

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک							 	
	Process Data Sheets For 2nd 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: 0005	نسخه: D03	شماره صفحه: ۱ از ۵

طرح نگهداشت و افزایش تولید ۲۷ مخزن

Process Data Sheets For 2nd Stage Gas Air Coolers

نگهداشت و افزایش تولید میدان نفتی بینک

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: 2 CLIENT Doc. Number: F0Z-708750

- 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

شماره پیمان:

۰۵۳ - ۰۷۳ - ۹۱۸۴

نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

Process Data Sheets For 2nd Stage Gas Air Coolers



شماره صفحه: ۲ از ۵

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
D03	0005	DT	PR	120	PEDCO	GCS	BK

CHANGE RECORD SHEET

PAGE	D00	D01	D02	D03
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3	X	X	X	
4	X	X	X	
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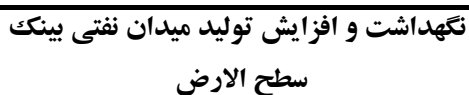
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 NISOC		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض								
		Process Data Sheets For 2nd Stage Gas Air Coolers								
شماره پیمان: ۰۵۳ - ۰۷۳ - ۹۱۸۴		پروژه BK	بسته کاری GCS	صادر کننده PEDCO	تسهیلات 120	رشته PR	نوع مدرک DT	سریال 0005	نسخه D03	شماره صفحه: ۳ از ۵

1	Note									Rev		
2		Service Of Unit		2nd Stage Gas Compression Cooler		Case		Summer Case				
3		Service Type		Sour Service		Tag No.		AE-2102 A/B/C				
4	7	Heat Duty(Normal x Overdesign)	MW	0.493	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-0011										
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	24.56		
12		- Vapor	kg/h	8664.0	8626.3			(L)	-	18.05		
13		- Liquid	kg/h	-	37.4		Density	(V) kg/m ³	42.92	59.39		
14								(L)		981.90		
15		- Water	kg/h	-			Thermal Cond.	(V) W/m-K	0.047	0.037		
16								(L)	-	0.652		
17		Temperature	°C	142.3	60		Specific Heat	(V) kJ/kgmol°C	59.25	58.95		
18		Operating Pressure	barg	54.8	54.1			(L)	-	77.81		
19		Pressure Drop	bar Allowable	0.7		Viscosity		(V) cP	0.016	0.014		
20		Pour Point/Freeze Point		°C	-	/	-	(L)	-	0.494		
21							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	990.7 -914.2		Altitude		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	62		Header Material		SS 316L				
33		Vacuum Pressure @ Temp. of		-		Header Corr. Allow.		-	mm			
34		Design Temperature	°C	175		Tube Material		SS 316L				
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	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.										

 NISOC		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض								
		Process Data Sheets For 2nd 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 0005	نسخه D03	شماره صفحه: ۴ از ۵

1	Note									Rev		
2		Service Of Unit		2nd Stage Gas Compression Cooler		Case		Winter Case				
3		Service Type		Sour Service		Tag No.		AE-2102 A/B/C				
4	7	Heat Duty(Normal x Overdesign)	MW	0.449	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-0011										
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/m ³	36.11	49.41		
14								(L)	-	-		
15		- Water	kg/h	-			Thermal Cond.	(V) W/m-K	0.050	0.039		
16								(L)	-	-		
17		Temperature	°C	149.5		60	Specific Heat	(V) kJ/kgmol°C	53.12	51.31		
18		Operating Pressure	barg	54.8		54.1		(L)	-	-		
19		Pressure Drop	bar Allowable	0.7			Viscosity	(V) cP	0.016	0.014		
20		Pour Point/Freeze Point		°C	-	/	-	(L)	-	-		
21							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	18.75				
25		Barometric Pressure	milbar	1005.43 -1007.77		Altitude		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	60	Header Material		SS 316L					
33		Vacuum Pressure @ Temp. of		-	Header Corr. Allow.		-	mm				
34		Design Temperature	°C	175	Tube Material		SS 316L					
35		MDMT	°C	3.24	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	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.										



Process Data Sheets For 2nd Stage Gas Air Coolers

شماره پیمان:

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نته کاری

صادرکننده

تسهيلات

روشته

نوع مدرک

سویال

نسخه

شماره صفحه: ۵ از ۵

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1	Note															Rev
2		TUBE SIDE ENTHALPY / PHYSICAL PROPERTIES PROFILES														
3		INLET PRESSURE (54.8 BARG)														
4		Vapour Properties							Liquid Properties							
5		Temperature	Enthalpy	Vapor Frac	Vapour Density	Vapour Mass	Vapour	Liquid	Liquid	Liquid Viscosity	Liquid	Surface	Pseudo	Pseudo		
6		C	[kJ/kgmol]		[kg/m3]	Specific Heat	Viscosity	Density	Mass	[Cp]	Thermal	Tension	Pc	Tc		
7						[kJ/kg-C]	[Cp]	[kg/m3]	Specific		Conductivity	dyn/cm	(Barg)	(C)		
8							[W/m K]		Heat		[W/m K]					
9		142	-85692	1.00	42.92	2.42	0.016	0.047	-	-	-	-	-	-		
10		134	-86178	1.00	44.10	2.40	0.016	0.046	-	-	-	-	-	-		
11		126	-86662	1.00	45.36	2.39	0.016	0.045	-	-	-	-	-	-		
12		118	-87143	1.00	46.71	2.38	0.016	0.044	-	-	-	-	-	-		
13		109	-87623	1.00	48.17	2.37	0.015	0.043	-	-	-	-	-	-		
14		101	-88101	1.00	49.74	2.37	0.015	0.042	-	-	-	-	-	-		
15		93	-88579	1.00	51.45	2.37	0.015	0.041	-	-	-	-	-	-		
16		85	-89056	1.00	53.32	2.37	0.015	0.040	-	-	-	-	-	-		
17		76	-89591	1.00	55.40	2.37	0.015	0.039	969.0	4.33	0.385	0.666	62.9	219.9	373.6	
18		68	-90177	1.00	57.72	2.39	0.014	0.038	975.5	4.32	0.435	0.659	64.4	219.9	373.6	
19		60	-90741	0.99	60.30	2.41	0.014	0.037	982.0	4.31	0.494	0.652	65.8	219.9	373.5	
20		OUTLET PRESSURE (51.8 BARG)														
21		Vapour Properties							Liquid Properties							
22		Temperature	Enthalpy	Vapor Frac	Vapour Density	Vapour Mass	Vapour	Liquid	Liquid	Liquid Viscosity	Liquid	Surface	Pseudo	Pseudo		
23		C	[kJ/kgmol]		[kg/m3]	Specific Heat	Viscosity	Density	Mass	[Cp]	Thermal	Tension	Pc	Tc		
24						[kJ/kg-C]	[Cp]	[kg/m3]	Specific		Conductivity	dyn/cm	(Barg)	(C)		
25							[W/m K]		Heat		[W/m K]					
26		142	-85679	1.00	42.35	2.41	0.016	0.047	-	-	-	-	-	-		
27		134	-86164	1.00	43.51	2.40	0.016	0.046	-	-	-	-	-	-		
28		126	-86647	1.00	44.74	2.39	0.016	0.045	-	-	-	-	-	-		
29		118	-87128	1.00	46.07	2.38	0.016	0.043	-	-	-	-	-	-		
		109	-87606	1.00	47.50	2.37	0.015	0.042	-	-	-	-	-	-		
		101	-88084	1.00	49.05	2.36	0.015	0.041	-	-	-	-	-	-		
		93	-88560	1.00	50.73	2.36	0.015	0.041	-	-	-	-	-	-		
		85	-89037	1.00	52.56	2.36	0.015	0.040	-	-	-	-	-	-		
30		76	-89567	1.00	54.60	2.37	0.015	0.039	969.01	4.33	0.385	0.666	62.9	219.9	373.6	
31		68	-90153	1.00	56.87	2.38	0.014	0.038	975.51	4.32	0.435	0.659	64.4	219.9	373.6	
32		60	-90716	0.99	59.39	2.40	0.014	0.037	981.94	4.31	0.494	0.652	65.8	219.9	373.5	
33		Notes:														
34		Refer to hazardous area classification layout, all instrumentation and electrical devices shall be suitable for: Zone:2 , Gas Group:IIA ,														
35		Temperature Class:T3														
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