

	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	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0003	نسخه D02	شماره صفحه: ۱ از ۵

## طرح نگهداشت و افزایش تولید ۲۷ مخزن

### Process Data Sheets For 1st Stage Gas Air Coolers

#### نگهداشت و افزایش تولید میدان نفتی بینک

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: 2      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
D02	0003	DT	PR	120	PEDCO	GCS	BK



شماره صفحه: ۲ از ۵



CHANGE RECORD SHEET

PAGE	D00	D01	D02	D03
1	X	X	X	
2	X	X	X	
3	X	X	X	
4	X	X	X	
5	X	X	X	
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		<b>نگهداشت و افزایش تولید میدان نفتی بینک</b> <b>سطح الارض</b>													
		<b>Process Data Sheets For 1st Stage Gas Air Coolers</b>													
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴		پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0003	نسخه D02	شماره صفحه: ۵ از ۵					
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	7	Heat Duty(Normal x Overdesign)	MW	0.332	x	1.1	No. Req'd	3	Working	2	Standby	1	Total	3	02
5	Draught	Induced Draft Type			Winterization Control		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No								
6	Cyclic Service	-			Misc. Conn's:		<input type="checkbox"/> TI <input type="checkbox"/> PI								
7	P&ID Number	BK-GCS-PEDCO-120-PR-PI-0008													
8	<b>TUBE SIDE PERFORMANCE OF ONE UNIT</b>														
9	Fluid Name	Hydrocarbon													
10	Fluid Quantity Total (Normal)	kg/hr	8664		IN		Out						02		
11		IN	Out		Molecular Weight	(V)	-	24.52	24.52				02		
12	- Vapor	kg/h	8664		8664		(L)	-	-				02		
13	- Liquid	kg/h	-		-		Density	(V)	kg/m <sup>3</sup>	15.38	18.28		02		
14							(L)	-	-				02		
15	- Water	kg/h	-		-		Thermal Cond.	(V)	W/m-K	0.042	0.033				
16							(L)	-	-				02		
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)	-	-				02		
19	Pressure Drop	bar Allowable	0.7				Viscosity	(V)	cP	0.015	0.013		02		
20	Pour Point/Freeze Point	°C	-		/ -		(L)	-	-						
21							Latent Heat	kJ/kg	-	-					
22							Fouling Resistance	m <sup>2</sup> °C/W	0.0002						
23	<b>AIR SIDE PERFORMANCE OF ONE UNIT</b>														
24	Inlet Air Temperature	°C	50.26		Min. Ambient Air Temperature		°C	5				02			
25	Barometric Pressure	milibar	914.2 -990.7		Elevation from sea level		m	12.5				02			
26	Air Side Fouling Resistance	m <sup>2</sup> °C/W	0.00035												
27	<b>Type Of Control</b>														
28	Louver	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Action Control		<input type="checkbox"/> Auto <input checked="" type="checkbox"/> Manual										
29	Fan Pitch	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Action Control		<input checked="" type="checkbox"/> Auto <input type="checkbox"/> Manual										
30	VFD	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No													
31	<b>CONSTRUCTION</b>														
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)								02		
36	2	Slope	%	Note2		Nozzle Size	in	-Inlet	6						
37	Chemical Cleaning	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Nozzle Size	in	-Outlet	6							
38	<b>Heating Fluid</b>														
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	<b>NOTES</b>														
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	Deleted.												02	
47	4	Deleted.												02	
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.												02	

		<b>نگهداشت و افزایش تولید میدان نفتی بینک</b> <b>سطح الارض</b>										
		<b>Process Data Sheets For 1st Stage Gas Air Coolers</b>										
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴		پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0003	نسخه D02	شماره صفحه: ۴ از ۵		
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	7	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		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
6	Cyclic Service	-				Misc. Conn's:		<input type="checkbox"/> TI <input type="checkbox"/> PI				
7	P&ID Number	BK-GCS-PEDCO-120-PR-PI-0008										
8	<b>TUBE SIDE PERFORMANCE OF ONE UNIT</b>											
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	<b>AIR SIDE PERFORMANCE OF ONE UNIT</b>											
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	<b>Type Of Control</b>											
28	Louver	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Action Control		<input type="checkbox"/> Auto <input checked="" type="checkbox"/> Manual						
29	Fan Pitch	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Action Control		<input checked="" type="checkbox"/> Auto <input type="checkbox"/> Manual						
30	VFD	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
31	<b>CONSTRUCTION</b>											
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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Nozzle Size		in	-Outlet	6				
38	<b>Heating Fluid</b>											
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	<b>NOTES</b>											
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	Deleted.										
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	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	شماره صفحه: ۵ از ۵					
		BK	GCS	PEDCO	120	PR	DT	0003	D02						
1	Note									Rev					
2		TUBE SIDE ENTHALPY / PHYSICAL PROPERTIES PROFILES													
3										02					
4		INLET PRESSURE (19 BARG)													
		Vapour Properties					Liquid Properties								
		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)
5		125	-85942	1.00	15.38	2.22	0.015	0.042	-	-	-	-	-	-	-
6		118	-86294	1.00	15.67	2.21	0.015	0.041	-	-	-	-	-	-	-
7		112	-86643	1.00	15.98	2.19	0.014	0.040	-	-	-	-	-	-	-
8		105	-86990	1.00	16.30	2.17	0.014	0.039	-	-	-	-	-	-	-
9		99	-87334	1.00	16.63	2.15	0.014	0.038	-	-	-	-	-	-	-
10		92	-87675	1.00	16.97	2.14	0.014	0.037	-	-	-	-	-	-	-
11		86	-88014	1.00	17.34	2.12	0.014	0.036	-	-	-	-	-	-	-
12		79	-88350	1.00	17.72	2.11	0.013	0.036	-	-	-	-	-	-	-
13		73	-88684	1.00	18.12	2.09	0.013	0.035	-	-	-	-	-	-	-
14		66	-89015	1.00	18.54	2.08	0.013	0.034	-	-	-	-	-	-	-
15		60	-89345	1.00	18.99	2.07	0.013	0.033	-	-	-	-	-	-	-
16															
17		OUTLET PRESSURE (18.3 BARG)												02	
18		Vapour Properties					Liquid Properties								
19		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)
20		125	-85927	1.00	14.83	2.22	0.015	0.042	-	-	-	-	-	-	-
21		118	-86278	1.00	15.11	2.20	0.015	0.041	-	-	-	-	-	-	-
22		112	-86627	1.00	15.40	2.19	0.014	0.040	-	-	-	-	-	-	-
23		105	-86973	1.00	15.70	2.17	0.014	0.039	-	-	-	-	-	-	-
24		99	-87316	1.00	16.02	2.15	0.014	0.038	-	-	-	-	-	-	-
25		92	-87657	1.00	16.35	2.13	0.014	0.037	-	-	-	-	-	-	-
26		86	-87995	1.00	16.70	2.12	0.013	0.036	-	-	-	-	-	-	-
27		79	-88331	1.00	17.06	2.10	0.013	0.036	-	-	-	-	-	-	-
28		73	-88664	1.00	17.45	2.09	0.013	0.035	-	-	-	-	-	-	-
29		66	-88995	1.00	17.85	2.07	0.013	0.034	-	-	-	-	-	-	-
30		60	-89323	1.00	18.28	2.06	0.013	0.033	-	-	-	-	-	-	-
31															
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													