR TO CONFIRM

NISOC	پروژه نگهداشت و افزایش تولید میدان نفتی منصوری بسته های کاری سطح الارض جمع آوري و تقويت فشار گازهاي همراه منصوري DATA SHEET FOR ORIFICE PLATE / RESTRICTION ORIFICE							
شماره پیمان: 9184 – 073 - 053	BK	GCS	PEDCO	120	IN	DT	0013	D00

FLOW ELEMENT (ORIFICE PLATE)

Rev.	Item No.	Tag No.	P&ID No.	Service	Line Size	Schedule	Piping Class	Nace	Fluid	Phase	Temperature (°C)		Pressure (barg)		Flow Rate (Kg/h)			Density (Kg/m3) (Mix./Liq./Ga)	Specific Gravity (Mix)	Molecular Weight(Kg/Kgmol)	Viscosity(CP) (Gas/Liquid)	Gas Compressibility Factor	Cp / Cv	Liquid Vapor Pressure (barg)	Max. Diff. Pressure Range (mbarg)	Plate Thickness (mm) (VTC)	Bore Diameter (mm) (VTC)	Beta Ratio (d/D) (VTC)	Flange Size	Flange Rating/Facing	Flange Material	Remark
											Design	Operating	Design	Operating	Min.	Normal	Max.															
	1	RO-2112	BK-GCS-PEDCO-120-PR-PI-0005	Gas Compression Inlet Knock Out Drum	2"	160	AN07	YES	GAS	G	85	36.92	9	5.3	-	250.7	-	5.47	0.1886	24.52	0.01	-	1.25	168.1	250	7.214	7.21	0.14	2"	300# , RF	ASTM A105	
	2	RO-2133A	BK-GCS-PEDCO-120-PR-PI-0011 (1 of 3)	2nd Stage Gas Compression Air Coolers	2"	40S	FS00	NO	GAS	G	85	60	62	54.1	-	1333.8	-	8.32	0.2869	24.52	0.011	-	1.26	168.1	250	6.741	6.74	0.13	2"	600# , RF	ASTM A182 GR.F316L	
	3	RO-2133B	BK-GCS-PEDCO-120-PR-PI-0011 (2 of 3)	2nd Stage Gas Compression Air Coolers	2"	40S	FS00	NO	GAS	G	85	60	62	54.1	-	1333.8	-	8.32	0.2869	24.52	0.011	-	1.26	168.1	250	6.741	6.74	0.13	2"	600# , RF	ASTM A182 GR.F316L	
	4	RO-2133C	BK-GCS-PEDCO-120-PR-PI-0011 (3 of 3)	2nd Stage Gas Compression Air Coolers	2"	40S	FS00	NO	GAS	G	85	60	62	54.1	-	1333.8	-	8.32	0.2869	24.52	0.011	-	1.26	168.1	250	6.741	6.74	0.13	2"	600# , RF	ASTM A182 GR.F316L	
	5	RO-2141	BK-GCS-PEDCO-120-PR-PI-0012	2nd Stage Gas Compression Discharge Drum	2"	160	FN05	YES	GAS	G	85	60	62	53.9	-	1722	-	8.302	0.2863	24.56	0.011	-	1.26	168.1	250	7.652	7.65	0.15	2"	600# , RF	ASTM A105	
	6	RO-2144	BK-GCS-PEDCO-120-PR-PI-0012	Gas Compression Discharge Drum	2"	40S	FS00	NO	GAS	G	85	60	62	53.9	-	600	-	982	0.982	24.56	0.495	-	1.46	29.9	250	0.3364	1.85	0.036	2"	600# , RF	ASTM A182 GR.F316L	
	7	RO-2151	BK-GCS-PEDCO-120-PR-PI-0013 (1 of 3)	Gas Compression Dehydration Package	4"	80	FN05	YES	GAS	G	85	59.4	62	52.9	-	3236	-	8.325	0.2871	24.58	0.011	0.825	1.26	-	250	10.49	10.48	0.103	4"	600# , RF	ASTM A105	
	8	RO-2162	BK-GCS-PEDCO-120-PR-PI-0014	Lean Glycol Storage Tank	2"	80	AN04	NO	GAS	G	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	HOLD	'HOLD	-			250	HOLD	HOLD	HOLD	2"	300# , RF	ASTM A105	
	9	RO-2131A	BK-GCS-PEDCO-120-PR-PI-0009 (1 of 3)	CLOSED DRAIN HEADER	2"	10S	CS00	NO	LIQUID	L	85	60	59.88	18.10	-	600	-	829.1	0.8291	18.03	0.49	-	1.16	1.33	250	11.71	1.96	0.38	2"	300# , RF	ASTM A182 GR.F316L	
	10	RO-2131B	BK-GCS-PEDCO-120-PR-PI-0009 (2 of 3)	CLOSED DRAIN HEADER	2"	10S	CS00	NO	LIQUID	L	85	60	59.88	18.10	-	600	-	829.1	0.8291	18.03	0.49	-	1.16	1.33	250	11.71	1.96	0.38	2"	300# , RF	ASTM A182 GR.F316L	
	11	RO-2131C	BK-GCS-PEDCO-120-PR-PI-0009 (3 of 3)	CLOSED DRAIN HEADER	2"	10S	CS00	NO	LIQUID	L	85	60	59.88	18.10	-	600	-	829.1	0.8291	18.03	0.49	-	1.16	1.33	250	11.71	1.96	0.38	2"	300# , RF	ASTM A182 GR.F316L	
	12	RO-2134A	BK-GCS-PEDCO-120-PR-PI-0009 (1 of 3)	LP FLARE HEADER	2"	80	CN05	YES	GAS	G	85	60	60	22.00	-	788	-	7.54	0.26	24.52	0.011	-	1.24	168.1	250	8.54	8.54	0.17	2"	300# , RF	ASTM A105	
	13	RO-2134B	BK-GCS-PEDCO-120-PR-PI-0009 (2 of 3)	LP FLARE HEADER	2"	80	CN05	YES	GAS	G	85	60	60	22.00	-	788	-	7.54	0.26	24.52	0.011	-	1.24	168.1	250	8.54	8.54	0.17	2"	300# , RF	ASTM A105	
	14	RO-2134C	BK-GCS-PEDCO-120-PR-PI-0009 (3 of 3)	LP FLARE HEADER	2"	80	CN05	YES	GAS	G	85	60	60	22.00	-	788	-	7.54	0.26	24.52	0.011	-	1.24	168.1	250	8.54	8.54	0.17	2"	300# , RF	ASTM A105	

Note: (1) HC:HYDROCARBONE , L: LIQUID , G: GAS , M: MIXED

(2) Vendor shall calculate the bore size & beta for 2 phase orifice plates.

(3) BLANK PLATE to be supplied. The bore shall be drilled later by others.