

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 	
	Process Data Sheets For 1st Stage Gas Air Coolers								
	شماره پیمان:	پروژه	بسته کاری	صادرکننده	تجهیزات	رشته	نوع مدرک	سریال	نسخه
۰۵۳ - ۰۷۳ - ۹۱۸۴	BK	GCS	PEDCO	120	PR	DT	0003	D05	شماره صفحه: ۱ از ۶

طرح نگهداشت و افزایش تولید ۲۷ مخزن

Process Data Sheets For 1st Stage Gas Air Coolers

نگهداشت و افزایش تولید میدان نفتی بینک

D05	JAN.2023	AFC	M.Aryafar	M.Fakharian	M.Mehrshad	
D04	NOV.2022	IFA	M.Aryafar	M.Fakharian	M.Mehrshad	
D03	Aug.2022	IFA	M.Aryafar	M.Fakharian	M.Mehrshad	
D02	Jun.2022	IFA	M.Aryafar	M.Fakharian	M.Mehrshad	
D01	Dec.2021	IFA	M.Aryafar	M.Fakharian	M.Mehrshad	
D00	NOV.2021	IFC	M.Aryafar	M.Fakharian	M.Mehrshad	
Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class: 1

CLIENT Doc. Number: F0Z-708748

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
سطح الارض

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

Process Data Sheets For 1st Stage Gas Air Coolers



شماره پیمان:
۰۵۳ - ۰۷۳ - ۹۱۸۴

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
D05	0003	DT	PR	120	PEDCO	GCS	BK

شماره صفحه: ۶ از ۲

CHANGE RECORD SHEET

PAGE	D00	D01	D02	D03	D04	D05
1	X	X	X	X	X	X
2	X	X	X	X	X	X
3	X	X	X		X	
4	X	X	X		X	
5	X	X	X			
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		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض											
		Process Data Sheets For 1st Stage Gas Air Coolers											
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴		پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0003	نسخه D05	شماره صفحه: ۶ از ۳			
1	Note									Rev			
2	Service Of Unit	1st Stage Gas Compression Cooler				Case		Summer Case					
3	Service Type	Sour Service				Tag No.		AE-2101 A/B/C					
4	Heat Duty(Normal x Overdesign)	MW	0.332	x	1.1	No. Req'd	3	Working	2	Standby	1	Total	3
5	Draught	Induced Draft Type				Winterization Control		☐ Yes ☒ No					
6	Cyclic Service	-				Misc. Conn's:		☐ TI ☐ PI					
7	P&ID Number	BK-GCS-PEDCO-120-PR-PI-0008											
8	TUBE SIDE PERFORMANCE OF ONE UNIT												
9	Fluid Name	Hydrocarbon											
10	Fluid Quantity Total (Normal)	kg/hr	8664		IN		Out						
11			IN	Out	Molecular Weight	(V)	-	24.52	24.52				
12	- Vapor	kg/h	8664	8664		(L)	-	-	-				
13	- Liquid	kg/h	-	-	Density	(V)	kg/m ³	15.38	18.28				
14						(L)	-	-	-				
15	- Water	kg/h	-	-	Thermal Cond.	(V)	W/m-K	0.042	0.033				
16						(L)	-	-	-				
17	Temperature	°C	124.8 (1)	60	Specific Heat	(V)	kJ/kgmol°C	54.53	50.54				
18	Operating Pressure	barg	19	18.3		(L)	-	-	-				
19	Pressure Drop	bar Allowable	0.7		Viscosity	(V)	cP	0.015	0.013				
20						(L)	-	-	-				
21	Pour Point/Freeze Point	°C	-	/	-	Latent Heat	kJ/kg	-	-				
22					Fouling Resistance	m ² °C/W		0.0002					
23	AIR SIDE PERFORMANCE OF ONE UNIT												
24	Inlet Air Temperature	°C	50.26		Min. Ambient Air Temperature	°C		5					
25	Barometric Pressure	milibar	914.2 -990.7		Elevation from sea level	m		12.5					
26	Air Side Fouling Resistance	m ² °C/W	0.00035										
27	Type Of Control												
28	Louver	☒ Yes ☐ No	Action Control		☐ Auto ☒ Manual								
29	Fan Pitch	☒ Yes ☐ No	Action Control		☒ Auto ☐ Manual								
30	VFD	☐ Yes ☒ No											
31	CONSTRUCTION												
32	Design Pressure	barg	22		Header Material	SS 316L (4)							
33	Vacuum Pressure @ Temp. of		-		Header Corr. Allow.	-		mm					
34	Design Temperature	°C	155		Tube Material	SS 316L (4)							
35	MDMT	°C	-28		P.W.H.T.(Process Reason)								
36	2 Slope	%	Note2		Nozzle Size	in	-Inlet	6					
37	Chemical Cleaning	☐ Yes ☒ No			Nozzle Size	in	-Outlet	6					
38	Heating Fluid												
39	Heating Fluid					Flow Rate	kg/s						
40	Temperature(in/out)	°C	/		Inlet Pressure	barg		/					
41	Design Temperature	°C					Pressure Drop(allowable)	bar					
42	Inlet/Outlet Nozzle	in	/		Design Pressure	barg							
43	NOTES												
44	1	It will be finalized after receiving compressor supplier data.											
45	2	Bundle to be self draining. The last row should 1% sloped.											
46	3	Design requirement should be in compliance with Process Design Criteria "BK-GNRL-PEDCO-000-PR-DC-0001" and IPS-E-PR-785.											
47	4	Deleted.											
48	5	For maximum, minimum and average temperature, min design relative humidity refer to "BK-GNRL-PEDCO-000-PR-DB-0001".											
49	6	Material requirement should be in compliance with NACE MR 0175/ISO 15156 and Technical Specification for Material Requirements in Sour service											
50		BK-GNRL-PEDCO-000-PI-SP-0008, <u>IPS-MPM-200</u> .											
51	7	Air coolers over sizing shall be considered 10 % on maximum duty or flow rate, whichever is greater.											

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض											
		Process Data Sheets For 1st Stage Gas Air Coolers											
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴		پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0003	نسخه D05	شماره صفحه: ۴ از ۶			
1	Note									REV			
2	Service Of Unit	1st Stage Gas Compression Cooler				Case				Winter Case			
3	Service Type	Sour Service				Tag No.				AE-2101 A/B/C			
4	Heat Duty(Normal x Overdesign)	MW	0.242	x	1.1	No. Req'd	3	Working	2	Standby	1	Total	3
5	Draught	Induced Draft Type				Winterization Control				☐ Yes	☒ No		
6	Cyclic Service	-				Misc. Conn's:				☐ TI	☐ PI		
7	P&ID Number	BK-GCS-PEDCO-120-PR-PI-0008											
8	TUBE SIDE PERFORMANCE OF ONE UNIT												
9	Fluid Name	Hydrocarbon											
10	Fluid Quantity Total (Normal)	kg/hr	7585		IN				Out				
11			IN	Out	Molecular Weight	(V) -	21.56	21.56					
12	- Vapor	kg/h	7585	7585		(L)	-	-					
13	- Liquid	kg/h	-	-	Density	(V) kg/m³	13.85	15.81					
14						(L)	-	-					
15	- Water	kg/h	-	-	Thermal Cond.	(V) W/m-K	0.042	0.035					
16						(L)	-	-					
17	Temperature	°C	113.1 (1)	60	Specific Heat	(V) kJ/kgmol°C	48.40	45.63					
18	Operating Pressure	barg	19	18.3		(L)	-	-					
19	Pressure Drop	bar Allowable	0.7		Viscosity	(V) cP	0.014	0.013					
20	Pour Point/Freeze Point		-	/	-	(L)	-	-					
21					Latent Heat	kJ/kg	-	-					
22					Fouling Resistance	m² °C/W	0.0002						
23	AIR SIDE PERFORMANCE OF ONE UNIT												
24	Inlet Air Temperature	°C	50.26		Min. Ambient Air Temperature	°C	5						
25	Barometric Pressure	milibar	914.2 -990.7		Altitude	m	12.5						
26	Air Side Fouling Resistance	m²°C/W	0.00035										
27	Type Of Control												
28	Louver	☒ Yes	☐ No	Action Control				☐ Auto	☒ Manual				
29	Fan Pitch	☒ Yes	☐ No	Action Control				☒ Auto	☐ Manual				
30	VFD	☐ Yes	☒ No										
31	CONSTRUCTION												
32	Design Pressure	barg	22		Header Material	SS 316L (4)							
33	Vacuum Pressure @ Temp. of		-		Header Corr. Allow.	-	mm						
34	Design Temperature	°C	155		Tube Material	SS 316L (4)							
35	MDMT	°C	-28		P.W.H.T.(Process Reason)								
36	Slope	%	Note2		Nozzle Size	in	-Inlet	6					
37	Chemical Cleaning	☐ Yes	☒ No		Nozzle Size	in	-Outlet	6					
38	Heating Fluid												
39	Heating Fluid					Flow Rate	kg/s						
40	Temperature(in/out)	°C	/		Inlet Pressure	barg	/						
41	Design Temperature	°C			Pressure Drop(allowable)	bar							
42	Inlet/Outlet Nozzle	in	/		Design Pressure	barg							
43	NOTES												
44	1	It will be finalized after receiving compressor supplier data.											
45	2	Bundle to be self draining. The last row should 1% sloped.											
46	3	Design requirement should be in compliance with Process Design Criteria "BK-GNRL-PEDCO-000-PR-DC-0001" and IPS-E-PR-785.											
47	4	Deleted.											
48	5	For maximum, minimum and average temperature, min design relative humidity refer to "BK-GNRL-PEDCO-000-PR-DB-0001".											
49	6	Material requirement should be in compliance with NACE MR 0175/ISO 15156 and Technical Specification for Material Requirements in Sour service											
50		BK-GNRL-PEDCO-000-PI-SP-0008, <u>IPS-MPM-200</u> .											
51	7	Air coolers over sizing shall be considered 10 % on maximum duty or flow rate, whichever is greater.											



نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض



Process Data Sheets For 1st Stage Gas Air Coolers

شماره پیمان:

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نته کاری

صادر کنندہ

تسهيلات

رشته

نوع مدرک

سو يال

نسخه

شماره صفحه: ۵ از ۶

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1	Note														Rev
2		TUBE SIDE ENTHALPY / PHYSICAL PROPERTIES PROFILES													
3															
4		INLET PRESSURE (19 BARG)													
		Vapour Properties						Liquid Properties							
5		Temperature C	Enthalpy [kJ/kgmol]	Vapor Frac	Vapour Density [kg/m3]	Vapour Mass Specific Heat [kJ/kg-C]	Vapour Viscosity [Cp]	Vapour Thermal Conductivity [W/m K]	Liquid Density [kg/m3]	Liquid Mass Specific Heat [kJ/kg-C]	Liquid Viscosity [Cp]	Liquid Thermal Conductivity [W/m K]	Surface Tension dyn/cm	Pseudo Pc (Barg)	Pseudo Tc (C)
6															
7		125	-85942	1.00	15.38	2.22	0.015	0.042	-	-	-	-	-	-	-
8		118	-86294	1.00	15.67	2.21	0.015	0.041	-	-	-	-	-	-	-
9		112	-86643	1.00	15.98	2.19	0.014	0.040	-	-	-	-	-	-	-
10		105	-86990	1.00	16.30	2.17	0.014	0.039	-	-	-	-	-	-	-
11		99	-87334	1.00	16.63	2.15	0.014	0.038	-	-	-	-	-	-	-
12		92	-87675	1.00	16.97	2.14	0.014	0.037	-	-	-	-	-	-	-
13		86	-88014	1.00	17.34	2.12	0.014	0.036	-	-	-	-	-	-	-
14		79	-88350	1.00	17.72	2.11	0.013	0.036	-	-	-	-	-	-	-
15		73	-88684	1.00	18.12	2.09	0.013	0.035	-	-	-	-	-	-	-
16		66	-89015	1.00	18.54	2.08	0.013	0.034	-	-	-	-	-	-	-
17		60	-89345	1.00	18.99	2.07	0.013	0.033	-	-	-	-	-	-	-
18		OUTLET PRESSURE (18.3 BARG)													
19		Vapour Properties						Liquid Properties							
20		Temperature C	Enthalpy [kJ/kgmol]	Vapor Frac	Vapour Density [kg/m3]	Vapour Mass Specific Heat [kJ/kg-C]	Vapour Viscosity [Cp]	Vapour Thermal Conductivity [W/m K]	Liquid Density [kg/m3]	Liquid Mass Specific Heat [kJ/kg-C]	Liquid Viscosity [Cp]	Liquid Thermal Conductivity [W/m K]	Surface Tension dyn/cm	Pseudo Pc (Barg)	Pseudo Tc (C)
21															
22															
23															
24		125	-85927	1.00	14.83	2.22	0.015	0.042	-	-	-	-	-	-	-
25		118	-86278	1.00	15.11	2.20	0.015	0.041	-	-	-	-	-	-	-
26		112	-86627	1.00	15.40	2.19	0.014	0.040	-	-	-	-	-	-	-
27		105	-86973	1.00	15.70	2.17	0.014	0.039	-	-	-	-	-	-	-
28		99	-87316	1.00	16.02	2.15	0.014	0.038	-	-	-	-	-	-	-
29		92	-87657	1.00	16.35	2.13	0.014	0.037	-	-	-	-	-	-	-
30		86	-87995	1.00	16.70	2.12	0.013	0.036	-	-	-	-	-	-	-
31		79	-88331	1.00	17.06	2.10	0.013	0.036	-	-	-	-	-	-	-
32		73	-88664	1.00	17.45	2.09	0.013	0.035	-	-	-	-	-	-	-
33		66	-88995	1.00	17.85	2.07	0.013	0.034	-	-	-	-	-	-	-
34		60	-89323	1.00	18.28	2.06	0.013	0.033	-	-	-	-	-	-	-
35															
36		Note:													
37		Refer to hazardous area classification layout, all instrumentation and electrical devices shall be suitable for: Zone:2, Gas Group:IIA ,													
38		Temperature Class:T3													



NISOC

نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

Process Data Sheets For 1st Stage Gas Air Coolers



شماره پیمان:

۰۵۳ - ۰۷۳ - ۹۱۸۴

پروژه

BK

بسته کاری

GCS

صادرکننده

PEDCO

تجهیزات

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سریال

0003

نسخه

D05

شماره صفحه: ۶ از ۶

ATTACHMENT 1: API 661 SPEC SHEET

NOTES

1- Design flowrate: 9530.4 kg/h corresponding to 110% of Design Case flowrate for Summer Case.