

	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	V03	

طرح نگهداشت و افزایش تولید 27 مخزن

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

نگهداشت و افزایش تولید میدان نفتی بینک

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

 NISOC	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)																	
شماره پیمان: 053-073-9184	Process Data Sheet for AE-2101 (A/B/C) <table border="1"> <tr> <td>پروژه</td> <td>بسته کاری</td> <td>صادرکننده</td> <td>تسهیلات</td> <td>رشته</td> <td>نوع مدرک</td> <td>سریال</td> <td>نسخه</td> </tr> <tr> <td>BK</td> <td>GCS</td> <td>AA</td> <td>120</td> <td>PR</td> <td>DS</td> <td>0001</td> <td>V03</td> </tr> </table>	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	BK	GCS	AA	120	PR	DS	0001	V03	شماره صفحه: 2 از 6
پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه											
BK	GCS	AA	120	PR	DS	0001	V03											

REVISION RECORD SHEET

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 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	<table><tr><th colspan="8">Process Data Sheet for AE-2101 (A/B/C)</th></tr><tr><th>نسخه</th><th>سریال</th><th>نوع مدرک</th><th>رشته</th><th>تسهیلات</th><th>صادرکننده</th><th>بسته کاری</th><th>پروژه</th></tr><tr><td>V03</td><td>0001</td><td>DS</td><td>PR</td><td>120</td><td>AA</td><td>GCS</td><td>BK</td></tr></table>	Process Data Sheet for AE-2101 (A/B/C)								نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	V03	0001	DS	PR	120	AA	GCS	BK	شماره صفحه : 3 از 6
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نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه																			
V03	0001	DS	PR	120	AA	GCS	BK																			

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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
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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 – Manufacturing (w/Engineering & Material 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	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0001	V03	

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

03

rev		DATA SHEET AIR COOLED HEAT EXCHANGER ABANAIR COOLER CO	Date : 2024.Oct.05 Rev : 3 CASE: 00012-AC-3991 Item no.: AE-2101 (A/B/C) Summer case
	Customer / Purch.	(PEDCO) / (NISOC)	
	Plant location	Binak oilfield	
	Service	1st Stage Gas Compression Cooler	No. Units: 3
	Plot size(W,L) [m]	1.90 x 3.8 (Note2)	No. of bay: 1
3	Surface / unit-Finned	658.66 [m2]	Bare Tube 31.536 [m2]
3	Heat exchanged	381.8(Note 1, 9) [KW]	MTD 29.1 [C]
3	Transf. rate-finned	20.607 [W/m2.k]	Bare Tube (C/D) 483.18 / 430.41 [W/m2k]
	PRODUCT SIDE		
	Fluid Name	Hydrocarbon	IN OUT (Note 9)
	Total Fluid [kg/h]	IN 8664 x 1.1 (note 1) OUT	Density (Liq) 14.197 Density (vap) 17.141
	Temperature [C]	129 60	Spec.Heat (Liq) kJ/(kg.°C) Spec.Heat (vap) 2.2057 1.9724
	Vapor [kg/h]	9530.4 9530.4	Conduct. (Liq) [W/Mk] Conduct. (vap) 0.0438 0.0336
	Liquid [kg/h]		Viscosity (Liq) [cp] Viscosity (Vap) 0.0137 0.0117
	N condensed [kg/h]		Velocity 18.7 15.49 [m/s]
	Steam [kg/h]		Allo/Calc. Press.Drop 0.700 / 0.473 [bar]
3	Water [kg/h]		
3	Inlet pressure [barg]	17.9 (Note 6)	
3	Fouling resist.[m2.k/w]	0.0002	
	AIR SIDE		
3	AirQuantity, Total	24.39 [m3/s]	Face Velocity: 2.99 [m/s]
3	AirQuant./Fan	12.20 [m3/s]	Altit. / Min. Des.Amb.: 12.5 / 5 [m]/[C]
3	Static pressure	145.05 [Pa]	Temp.In / Out : 50.26 / 65.19 [C]
	DESIGN		
	Design pressure	22 [Barg]	Code Requirements ASME VIII DIV.1 ; API 661
	Design temperature	155 [C]	TUBE
	Test pressure	28.60 [Barg]	Material SA-213 TP316L
	BAY width [m]	1.90	Outside Diameter 25.4 [mm]
	Bundle Size	1.86 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 61 [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	FA 10
	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
3	TVPI	Yes / Yes (1/2")	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
	rev / min	696	rev / min 1500
	Diameter	1372 mm	Enclosure EExd, IIB T3 (IP 55)
3	N .Blades	5	Volt, Phase, Cycle 400-3-50
	Material, Blade	AL	SPEED REDUCER
	Material, Hub	Steel/Alu	Type V-Belt
3	KW / Fan, Absorb.	3.4	N .Bay 2
	SPL@ 1m beside. fan	<85 [dB(A)]	Service Factor 1.8
			Ratio 2.16
	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-GNRAL-PEDCO-000-PI-SP-0008, IPS-MPM-200.		
	5- Maximum allowable nozzle load = 3 x API.		
	6-17.9 bar g considered as an inlet pressure based on PFD document .no:BK-GCS-HY-120-PR-PF-0001-V04-AP		
	7-Deleted		
	8-MDMT considered 5 C		
	9-Physical properties changed based on last revision of PFD Doc.No:BK-GCS-HY-120-PR-PF-0001-V04-AP		

 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	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	AA	120	PR	DS	0001	V03	

REV		AIR COOLED HEAT EXCHANGER ABAN AIR COOLER CO		DATA SHEET		Date : 2024.Oct.05 Rev : 3 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	
	Plot size(W,L) [m]	1.90 x 3.8 (note2)		DRAFT	INDUCED	No. of bay: 1	
3	Surface / unit-Finned	658.66	[m2]	Bare Tube		31.536	[m2]
3	Heat exchanged	268 (Note 1,9)	[KW]	MTD		26.4	[C]
3	Transf. rate-finned	19.22	[W/m2 ,k]	Bare Tube (C/D)		447.05 / 401.5	[W/m2k]
				PRODUCT SIDE			
Fluid Name		Hydrocarbon			IN	OUT	(Note 9)
		IN	OUT	Density (Liq)			[kg/m3]
Total Fluid [kg/h]		7585 x 1.1 (note 1)		Density (vap)	14.72	17.25	[kg/m3]
Temperature [C]		116	60	Spec.Heat (Liq)			kJ/(kg.°C)
Vapor [kg/h]		8343.5	8343.5	Spec.Heat (vap)	2.16	1.97	kJ/(kg.°C)
Liquid [kg/h]				Conduct. (Liq)			[W/Mk]
N condensed [kg/h]				Conduct. (vap)	0.0418	0.0336	[W/Mk]
Steam [kg/h]				Viscosity (Liq)			[cp]
Water [kg/h]				Viscosity (Vap)	0.0133	0.0117	[cp]
Inlet pressure [barg]		17.9	(note 6)	Velocity	15.79	13.47	[m/s]
Fouling resist.[m2.k/w]		0.0002		Allo/Calc. Press.Drop	0.700 / 0.36		[bar]
				AIR SIDE			
3	AirQuantity, Total	24.08	[m3/s]	Face Velocity:		2.99	[m/s]
3	AirQuant./Fan	12.04	[m3/s]	Altit. / Min. Des.Amb.:		12.5 / 5	[m]/[C]
3	Static pressure	143.54	[Pa]	Temp.In / Out :		50.26 / 60.76	[C]
				DESIGN			
Design pressure		22	[Barg]	Code Requirements	ASME VIII DIV.1 ; API 661		
Design temperature		155	[C]	TUBE			
Test pressure		28.60	[Barg]	Material	SA-213 TP316L		
BAY width [m]		1.9		Outside Diameter	25.4		[mm]
Bundle Size		1.86 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	61		[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		FPI	10		
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		
3	TV/PI	Yes / Yes (1/2")		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 autovariable/bay		50%		KW / Driver	5.5		
rev / min		696		rev / min	1500		
Diameter		1372	mm	Enclosure	EExd, IIB T3 (IP 55)		
3	N . Blades	5		Volt, Phase, Cycle	400-3-50		
Material, Blade		AL		SPEED REDUCER			
Material, Hub		Steel/Alu		Type	V-Belt		
KW / Fan, Absorb.		3.4		N . Bay	2		
				Service Factor	1.8		
SPL@ 1m beside. fan		<85	[dB(A)]	Ratio	2.16		
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-GNRAL-PEDCO-000-PI-SP-0008, IPS-MPM-200.							
5- Maximum allowable nozzle load = 3 x API.							
6-17.9 bar g considered as an inlet pressure based on PFD document .no:BK-GCS-HY-120-PR-PF-0001-V04-AP							
7-Deleted							
8-Physical properties changed based on last revision of PFD Doc.No:BK-GCS-HY-120-PR-PF-0001-V04-AP							