طرح نگهداشت و افزایش تولید 27 مخزن

Process Data Sheet for AE-2102 (A/B/C)

نگهداشت و افزایش تولید میدان نفتی بینک

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

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 BK-HD-GCS-CO-0015_02)*	HIRGA ENERG AAC

شماره پیمان:	Process Data Sheet for AE-2102 (A/B/C)								شماره صفحه : 2 از 6
053 – 073 – 9184	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	AA	120	PR	DS	0002	V04	

REVISION RECORD SHEET

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CONTENTS

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 usedwhere a provision is completely discretionary.

2.0 PROCESS DATA SHEET FOR AE-2102 (A/B/C)

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rev.									
	AAC			DATA SHEET AIR COOLED HEAT EXCHANGER ABAN AIR COOLER CO			Date : Rev : CASE:	2024.Nov.25 4 00012-AC-3991	
	Customer / Purch.	(PEDCO) / (NISOC)					Item no.:	AE-2102 (A/B/C)	
	Plant location	Binak oilfield						Summer Case	
	Service	2st Stage Gas Compression Cooler					No. Units:	3	
4	Plot size(W,L) [m]	2.172 x 3.90 (note2)		DRAFT	INDUCED		No.of bay:	1	
4	Surface / unit-Finned	1027	[m2]	Bare Tube		48.548		[m2]	
4	Heat exchanged	582 (note 1)	[KW]	MTD		31.3		[C]	4
4	Transf. rate-finned	18.267	[W/m2 ,k]	Bare Tube (C/D)		428.51/	386.44	[W/m2k]	4
				PRODUCT SIDE					
	Fluid Name	Hydrocarbon				IN	OUT		
		IN	OUT	Density	(Liq)		981.96	[kg/m3]	4
	Total Fluid [kg/h]	8664 x 1.1 (note 1)		Density	(vap)	42.156	60.185	[kg/m3]	4
	Temperature [C]	148	60	Spec.Heat	(Liq)		4.3096	kJ/(kg.°C)	4
4	Vapor [kg/h]	9530.4	9489.2	Spec.Heat	(vap)	2.4255	2.4072	kJ/(kg.°C)	4
4	Liquid [kg/h]		41.263	Conduct.	(Liq)		0.6515	[W/Mk]	4
	N condensed [kg/h]			Conduct.	(vap)	0.0473	0.0371	[W/Mk]	4
	Steam [kg/h]			Viscosity	(Liq)		0.4943	[cp]	4
	Water [kg/h]			Viscosity	(Vap)	0.0164	0.0142	[cp]	4
	Inlet pressure [barg]	54.8		Velocity		4.2	2.93	[m/s]	4
	Fouling resist.[m2.k/w]	0.0002		Allo/Calc. Press.Drop		0.700 /	0.097	[bar]	4
				AIR SIDE					
4	AirQuantity, Total (Per Unit)	31.42	[m3/s]	Face Velocity:		3.27		[m/s]	4
4	AirQuant./Fan	15.71	[m3/s]	Altit. / Min. Des.Amb.:		12.5 / 5		[m]/[C]	
4	Static pressure	168.85	[Pa]	Temp.In / Out :		50.26 / 68.06		[C]	4
				DESIGN					
	Design pressure	62	[Barg]	Code Requirements		ASME VIII DIV.1 ; API 661			
	Design temperature	175	[C]			TUBE			
	Test pressure	80.60	[Barg]	Material		SA-213 TP316L			
4	BAY width [m]	2.172		Outside Diameter		25.4		[mm]	
4	Bundle Size	2.116 x 3.900		Wall Thickness		1.651		[mm]	
	N .Bay	1		N ./Bundle		156			
	N .Bundles / Bay	1		Length		3.9		[m]	
	N .Tube Rows	6		Pitch		70.5		[mm]	4
	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			4
	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 X4" (80S)		Louvers		Yes, (Manual)			
	Qty / Size nozzle OUT	1 X 4" (80S)		Vibration switches		Yes, EExd, IIB T3 (IP 65)			
	Rating & Facing (in/out)	600 RF		Steam Coil		No			
4	TI/PI	Yes (2") / Yes (2")		Recirculation System		No			
	Vent / Drain	Yes (2") / Yes (2")	LWN #600	Tube / Tubesheet Connection.		Expanded + Strength weld			
				MECH. EQUIPMENT					
	FAN			ELECTRIC MOTOR					
	N ./Bay	2		N ./Bay		2			
	N autovariable/bay	50%		KW / Driver		7.5			4
4	rev / min	645.4		rev / min		1500			
	Diameter	1450	mm	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.	4.8		N .Bay		2			
4	Type of fan ring	Conical 30 deg		Service Factor		1.8			
	SPL@ 1m beside. fan	≤85	[dB(A)]	Ratio		2.32			
	NOTES:								
	1- 10% over design on duty and 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								
	5- Maximum allowable nozzle load = 3 x API.								
	6-MDMT is considered 5 C								
	7-Physical properties changed based on last revision of PFD Doc.No:BK-GCS-HY-120-PR-PF-0001-V04-AP								
	8-Priminarly fan data sheet is attached and final fan data sheet will be submitted after subvendor finalization.								4

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rev									
	AAC	DATA SHEET AIR COOLED HEAT EXCHANGER ABAN AIR COOLER CO					Date : Rev : CASE:	2024.Nov.25 4 00012-AC-3991	
	Customer / Purch.	(PEDCO) / (NISOC)					Item no.:	AE-2102 (A/B/C)	
	Plant location	Binak oilfield						Winter case	
	Service	2st Stage Gas Compression Cooler					No. Units:	3	
	Plot size(W,L) [m]	2.17 x 3.90 (note2)		DRAFT	INDUCED		No.of bay:	1	
4	Surface / unit-Finned	1027	[m2]	Bare Tube		48.548	·	[m2]	
4	Heat exchanged	495.5 (Note 1)	[KW]	MTD		34.1	·	[C]	4
4	Transf. rate-finned	16.86	[W/m2 ,k]	Bare Tube (C/D)		392.20/	356.65	[W/m2k]	4
				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)	36.175	50.059	[kg/m3]	4
	Temperature [C]	149	60	Spec.Heat	(Liq)			kJ/(kg.°C)	
	Vapor [kg/h]	8343.5	8343.5	Spec.Heat	(vap)	2.463	2.38	kJ/(kg.°C)	4
	Liquid [kg/h]			Conduct.	(Liq)			[W/Mk]	
	N condensed [kg/h]			Conduct.	(vap)	0.05	0.0387	[W/Mk]	4
	Steam [kg/h]			Viscosity	(Liq)			[cp]	
	Water [kg/h]			Viscosity	(Vap)	0.0163	0.0139	[cp]	4
	Inlet pressure [barg]	54.8		Velocity		4.28	3.1	[m/s]	
	Fouling resist.[m2.k/w]	0.0002		Allo/Calc. Press.Drop		0.700 /	0.081	[bar]	4
				AIR SIDE					
4	AirQuantity, Total (Per Unit)	31.18	[m3/s]	Face Velocity:		3.27		[m/s]	4
4	AirQuant./Fan	15.59	[m3/s]	Altit. / Min. Des.Amb.:		12.5 / 5		[m]/[C]	
4	Static pressure	167.92	[Pa]	Temp.In / Out :		50.26 /	65.57	[C]	4
				DESIGN					
	Design pressure	62	[Barg]	Code Requirements		ASME VIII DIV.1 ; API 661			
	Design temperature	175	[C]			TUBE			
	Test pressure	80.60	[Barg]	Material		SA-213 TP316L			
4	BAY width [m]	2.172		Outside Diameter		25.4		[mm]	
4	Bundle Size	2.116 x 3.900		Wall Thickness		1.651		[mm]	
	N .Bay	1		N ./Bundle		156			
	N .Bundles / Bay	1		Length		3.9		[m]	
	N .Tube Rows	6	equal count	Pitch		70.5		[mm]	4
	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			4
	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 X4" (80S)		Louvers		Yes, (Manual)			
	Qty / Size nozzle OUT	1 X 4" (80S)		Vibration switches		Yes, EExd, IIB T3 (IP 65)			
	Rating & Facing (in/out)	600 RF		Steam Coil		No			
4	TI/PI	Yes (2") / Yes (2")		Recirculation System		No			
	Vent / Drain	Yes (2") / Yes (2")	LWN #600	Tube / Tubesheet Connection.		Expanded + Strength weld			
				MECH. EQUIPMENT					
	FAN			ELECTRIC MOTOR					
	N ./Bay	2		N ./Bay		2			
	N autovariable/bay	50%		KW / Driver		7.5			
4	rev / min	645.4		rev / min		1500			
	Diameter	1450	mm	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			
	KW / Fan, Absorb.	4.8		N .Bay		2			
				Service Factor		1.8			
	SPL@ 1m beside. fan	≤85	[dB(A)]	Ratio		2.32			

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

5- Maximum allowable nozzle load = 3 x API.

6-MDMT is considered 5C

7-Physical properties changed based on last revision of PFD Doc.No:BK-GCS-HY-120-PR-PF-0001-V04-AP

8-Priminarly fan data sheet is attached and final fan data sheet will be submitted after subvendor finalization. 4