

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)								
	شماره پیمان: 053-073-9184						شماره صفحه: 1 از 6		
Process Data Sheet for AE-2101 (A/B/C)									
پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه		
BK	GCS	AA	120	PR	DS	0001	V04		

طرح نگهداشت و افزایش تولید 27 مخزن

Process Data Sheet for AE-2101 (A/B/C)

نگهداشت و افزایش تولید میدان نفتی بینک

V04	Nov.2024	AFC	AAC	M.FAKHARIAN	M.SADEGHIAN	
V03	Oct.2024	AFC	AAC	M.FAKHARIAN	M.SADEGHIAN	
V02	Aug.2024	IFA	AAC	M.FAKHARIAN	M.SADEGHIAN	
V01	Mar.2024	IFA	AAC	M.FAKHARIAN	S.FRAMARZPOUR	
V00	Nov.2023	IFA	AAC	M.FAKHARIAN	S.FRAMARZPOUR	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Status:

IFA: Issued For Approval
IFI: Issued For Information
AFC: Approved For Construction

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد 02_BK-HD-GCS-CO-0015)							
	Process Data Sheet for AE-2101 (A/B/C)		شماره صفحه : 2 از 6					
شماره پیمان: 053-073-9184	پروژه BK	بسته کاری GCS	صادرکننده AA	تسهیلات 120	رشته PR	نوع مدرک DS	سریال 0001	نسخه V04

REVISION RECORD SHEET

PAGE	V00	V01	V02	V03	V04
1	X	X	X	X	X
2	X	X	X	X	X
3	X		X	X	X
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54					
55					
56					
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62					
63					
64					
65					

PAGE	V00	V01	V02	V03	V04
66					
67					
68					
69					
70					
71					
72					
73					
74					
75					
76					
77					
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129					
130					

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)							
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2101 (A/B/C)							شماره صفحه : 3 از 6
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	AA	120	PR	DS	0001	
								V04

CONTENTS

1.0	INTRODUCTION	4
2.0	PROCESS DATA SHEET FOR AE-2101 (A/B/C)	5

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)								
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2101 (A/B/C)							شماره صفحه : 4 از 6	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0001	V04	

1.0 INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Supply of Air Coolers
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of : Hirgan Energy – Design & Inspection(D&I) Companies
VENDOR:	Aban Air Cooler (AAC)
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	Third Party Inspector
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)								
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2101 (A/B/C)							شماره صفحه : 5 از 6	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0001	V04	

2.0 PROCESS DATA SHEET FOR AE-2101 (A/B/C)

AAC		DATA SHEET		Date :	2024.Nov.25
		AIR COOLED HEAT EXCHANGER		Rev :	4
		ABAN AIR COOLER CO		CASE:	00012-AC-3991
Customer / Purch.		(PEDCO) / (NISOC)		Item no.:	AE-2101 (A/B/C)
Plant location		Binak oilfield		Summer case	
Service		1st Stage Gas Compression Cooler		No. Units:	3
Plot size (W,L) [m]		1.970 x 3.8 (note 2)		No. of bay:	1
4	Surface / unit-Finned	668.71	[m2]	Bare Tube	31.536
4	Heat exchanged	381.8	[KW]	MTD	29.1
4	Transf. rate-finned	20.125	[W/m2 .k]	Bare Tube (C/D)	478.50 / 426.74
		PRODUCT SIDE			
Fluid Name		Hydrocarbon			
		IN	OUT	Density (Liq)	[kg/m3]
Total Fluid [kg/h]		8664 x 1.1 (note 1)		Density (vap)	14.197
Temperature [C]		129	60	Spec. Heat (Liq)	17.141
Vapor [kg/h]		9530.4	9530.4	Spec. Heat (vap)	2.206
Liquid [kg/h]				Conduct. (Liq)	1.97
N condensed [kg/h]				Conduct. (vap)	0.0438
Steam [kg/h]				Viscosity (Liq)	0.0336
Water [kg/h]				Viscosity (Vap)	0.0137
Inlet pressure [barg]		17.9	(note 6)	Velocity	0.0117
Fouling resist. [m2.k/w]		0.0002		Allo/Calc. Press. Drop	18.7
		AIR SIDE		0.700 / 0.473	15.49
4	Air Quantity, Total	24.44	[m3/s]	Face Velocity:	2.9
4	Air Quant. / Fan	12.22	[m3/s]	Altit. / Min. Des. Amb.:	12.5 / 5
4	Static pressure	138.77	[Pa]	Temp. In / Out :	50.26 / 65.15
		DESIGN			
Design pressure		22	[Barg]	Code Requirements	ASME VIII DIV.1 ; API 661
Design temperature		155	[C]	TUBE	
Test pressure		28.60	[Barg]	Material	
4	BAY width [m]	1.97		SA-213 TP316L	
4	Bundle Size	1.92 x 3.8		Outside Diameter	25.4
N .Bay		1		Wall Thickness	1.651
N .Bundles / Bay		1		N .Bundle	104
N .Tube Rows		4		Length	3.8
N .Passes		4		Pitch	63.5
Tube slope		1% on Last pass		FIN	
HEADER				Type	EXTRUDED
Type		Plug		Material	ALUMINIUM alloy 1060 - O
Material		SA-240 TP316L		Outside Diameter	57.15
Header Design / SPLIT		Shoulder/No		Stock Thick.	0.48
Plug Mat		SA 182 F316L		FPM	400
Gasket Mat		Solid Metal		MISCELLANEOUS	
Corrosion Allow.		0	[mm]	Structural Mounting	Ground
Qty / Size nozzle IN		1 X 6" (80S)		Bundle Frame	H.D.G
Qty / Size nozzle OUT		1 X 6" (80S)		Louvers	Yes, (Manual)
Rating & Facing (in/out)		300 RF		Vibration switches	Yes, EExd, IIB T3 (IP 65)
4	TI/PI	Yes(2")/ Yes (2")		Steam Coil	No
Vent / Drain		Yes (2") / Yes (2")	LWN #300	Recirculation System	No
				Tube / Tubesheet Connection.	Expanded + Strength weld
		MECH. EQUIPMENT			
FAN				ELECTRIC MOTOR	
N .Bay		2		N .Bay	2
N .autowariable/bay		50%		KW / Driver	5.5
4	rev / min	626.4		rev / min	1500
Diameter		4.5 FT (1372mm)		Enclosure	EExd, IIB T3 (IP 55)
4	N .Blades	4		Volt. Phase, Cycle	400-3-50
Material, Blade		AL		SPEED REDUCER	
Material, Hub		Steel/Alu		Type	V-Belt
4	KW / Fan, Absorb.	2.6		N .Bay	2
4	Type of fan Ring	Flanged		Service Factor	1.8
SPL@ 1m beside. fan		<85	[dB(A)]	Ratio	2.39
NOTES:					
1- 10% over design on duty / flow has been considered.					
2- Plot size is without considering side walkways.					
3- Air side fouling factor has been considered equal to 0.00035 m2.K/w.					
4- Technical Bid is in compliance with NACE MR 0175/ISO 15156 and Technical Specification for Material Requirements in Sour service Doc. No. BK-GNRL-PEDCO-000-PI-SP-0008, IPS-MPM-200.					
5- Maximum allowable nozzle load = 3 x API.					
6-Physical properties changed based on last revision of PFD Doc.No:BK-GCS-HY-120-PR-PF-0001-V04-AP					
7-Deleted					
8-Primarily fan data sheet is attached and final fan data sheet will be submitted after subvendor finalization.					

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج کولرهای هوایی ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0015_02)								
شماره پیمان: 053 – 073 – 9184	Process Data Sheet for AE-2101 (A/B/C)							شماره صفحه : 6 از 6	
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0001	V04	

rev.			DATA SHEET		Date :	2024.Nov.25
			AIR COOLED HEAT EXCHANGER		Rev :	4
			ABANAIR COOLER CO		CASE:	00012-AC-3991
	Customer / Purch.		(PEDCO) / (NISOC)		Item no.:	AE-2101 (A/B/C)
	Plant location		Binak oilfield		Winter case	
	Service		1st Stage Gas Compression Cooler		No. Units:	3
4	Plot size(W,L) [m]	1.97 x 3.8 (note2)	DRAFT	INDUCED	No.of bay:	1
4	Surface / unit-Finned	668.71 [m2]	Bare Tube		31.536	[m2]
4	Heat exchanged	276 (Note 1,9) [KW]	MTD		26.3	[C]
4	Transf. rate-finned	19.37 [W/m2 ,k]	Bare Tube (C/D)		458.48 / 410.75	[W/m2k]
			PRODUCT SIDE			
Fluid Name		Hydrocarbon		IN	OUT	
		IN	OUT	Density (Liq)		[kg/m3]
Total Fluid [kg/h]		7585 x 1.1 (note 1)		Density (vap)	12.847	14.916 [kg/m3]
Temperature [C]		116	60	Spec.Heat (Liq)		kJ/(kg.°C)
Vapor [kg/h]		8343.5	8343.5	Spec.Heat (vap)	2.2197	2.029 kJ/(kg.°C)
Liquid [kg/h]				Conduct. (Liq)		[W/Mk]
N condensed [kg/h]				Conduct. (vap)	0.0441	0.0356 [W/Mk]
Steam [kg/h]				Viscosity (Liq)		[cp]
Water [kg/h]				Viscosity (Vap)	0.0137	0.0121 [cp]
Inlet pressure [barg]		17.9	(note 6)	Velocity	18.09	15.58 [m/s]
Fouling resist.[m2.k/w]		0.0002		Allo/Calc. Press.Drop	0.700 / 0.416	[bar]
			AIR SIDE			
4	AirQuantity, Total	24.14 [m3/s]	Face Velocity:	2.9		[m/s]
4	AirQuant./Fan	12.07 [m3/s]	Altit. / Min. Des.Amb.:	12.5 / 5		[m]/[C]
4	Static pressure	137.4 [Pa]	Temp.In / Out :	50.26 / 61.02		[C]
			DESIGN			
Design pressure		22 [Barg]	Code Requirements	ASME VIII DN.1 ; API 661		
Design temperature		155 [C]		TUBE		
Test pressure		28.60 [Barg]	Material	SA-213 TP316L		
4	BAY width [m]	1.97	Outside Diameter	25.4		[mm]
4	Bundle Size	1.92 x 3.8	Wall Thickness	1.651		[mm]
N .Bay		1	N ./Bundle	104		
N .Bundles / Bay		1	Length	3.8		[m]
N .Tube Rows		4	Pitch	63.5		[mm]
N .Passes		4		FIN		
Tube slope		1% on Last pass		Type	EXTRUDED	
HEADER				Material	ALUMINIUM alloy 1060 - O	
Type		Plug		Outside Diameter	57.15	[mm]
Material		SA-240 TP316L		Stock Thick.	0.48	[mm]
Header Design / SPLIT		Shoulder/No		FPM	400	
Plug Mat		SA 182 F316L		MISCELLANEOUS		
Gasket Mat		Solid Metal		Structural Mounting	Ground	
Corrosion Allow.		0 [mm]	Bundle Frame	H.D.G		
Qty / Size nozzle IN		1 X 6" (80S)		Louvers	Yes, (Manual)	
Qty / Size nozzle OUT		1 X 6" (80S)		Vibration switches	Yes, EExd, IIB T3 (IP 65)	
Rating & Facing (in/out)		300 RF		Steam Coil	No	
4	TI/PI	Yes (2") / Yes (2")		Recirculation System	No	
Vent / Drain		Yes (2") / Yes (2") LWN #300		Tube / Tubesheet Connection.	Expanded + Strength weld	
			MECH. EQUIPMENT			
FAN			ELECTRIC MOTOR			
N ./Bay		2	N ./Bay	2		
N .autovvariable/bay		50%	KW / Driver	5.5		
4	rev / min	626.4	rev / min	1500		
Diameter		1372 (4.5 FT)	Enclosure	EExd, IIB T3 (IP 55)		
N . Blades		4	Volt, Phase, Cycle	400-3-50		
Material, Blade		AL		SPEED REDUCER		
Material, Hub		Steel/Alu		Type	V-Belt	
4	KW / Fan, Absorb.	2.6	N .Bay	2		
4	Type of fan Ring	Flanged	Service Factor	1.8		
SPL@ 1m beside. fan		<85 [dB(A)]	Ratio	2.39		
NOTES:						
1- 10% over design on duty / flow has been considered.						
2- Plot size is without considering side walkways.						
3- Air side fouling factor has been considered equal to 0.00035 m2.K/w.						
4- Thechnical Bid is in compliance with NACE MR 0175/ISO 15156 and Technical Specification for Material Requirements in Sour service Doc. No. BK-GNRL-PEDCO-000-PI-SP-0008, IPS-MPM-200.						
5- Maximum allowable nozzle load = 3 x API.						
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8-Primarily fan data sheet is attached and final fan data sheet will be submitted after subvendor finalization.						