

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)								
	شماره پیمان: 053 - 073 - 9184						شماره صفحه: 1 از 24		
DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES									
پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه		
BK	GCS	HY	120	ME	DS	0001	V01		

طرح نگهداشت و افزایش تولید 27 مخزن

DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

نگهداشت و افزایش تولید میدان نفتی بینک

V01	JULY.2023	IFR	Havayar Co.	M. Fakharian	A.M. Mohseni	
V00	FEB.2023	IFR	Havayar Co.	M. Fakharian	M. Mehrshad	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class:

Status:

IFA: Issued for Approval

IFR: Issued for Review

IFI: Issued for Information

AFC: Approved for Construction

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)						 HAVAYAR INDUSTRIAL GROUP		
	شماره پیمان: 053 - 073 - 9184						شماره صفحه : 2 از 24		
DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES									
پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه		
BK	GCS	HY	120	ME	DS	0001	V01		

REVISION RECORD SHEET

PAGE	V00	V01	V02	V03	V04
1	X	X			
2	X	X			
3	X	X			
4	X	X			
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نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض
خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک
(BK-HD-GCS-CO-0008_03 قرارداد)



شماره پیمان:

053 - 073 - 9184

DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

شماره صفحه: 3 از 24

نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه

BK GCS HY 120 ME DS 0001 01

1	APPLICABLE TO:	☐ PROPOSALS	☒ PURCHASE	☐ AS BUILT								
2	FOR/USER	NISOC		SITE/LOCATION	Binak Oil Field		SERVICE	Sour Gas		NO. REQ'D	2 Operating / 1 Spare	
3	NOTE:	☐ INDICATES INFO. TO BE COMPLETED BY PURCH.		☐ BY MANUFACTURER WITH PROPOSAL		☒ BY MANUFACTURER AFTER ORDER		☒ BY MANUFACTURER OR PURCHASER AS APPLICABLE				
5	COMPR. MFR	Havayar / Kwangshin		TYPE MODEL NO(S)	KSOPT		SERIAL NO(S)	C-2101&C-2102 A/B/C				
6	COMPR.THROWS: TOTAL NO.	2		NO. WITH CYLS.	2		NOMINAL FRAME RATING	1050		BkW @ RATED R/MIN OF	420	
7	☐ MAX/MIN ALLOWABLE SPEED			/		r/min						
8	DRIVER MFR	As per Sub vendor List		DRIVER NAMEPLATE kW/OPERATING r/min	1050		/	420				
9	DRIVE SYSTEM:	☒ DIRECT COUPLED		☐ GEARED & COUPLED	☐ V-BELT							
10	TYPE OF DRIVER:	☒ IND. MOTOR		☐ SYN. MOTOR	☐ STEAM TURBINE	☐ GAS TURBINE	☐ ENGINE	☐ OTHER				
11	CYLINDERS CONSTRUCTION:	☒ LUBE		☐ NON-LUBE								
13	☒ MAX ACCEPTABLE AVG PISTON SPEED	4		m/s								
14	OPERATING CONDITIONS (EACH MACHINE)											
15	☒ SERVICE OR ITEM NO.	Continuous		Continuous		Continuous		Continuous				
16	☒ STAGE	1st		2nd		1st		2nd				
17	☒ NORM. OR ALT. CONDITION	Summer		Winter								
18	☒ CERTIFIED PT. (X) MARK ONE	x										
19	☒ MOLECULAR WEIGHT	24.52		24.52		21.56		21.56				
20	☒ Cp/Cv (K) @ 65°C OR	1.245		1.278		1.28		1.295				
21	INLET CONDITIONS:	AT INLET TO:		☒ PULSE DEVICES		☒ COMPRESSOR CYLINDER FLANGES						
22	NOTE:	☐ SIDE STREAM TO				STAGE(S), THESE INLET PRESS. ARE FIXED						
23	☒ PRESSURE (barg) @ PUL. SUPP. INLET	4.9		17.5		4.9		17.5				
24	☒ PRESSURE (barg) @ CYL. FLANGE	4.8		17.4		4.8		17.4				
25	☒ TEMPERATURE (°C)	36.8		59.9		18.9		59.9				
26	☐ REC: SIDE STREAM TEMPS (°C)											
27	☒ COMPRESSIBILITY (Z _s)	0.975		0.936		0.977		0.951				
28	INTERSTAGE:	INTERSTAGE Δ P INCL:		☐ PULSE DEVICES		☐ PIPING	☐ COOLERS	☐ SEPARATORS	☐ OTHER			
29	☒ ΔP BETWEEN STAGES, %/bar	/		/		/		/				
30	DISCHARGE CONDITIONS:	AT OUTLET FROM:		☒ PULSE DEVICE		☒ COMP. CYL. FLANGES		☐ OTHER				
31	☒ PRESSURE (barg) @ CYL. FLANGE	18.25		54.9		18.25		54.9				
32	☒ PRESS. (barg) @ PUL. SUPP. OUTLET	18.15		54.8		18.15		54.8				
33	☐ TEMP., ADIABATIC, °C											
34	☒ TEMP., PREDICTED, °C	129		146		116		150				
35	☒ COMPRESSIBILITY (Z ₂) OR (Z _{AVG})	0.964		0.923		0.970		0.948				
36	* CAPACITY AT INLET TO COMPRESSOR, NO NEGATIVE TOLERANCE (-0%)											
37	☒ kg/h	CAPACITY SPECIFIED		8664		8664		7585		7585		
38	IS	☒ WET		☐ DRY								
39	☒ Nm ³ /h (1 atm & 0 °C)	7918		7918		7887		7887				
40	* MFR.'S RATED CAPACITY (AT INLET TO COMPRESSOR & kW @ CERTIFIED TOLERANCE OF ±3% FOR CAP. & ±3% FOR kW)											
41	☒ kg/h	CAPACITY SPECIFIED		8935.5		8935.5		8343.5		8343.5		
42	IS	☒ WET		☐ DRY								
43	☒ INLET VOLUME FLOW (m ³ /h)	1589		1589		1589		1589				
44	☒ Nm ³ /h (1.013 bar & 0°C)	8162.9		8162.9		8668.6		8668.6				
45	☒ BkW/STAGE	441.1		450.8		435.2		468.5				
46	☒ TOTAL BkW @ COMPRESSOR SHAFT	891.8		891.8		903.7		903.7				
47	☒ TOTAL kW INCLUDING V-BELT & GEAR LOSSES											
49	* CAPACITY FOR NNT											
50	MANUFACTURER'S = REQUIRED ÷ 0.97											
51	THEREFORE REQUIRED = MFR'S x 0.97											
				REMARKS:		10% over design is considered for winter case has been considered (8343.5 kg/h)						
						10% over-design is considered for winter case based on basic documents.						
						Total kW including loss at PSV set pressure (60.8 barg): 949.8 kw						

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)									
شماره پیمان: 053 - 073 – 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES								شماره صفحه: 4 از 24	
		نسخه سریال نوع مدرک رشته تسهیلات صادر کننده بسته کاری پروژه									
		BK GCS HY 120 ME DS 0001 01									
GAS ANALYSIS AT OPERATING CONDITIONS MOLE % (BY VOLUME) ONLY										REMARKS	
☒ SERVICE/ITEM NO.			Continious		Continious		Continious		Continious		
☒ STAGE			1st		2nd		1st		2nd		
☒ NORMAL OR ALT			Summer		Winter						
M.W.											
AIR			28.966								
OXYGEN O ₂			32.000								
NITROGEN N ₂			28.016		0.2984		0.2984		0.3101		
WATER VAPOR H ₂ O			18.016		1.0314		1.0314		0.3638		
CARBON MONOX. CO			28.010								
CARBON DIOX. CO ₂			44.010		3.1606		3.1606		2.5202		
HYDRO. SULFIDE H ₂ S			34.076		5.4119		5.4119		4.7056		
HYDROGEN H ₂			2.016								
METHANE CH ₄			16.042		63.8921		63.8921		73.9809		
ETHYLENE C ₂ H ₄			28.052								
ETHANE C ₂ H ₆			30.068		13.7515		13.7515		11.4249		
PROPYLENE C ₃ H ₆			42.078								
PROPANE C ₃ H ₈			44.094		7.7314		7.7314		4.7371		
I-BUTANE C ₄ H ₁₀			58.120		0.8394		0.8394		0.3942		
n-BUTANE C ₄ H ₁₀			58.120		1.8594		1.8594		0.8130		
I-PENTANE C ₅ H ₁₂			72.146		0.6968		0.6968		0.3066		
n-PENTANE C ₅ H ₁₂			72.146		0.3774		0.3774		0.1450		
n-HEXANE C ₆ H ₁₄			86.180		0.6549		0.6549		0.2224		
n-HEPTANE C ₇ H ₁₆			100.20		0.1956		0.1956		0.0542		
n-OCTANE C ₈ H ₁₈			114.23		0.0596		0.0596		0.0149		
n-NONANE C ₉ H ₂₀			128.26		0.0297		0.0297		0.0071		
n-DECANE C ₁₀ H ₂₂			142.28		0.0099		0.0099		0.0000		
AMMONIA NH ₃			17.031								
HYDRO. CHLOR. HCl			36.461								
CHLORINE Cl ₂			70.914								
CHLORIDES - TRACES											
☒ CALCULATED MOL WT.			24.52		24.52		21.56		21.56		
☒ C _p /C _v (K) @ 65° OR °C			1.245		1.278		1.28		1.295		
NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINUTE TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUDED ABOVE.											
☒ SITE/LOCATION CONDITIONS NOTE 22											
ELEVATION 12.5 m 0.99 bar AMBIENT TEMPS: MAX 50 °C MIN 5 °C											
MIN DESIGN METAL TEMP °C (6.15.8.1) RELATIVE HUMIDITY: MAX 100 % MIN 0 %											
COMPRESSOR LOCATION: ☐ INDOOR ☐ HEATED ☐ UNHEATED ☐ AT GRADE LEVEL ☐ ELEVATED: m											
☒ OUTDOOR ☐ NO ROOF ☒ UNDER ROOF ☐ PARTIAL SIDES ☐ PLATFORM: ☐ ON-SHORE											
☐ OFF-SHORE ☐ WEATHER PROTECTION REQ. ☐ TROPICALIZATION REQ.											
☐ WINTERIZATION REQUIRED											
UNUSUAL CONDITIONS: ☒ CORROSIVES ☐ DUST ☐ FUMES ☐ OTHER											
ELECTRICAL CLASSIFICATIONS											
HAZARDOUS											
NON-HAZARDOUS											
MAIN UNIT ☒ ZONE 2 GROUP GR.IIB TEMP CLASS T3											
L.O. CONSOLE ☒ ZONE 2 GROUP GR.IIB TEMP CLASS T3											
CW CONSOLE ☒ ZONE 2 GROUP GR.IIB TEMP CLASS T3											

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)	
شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES	شماره صفحه : 5 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه 01 0001 DS ME 120 HY GCS BK	

PART LOAD OPERATING CONDITIONS					
CAPACITY CONTROL	BY:	☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER	NOTE 8		
(NOTE 7)	FOR:	☐ PART LOAD COND. ☐ START-UP ONLY ☒ BOTH			
	WITH:	☒ AUTO LOADING DELAY INTERLOCK (7.6.2.4) ☐ AUTO IMMEDIATE UNLOADING			
	USING:	☒ FIXED VOLUME PCK. ☒ SUCTION VALVE UNLOADERS: ☒ FINGER ☐ PLUG ☐ OTHER			
		ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)			
		NUMBER OF STEPS: ☐ ONE ☐ THREE ☒ FIVE ☐ OTHER _____			
		☐ RAIN COVER REQUIRED OVER UNLOADERS			

ALL UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 3.																																																																																																																			
INLET AND DISCHARGE PRESSURE ARE		☒ AT CYLINDER FLANGES		☐ PULSATION SUPPRESSOR FLANGES																																																																																																															
11 ☒ SERVICE OR ITEM NO. 12 ☒ STAGE 13 ☒ NORMAL OR ALTERNATE CONDITION 14 ☒ PERCENT CAPACITY 15 ☒ WEIGHT FLOW, kg/h 16 ☒ Nm ³ /h (1.013 bar & 0°C) 17 ☐ POCKETS/VALVES OPERATION * 18 ☒ POCKET CLEARANCE ADDED % 19 ☒ TYPE UNLOADERS, PLUG/FINGER 20 ☒ INLET TEMPERATURE, °C 21 ☒ INLET PRESSURE, barg 22 ☒ DISCHARGE PRESSURE, barg 23 ☐ DISCHARGE TEMP., ADIABATIC °C 24 ☒ DISCHARGE TEMP., PREDICTED °C 25 ☒ VOLUMETRIC EFF., %HE/%CE 26 ☒ CALC. GAS ROD LOAD, kN, C ** 27 ☒ CALC. GAS ROD LOAD, kN, T ** 28 ☒ COMB. ROD LOAD, kN C (GAS & INERTIA) 29 ☒ COMB. ROD LOAD, kN T (GAS & INERTIA) 30 ☒ ROD REV., DEGREES MIN @ X-HD PIN *** 31 ☒ kW/STAGE 32 ☒ TOTAL kW @ COMPRESSOR SHAFT 33 ☒ TOTAL kW INCL. V-BELT & GEAR LOSSES	<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="5">Continuous</th> </tr> <tr> <th colspan="5">1st</th> </tr> <tr> <th colspan="5">Summer</th> </tr> <tr> <th>0</th> <th>25</th> <th>50</th> <th>75</th> <th>100</th> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>8935.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>8162.9</td> </tr> <tr> <th>HE S & CE S</th> <th>HE F & CE S</th> <th>HE S or CE S</th> <th>HE F</th> <th>-</th> </tr> <tr> <td></td> <td>25% (Head Side)</td> <td></td> <td>25% (Head Side)</td> <td></td> </tr> <tr> <td>Finger</td> <td>Finger</td> <td>Finger</td> <td>Finger</td> <td>Finger</td> </tr> <tr> <td>36.8</td> <td>36.8</td> <td>36.8</td> <td>36.8</td> <td>36.8</td> </tr> <tr> <td>4.80</td> <td>4.80</td> <td>4.80</td> <td>4.80</td> <td>4.80</td> </tr> <tr> <td>18.25</td> <td>18.25</td> <td>18.25</td> <td>18.25</td> <td>18.25</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>129.0</td> </tr> <tr> <td>- / -</td> <td>36.235 / -</td> <td>72.47/- / 72.47/-</td> <td>36.235 / 72.47</td> <td>72.47 / 72.47</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>24453</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>22951</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>441.1</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					Continuous					1st					Summer					0	25	50	75	100					8935.5					8162.9	HE S & CE S	HE F & CE S	HE S or CE S	HE F	-		25% (Head Side)		25% (Head Side)		Finger	Finger	Finger	Finger	Finger	36.8	36.8	36.8	36.8	36.8	4.80	4.80	4.80	4.80	4.80	18.25	18.25	18.25	18.25	18.25					129.0	- / -	36.235 / -	72.47/- / 72.47/-	36.235 / 72.47	72.47 / 72.47										24453					22951										441.1															
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* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

HEAD END = HE					SUCTION VALVE(S) UNLOADED = S
OR					OR
CRANK END = CE	}	PLUS	{		FIXED POCKET OPEN = F
					OR
					VARIABLE POCKET OPEN = V

EXAMPLE: HE-F/CE-S = HEAD END FIXED POCKET OPEN / CRANK END SUCTION VALVE(S) UNLOADED.

** C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD

☐ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, _____ barg

CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER _____

☒ PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN _____ / _____ barg

REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH

IN1. To be specified?
HY Reply: Noted.

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شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES	شماره صفحه : 6 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه 01 0001 DS ME 120 HY GCS BK	

PART LOAD OPERATING CONDITIONS					
CAPACITY CONTROL	BY:	☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER _____			
	FOR:	☐ PART LOAD COND. ☐ START-UP ONLY ☒ BOTH			
	WITH:	☒ AUTO LOADING DELAY INTERLOCK (7.6.2.4) ☐ AUTO IMMEDIATE UNLOADING			
	USING:	☒ FIXED VOLUME PCK. ☒ SUCTION VALVE UNLOADERS: ☒ FINGER ☐ PLUG ☐ OTHER			
		ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)			
		NUMBER OF STEPS: ☐ ONE ☐ THREE ☒ FIVE ☐ OTHER _____			
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* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

HEAD END = HE		SUCTION VALVE(S) UNLOADED = S
OR	}	OR
CRANK END = CE	} PLUS	FIXED POCKET OPEN = F
		OR
	}	VARIABLE POCKET OPEN = V

EXAMPLE: HE-F/CE-S = HEAD END FIXED POCKET OPEN / CRANK END SUCTION VALVE(S) UNLOADED.

** C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD

☐ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, _____ barg

CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER _____

☒ PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN _____ / _____ barg

REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH

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شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES	شماره صفحه: 7 از 24
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<table style="width:100%;"> <tr> <td style="width:30%;">HEAD END = HE</td> <td style="width:10%; text-align: center;"> </td> <td style="width:10%;"></td> <td style="width:10%; text-align: center;"> </td> <td style="width:30%;">SUCTION VALVE(S) UNLOADED = S</td> </tr> <tr> <td>OR</td> <td></td> <td></td> <td style="text-align: center;">OR</td> <td></td> </tr> <tr> <td>CRANK END = CE</td> <td style="text-align: center;">} PLUS {</td> <td></td> <td style="text-align: center;">OR</td> <td>FIXED POCKET OPEN = F</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">OR</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;"> </td> <td>VARIABLE POCKET OPEN = V</td> </tr> </table>						HEAD END = HE				SUCTION VALVE(S) UNLOADED = S	OR			OR		CRANK END = CE	} PLUS {		OR	FIXED POCKET OPEN = F				OR						VARIABLE POCKET OPEN = V																																																																											
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EXAMPLE: HE-F/CE-S = HEAD END FIXED POCKET OPEN / CRANK END SUCTION VALVE(S) UNLOADED.																																																																																																									
** C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD																																																																																																									
☐ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, _____ barg																																																																																																									
CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER _____																																																																																																									
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نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض

خرید بکچ های کمپرسور گاز (دفت و برگشتی) بینک
(قرارداد BK-HD-GCS-CO-0008_03)



DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

شماره پیمان:

053 - 073 - 9184

شماره صفحه: 9 از 24

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
01	0001	DS	ME	120	HY	GCS	BK

● SCOPE OF BASIC SUPPLY

PURCHASER TO FILL IN (☐ ☐ ☐) AFTER COMMODITY TO INDICATE: ☐ BY COMPR. MFR. ☐ BY PURCH. ☐ BY OTHERS

● DRIVER (☒ ☐ ☐): ☐ VARIABLE SPEED SPEED RANGE _____ r/min TO _____ r/min
☒ INDUCTION MOTOR ☐ SYNCHRONOUS MOTOR ☐ STEAM TURBINE ☐ ENGINE ☐ OTHER _____
☐ API 541 ☐ API 546 ☐ API 611 ☐ API 612
☐ OUTBOARD BEARING ☐ PROVISION FOR DRY AIR PURGE FOR OUTBOARD BEARING.
☐ SLIDE BASE FOR DRIVER (☐ ☐ ☐) SOLE PLATE FOR DRIVER (☐ ☐ ☐)
☐ MOTOR STARTING EQUIPMENT (☐ ☐ ☐); DEFINE _____
☐ GEAR (☐ ☐ ☐): ☐ BASEPLATE FOR GEAR ☐ API 613 ☐ API 677
● COUPLING(S) (☒ ☐ ☐): ● LOW SPD. ☐ HI-SPD. ☐ QUILL SHAFT ☐ KEY-LESS DRV. ☐ KEY'D DRV. ☐ OTHER _____
☒ API 671
☐ V-BELT DRIVE (☐ ☐ ☐): ☐ SHEAVES & V-BELTS (☐ ☐ ☐) ☐ STATIC CONDUCTING V-BELTS ☐ BANDED V-BELTS
● DRIVE GUARD(S) (☒ ☐ ☐): ☐ MANUFACTURER'S STD. ● NON-SPARKING ☐ CALIF CODE ● API 671, ANNEX G
☐ OTHER

● PULSATION SUPPRESSORS (☒ ☐ ☐): ● INITIAL INLET & FINAL DISCHARGE ● SUPPORTS (☒ ☐ ☐)
● INTERSTAGE ● SUPPORTS (☒ ☐ ☐)
☐ SUPPRESSOR(S) TO HAVE MOISTURE REMOVAL SECTION: ☐ INITIAL INLET ☐ ALL INTERSTAGE INLET
● ACOUSTICAL SIMUL. STUDY (☒ ☐ ☐): DESIGN ☐ 1, EMPIRICAL PULSATION SUPPRESSION DEVICE SIZING
APPROACH ☐ 2, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS
CHECK ONLY ONE, SEE 7.9.4.1.1, TABLE 6) ☐ 3, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS
STUDY TO CONSIDER: PLUS MECHANICAL ANALYSIS
ALL SPECIFIED LOAD COND., INCL. ● SINGLE ACT., PLUS ● COMP. OPER. IN PARALLEL ☐ ALTERNATE GASES
☐ CRITICAL FLOW MEASUREMENT (7.9.4.2.5.3.3) ☐ WITH EXISTING COMP. AND PIPING SYSTEMS
☐ PULSATION SUPPRESS'N DEVICE LOW CYCLE FATIGUE ANALYSIS ● PIPING SYSTEM FLEXIBILITY
● VENDOR REVIEW OF PURCHASER'S PIPING ARRANGEMENT
NOTE: SEE APPENDIX N FOR INFORMATION REQUIRED FOR STUDY

PACKAGED: ☐ NO ☒ YES (☒ ☐ ☐) DEFINE BASIC SCOPE OF PACKAGING IN REMARKS SECTION, PAGE 5
☐ DIRECT GROUTED ☐ CEMENTED/MORTAR GROUT ☐ EPOXY GROUT; MFG/TYPE _____ / _____
☐ RAILS ☐ CHOCK BLOCKS ☒ SHIMS ☐ BASEPLT. ● SKID ☐ SOLEPLT. ☐ BOLTS OR STUDS FOR SOLEPLT. TO FRAME
☐ SUITABLE FOR COLUMN MOUNTING (UNDER SKID AND/OR BASEPLATE)
☒ LEVELING SCREWS ☐ NON-SKID DECKING ☐ SUB SOLEPLATES
● INTERCLR(S) (☐ ☒ ☐) ● OFF MOUNTED ☐ MACHINE MTD. ● AFTERCLR(S) (☐ ☒ ☐)
● SEPARATOR(S) (☐ ☒ ☐) ☐ CONDENSATE SEPARATION & COLLECTION FACILITY SYSTEM (7.8.2.1)
☐ INTERSTAGE PIP. (☐ ☐ ☐): ☐ FINAL DISC. PIP. (☐ ☐ ☐): ☐ PARTIAL PRE FAB, FIELD FIT ☐ SHOP FITTED
FLANGE FINISH ☐ API 618 FLANGE FINISH > 125 < 250 (7.9.5.1.16) ● FLANGE FINISH PER ANSI 16.5 ☐ SPECIAL FINISH
☐ SPECIAL PIPING REQUIREMENTS (7.7.1.13). (DEFINE IN REMARKS SECTION NEXT PAGE)
☐ INITIAL INLET, ☐ INTERSTAGE SUCTION PIPING ARR'D FOR: ● INSULATION (☒ ☐ ☐) ● HEAT TRACING (☒ ☐ ☐)
● INLET STRAINER(S) (☒ ☐ ☐): ● INITIAL INLET ☐ SIDESTREAM INLET ● SPOOL PIECE FOR INLET STRAINERS
● MANIFOLD PIPING; ☒ DRAINS ☒ VENTS ☐ RELIEF VALVES ☐ AIR/GAS SUPPLY
● RELIEF VALVE(S) (☐ ☒ ☐): ☐ INITIAL INLET ● INTERSTAGE ● FINAL DISCHARGE
☐ RUPTURE DISC(S) (☐ ☐ ☐) ☐ THRU STUDS IN PIPING FLANGES
☐ FOR ATMOSPHERIC INLET AIR COMPR. ONLY: ☐ INLET AIR FILTER (☐ ☐ ☐) ☐ INLET FILTER -SILENCER (☐ ☐ ☐)
● PREFERRED TYPE OF CYLINDER COOLING (☒ ☐ ☐): ● FORCED ☐ THERMOSYPHON _____ STAGE CYL(S)
☐ STATIC (STAND-PIPE) _____ STAGE CYL(S)
NOTE: MANUFACTURER SHALL RECOMMEND
BEST TYPE OF COOLING AFTER
FINAL ENGINEERING REVIEW OF ALL
OPERATING CONDITIONS
● CYL. COOLANT PIPING BY (☒ ☐ ☐) ☒ MATCH M'R'KED
● SINGLE INLET/OUTLET MANIFOLD & VALVES ● SIGHT GL'SS(ES)
● INDIVIDUAL INLET/ OUTLET PER CYL. ● VALVE(S)
● CLOSED SYSTEM WITH PUMP, COOLER, SURGE TANK, & PIPING

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)	 HAVAYAR INDUSTRIAL GROUP																
شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES <table border="1"> <tr> <td>نسخه</td> <td>سریال</td> <td>نوع مدرک</td> <td>رشته</td> <td>تسهیلات</td> <td>صادرکننده</td> <td>بسته کاری</td> <td>پروژه</td> </tr> <tr> <td>01</td> <td>0001</td> <td>DS</td> <td>ME</td> <td>120</td> <td>HY</td> <td>GCS</td> <td>BK</td> </tr> </table>	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	01	0001	DS	ME	120	HY	GCS	BK	شماره صفحه : 10 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه											
01	0001	DS	ME	120	HY	GCS	BK											
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 ● SCOPE OF BASIC SUPPLY (Con't) ● SEPARATE COOLING CONSOLE (☐ ☐ ☐): ● ONE FOR EA. TAG ☐ ONE CMMN TO ALL UNITS ● DUAL PUMPS (AUX. & MAIN) ● ARRANGED FOR HEATING JACKET WATER AS WELL AS COOLING ☐ SHOP RUN ● ROD PRESS. PACKING COOLING SYSTEM (☐ ☐ ☐): ☐ SEPARATE CONSOLE ● COMBINE WITH JKT SYSTEM ☐ FILTERS ● FRAME LUBE OIL SYSTEM (☐ ☐ ☐): ● AUX. PUMP ● DUAL FILTERS WITH TRANSFER VALVE ● SHOP RUN ☐ CONTINUOUS FLOW IN SENSING LINE TO PRESSURE SWITCHES ● SEPARATE LUBE OIL CONSOLE (☐ ☐ ☐): ☐ EXTENDED TO MOTOR OUTBOARD BEARING ● SHOP RUN NOTE: PIPING BETWEEN ALL UTILITY CONSOLES AND COMPRESSOR UNIT BY VENDOR ● CAPACITY CONTROL (☐ ☐ ☐): ● SEE DATA SHEET PAGE 3 FOR DETAILS ● IN INSTRUMENT & CONTROL PANEL ☐ SEPARATE MACHINE MOUNTED PANEL ☐ SEPARATE FREE STANDING PANEL ● PNEUMATIC ☐ ELECTRIC ☐ ELECTRONIC ☐ HYDRAULIC ● PROGRAMMABLE CONTROLLER NOTE19 ● INSTRUMENT & CONTROL PANEL (☐ ☐ ☐): ● ONE FOR EACH UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MOUNTED ● FREE STANDING (OFF UNIT) ☐ BUFFER GAS CONTROL PANEL (☐ ☐ ☐): ☐ ONE FOR EACH UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MOUNTED ☐ FREE STANDING (OFF UNIT) SEE INSTRUMENTATION DATA SHEETS FOR DETAILS OF PANEL, ADDITIONAL REMARKS, AND INSTRUMENTATION. NOTE: ALL TUBING, WIRING, & CONNECTIONS BETWEEN OFF-UNIT FREE STANDING PANELS AND COMPRESSOR UNIT BY PURCHASER. ● HEATERS (☐ ☐ ☐): ● FRAME LUBE OIL ● CYL. LUBRICATORS ● COOLING WATER ☐ DRIVER(S) ☐ GEAR OIL ● ELECTRIC ☐ STEAM ● BARRING DEVICE (☐ ☐ ☐): ☐ MANUAL ☐ PNEUMATIC ● ELECTRIC ☐ FLYWHEEL LOCKING DEVICE (☐ ☐ ☐) ☐ CRANKCASE RAPID PRESSURE RELIEF DEVICE(S) (☐ ☐ ☐) ● SPECIAL CORROSION PROTECTION: ☐ NO ● YES ☐ MFR'S STANDARD ● OTHER NACE MR0175 for wetted pipes ☐ HYDRAULIC TENSIONING TOOLS ☐ NO ☐ YES ● MECHANICAL RUN TEST: ☐ NO ● YES ☐ MFG'S STANDARD ● OTHER MFR. Procedure (Approved by Purchaser) ☐ COMPLETE SHOP RUN TEST OF ALL MACHINE MOUNTED EQUIPMENT, PIPING & APPURT.(S) PAINTING: ● MANUFACTURER'S STANDARD ● SPECIAL AS PER: BK-GNRL-PEDCO-000-PI-SP-0006 NAMEPLATES: ☐ U.S. CUSTOMARY UNITS ● SI UNITS SHIPMENT: ● DOMESTIC ☐ EXPORT ☐ EXPORT BOXING REQUIRED (☐ ☐ ☐) ● STANDARD 6 MONTH STORAGE PREPARATION (☐ ☐ ☐), PER SPEC ● OUTDOOR STORAGE FOR OVER 6 MONTHS (☐ ☐ ☐), PER SPEC MFG's Procedure (12 month from shipment) ● INITIAL INSTALLATION AND OPERATING TEMP ALIGNMENT CHECK AT JOBSITE BY VENDOR REPRESENTATIVE ☐ COMPRESSOR MANUFACTURER'S USER'S LIST FOR SIMILAR SERVICE ● COMPRESSOR VALVE DYNAMIC RESPONSE ● PERFORMANCE DATA REQUIRED (9.3.3): ● BHP VS. SUCTION PRESSURE CURVES ● ROD LOAD/GAS LOAD CHARTS ☐ VALVE FAILURE DATA CHARTED ● SPEED/TORQUE CURVE DATA ● BkW VS. CAPACITY PERFORMANCE CURVES OR TABLES REQUIRED FOR UNLOADING STEPS AND/OR VARIABLE SUCTION/DISCHARGE PRESSURES																		

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REMARKS:



نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض

خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک
(قرارداد BK-HD-GCS-CO-0008_03)



DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

شماره پیمان:

053 - 073 - 9184

شماره صفحه : 11 از 24

نسخه	سریال	نوع مدرک	رشته	تسهيلات	صادرکننده	بسته کاری	پروژه
01	0001	DS	ME	120	HY	GCS	BK

UTILITY CONDITIONS

ELECTRICAL POWER:	AC VOLTS	/	PHASE	/	HERTZ	DC VOLTS	AC VOLTS	/	PHASE	/	HERTZ	DC VOLTS
● MAIN DRIVER	11000	/	3	/	50		110	/	1	/	50	
● AUXILIARY MOTORS	400	/	3	/	50		230	/	1	/	50	
● HEATERS	230	/	1	/	50			/		/		

Note: Heater below than 3kw is 230Vac.

INSTRUMENT AIR:	NORMAL PRESSURE	barg	MAX/MIN	4	/	8.5	barg
NITROGEN:	NORMAL PRESSURE	barg	MAX/MIN		/		barg

<u>STEAM</u> FOR:				<u>DRIVERS</u>				<u>HEATERS</u>						
INLET: PRESS	barg	MAX/MIN	/	barg	INLET: PRESS	barg	MAX/MIN	/	barg	(NORM.) TEMP	°C	MAX/MIN	/	°C
(NORM.) TEMP	°C	MAX/MIN	/	°C	(NORM.) TEMP	°C	MAX/MIN	/	°C	EXH'ST: PRESS	barg	MAX/MIN	/	barg
EXH'ST: PRESS	barg	MAX/MIN	/	barg	(NORM.) TEMP	°C	MAX/MIN	/	°C	(NORM.) TEMP	°C	MAX/MIN	/	°C

<u>COOLING WATER</u> FOR:				<u>COMPRESSOR CYLINDERS</u>				<u>COOLERS</u>							
TYPE WATER				TYPE WATER				TYPE WATER							
SUPP.: PRESS	3	barg	MAX/MIN	/	barg	SUPP.: PRESS	barg	MAX/MIN	/	barg	(NORM.) TEMP	°C	MAX/MIN	/	°C
(NORM.) TEMP	58	°C	MAX/MIN	/	°C	(NORM.) TEMP	°C	MAX/MIN	/	°C	RT'RN: PRESS	barg	MAX/MIN	/	barg
RT'RN: PRESS	barg	MAX/MIN	/	barg	(NORM.) TEMP	°C	MAX/MIN	/	°C	(NORM.) TEMP	°C	MAX/MIN	/	°C	
(NORM.) TEMP	65	°C	MAX/MIN	/	°C										

COOLING FOR ROD PACKING:

TYPE FLUID	GLYCOL H2O	SUPPLY PRESSURE	3	barg @	58	°C	RETURN	barg @	65	°C
------------	------------	-----------------	---	--------	----	----	--------	--------	----	----

FUEL GAS:	NORMAL PRESSURE	barg	MAX/MIN	/	barg	LHV	MJ/m ³
COMPOSITION							

REMARKS/SPECIAL REQUIREMENTS:

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (BK-HD-GCS-CO-0008_03 قرارداد)							
شماره پیمان: 053 - 073 - 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES					شماره صفحه : 13 از 24		
		پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
		BK	GCS	HY	120	ME	DS	0001	01

1 CONSTRUCTION FEATURES									
2	SERVICE ITEM NO.	Sour Gas							
3	STAGE	2							
4	CYLINDER SIZE (BORE DIA), mm	475 / 280							
5	ROD RUN-OUT: NORMAL COLD VERTICAL								
6	(per Annex C)								
7	CYLINDER INDICATOR VALVES REQUIRED	☐	☐	☐	☐	☐	☐	☐	☐
8	INDICATOR CONNECTIONS ABOVE 345 bar	☐	☐	☐	☐	☐	☐	☐	☐
9	FLUOROCARBON SPRAYED CYLINDER	☐	☐	☐	☐	☐	☐	☐	☐
10 MATERIALS OF CONSTRUCTION									
11	CYLINDER(S)	A395 Gr. 60-40-18							
12	CYLINDER LINER(S)	A278 CL.NO.40							
13	PISTON(S)	A395 Gr. 60-40-18							
14	PISTON RINGS	Filled PTFE							
15	WEAR BANDS ● REQUIRED	Filled PTFE							
16	PISTON ROD(S): MATERIAL/YIELD, N/mm ²	A564 Type 630 / / / / /							
17	THREAD ROOT STRESS @ MACRL * @ X-HD END								
18	PISTON ROD HARDNESS, BASE MATERIAL, Rc								
19	PISTON ROD COATING ● REQUIRED	TC							
20	COATING HARDNESS, Rc								
21	VALVE SEATS / SEAT PLATE	A276 Type 420							
22	VALVE SEAT MIN HARDNESS, Rc								
23	VALVE GUARDS (STOPS)	A276 Type 420							
24	VALVE DISCS	PEEK (Non-Metallic)							
25	VALVE SPRINGS	B637 (Inconel X-750)							
26	ROD PRESSURE PACKING RINGS	Filled PTFE							
27	ROD PRESSURE PACKING CASE	A276 TP316L							
28	ROD PRESSURE PACKING SPRINGS								
29	SEAL / BUFFER PACKING, DISTANCE PIECE								
30	SEAL / BUFFER PACKING, INTERMEDIATE								
31	WIPER PACKING RINGS								
32	MAIN JOURNAL BEARINGS, CRANKSHAFT	A668 CL.D							
33	CONNECTING ROD BEARING, CRANKPIN								
34	CONNECTING ROD BUSHING, X-HD END								
35	CROSSHEAD (X-HD) PIN BUSHING								
36	CROSSHEAD PIN								
37	CROSSHEAD	A216 Gr.WCB							
38	CROSSHEAD SHOES	A278CL.NO.35 "Wj2"Coating							
39	INSTRUMENTATION IN COLD SIDE								
40	CONTACT W/PROCESS GAS HOT SIDE								
41	* MACRL = MAXIMUM ALLOWABLE COMBINED ROD LOAD								
42	COMPRESSOR CYLINDER ROD PACKING ☐ FULL FLOATING PACKING ☒ VENTED TO: ☒ FLARE @ _____ barg ☐ ATMOS. ☐ SUCTION PRESSURE @ 0.8 barg ☐ FORCED LUBRICATED ☐ NON-LUBE ☒ WATER COOLED, _____ STAGE(S), _____ GPM REQ'D ☒ OIL COOLED, _____ STAGE(S), _____ GPM REQ'D ☒ WATER FILTER ☐ PROV.FUTURE WATER/OIL COOLING ☐ VENT/BUFFER GAS SEAL PACKING ARR. (REF. FIG I-1) ☒ CONSTANT OR ☐ VARIABLE DISPOSAL SYSTEM ☐ BUFFER GAS PRESSURE, _____ barg ☐ SPLASH GUARDS FOR WIPER PACKING		DISTANCE PIECE(S): ☐ TYPE A ☐ TYPE B ☒ TYPE C ☐ TYPE D COVERS: ☒ SOLID METAL ☐ SCREEN ☐ LOUVERED CYLINDER COMPARTMENT: ☒ VENTED TO Flare @ 0.8 barg ☒ PURGED AT 1.8 barg ☐ PRESSURIZED TO _____ barg ☐ WITH RELIEF VALVE FRAME COMPARTMENT: ☒ VENTED TO ATM barg ☒ PURGED AT 0.5 ~ 1 barg ☐ PRESSURIZED TO _____ barg ☐ WITH RELIEF VALVE ☐ DISTANCE PIECE MAWP _____ barg						

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)							
شماره پیمان: 053 - 073 - 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES				شماره صفحه: 14 از 24			
		نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
		01	0001	DS	ME	120	HY	GCS	BK

☒ CONSTRUCTION FEATURES (CONTINUED)																																																																																															
☐ FABRICATED CYLINDER, HEADS, & CONNECTION SKETCHES FOR DESIGN REVIEW BY PURCHASER. (6.15.5.13)		☒ BUFFER GAS PACKING ARR. REF: ANNEX I ☐ OIL WIPER PACKING PURGE FIGURES I-1, I-2 & I-3 ☒ INTERMEDIATE PARTITION PURGE INERT BUFFER PURGE GAS: ☒ N ₂ ☐ OTHER _____ ☒ VENT, DRAIN, PURGE PIPING BY MFG'R ☐ NO ☒ YES																																																																																													
☒ COUPLING(S) ☒ LOW-SPEED ☐ HI-SPEED Between Compressor & Driver or Gear Between Driver & Gear BY MANUFACTURER TBD MODEL TBD TYPE TBD API-671 APPLIES ☒ YES ☐ NO		☐ V-BELT DRIVE DRIVEN SHEAVE DRIVE SHEAVE (COMPRESSOR SHAFT) (DRIVER SHAFT) RPM (EXPECTED) _____ PITCH DIA. (IN.) _____ ☐ QTY & GROOVE X-SEC. _____ POWER TRANSMITT'D _____ Incl. Belt Losses DRIVER NAMEPLATE HP RATING _____ ☐ CENTER DISTANCE (IN.) _____ ☐ QTY, TYPE, _____ X-SEC., & LENGTH BELTS _____ ☐ BELT SERVICE FACTOR (RELATIVE TO DRIVER NAMEPLATE HP RATING) _____																																																																																													
☒ INSPECTION AND SHOP TESTS (REF. 8.1.5)		☒ CYLINDER LUBRICATION																																																																																													
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سطح الارض و ابنیه تحت الارض

خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک
(قرارداد BK-HD-GCS-CO-0008_03)



شماره پیمان:

053 - 073 - 9184

DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

شماره صفحه : 16 از 24

نسخه 01 سریال 0001 نوع مدرک DS رشته ME تسهیلات 120 صادر کننده HY بسته کاری پروژه GCS BK

FRAME LUBE OIL SYSTEM

BASIC LUBE OIL SYSTEM FOR FRAME:

☐ SPLASH

☒ PRESSURE (FORCED)

☒ HEATERS REQUIRED:

☒ REF: TYPE MAIN BEARINGS:

☐ TAP'RD ROLL'R

☒ PRECISION SL'VE

☒ ELEC. W/THERMOSTAT(S) ☐ STEAM

PRESSURE SYSTEM:

☒ MAIN OIL PUMP DRIVEN BY:

☒ COMP. CRANKSHAFT

☐ ELEC. MOTOR ☐ OTHER

☒ PSV FOR MAIN PUMP EXTERNAL TO CRANKCASE

☒ CHECK VALVE ON MAIN PUMP (FIG G-5)

☒ AUX OIL PUMP DRIVEN BY:

☒ ELEC. MOTOR

☐ OTHER

☐ HAND OPERATED PRE-LUBE PUMP FOR STARTING

☐ OPERATIONAL TEST & 4 HOUR MECH RUN TEST

☐ CONTINUOUS OIL FLOW THROUGH SWITCH SENSING LINE (7.7.2.5)

SEP. CONSOLE FOR PRESS. LUBE SYS:

☒ ONE CONSOLE FOR EA. COMP.

☐ ONE CONSOLE FOR COMPRESSORS

Note: Instrumentation to be listed on Instrumentation Data Sheets.

☐ CONSOLE TO BE OF DECK PLATE TYPE CONSTRUCTION SUITABLE FOR MULTI-POINT SUPPORT AND GROUTING WITH GROUT & VENT HOLES.

☒ ELECTRICAL CLASSIFICATION : (ZONE 2 GROUP IIB TEMP CLASS T3 ☐ NON-HAZARDOUS

BASIC SYS. REQ'MTS (NORM. OIL FLOWS & VOLUMES)

LUBE OIL

FLOW

PRESSURE

VISCOSITY

SUMP VOLUME

lit/min

barg

SSU @ 40°C

SSU @ 100°C

m³

☒ COMPRESSOR FRAME

136

☐ DRIVER

☐ GEAR

SYSTEM PRESSURES:

☒ DESIGN

8 barg

☒ HYDROTEST

10.4 barg

☒ PRESSURE CONTROL VALVE SETTING

5.5 barg

☒ PUMP REL'F VALVE(S) SET

8 barg

PIPING MATERIALS:

CARBON STEEL

STAINLESS STEEL WITH SS FLANGES

STAINLESS STEEL WITH CARBON STEEL FLANGES

☒ UPSTREAM OF PUMPS & FILTERS

☐

☒

☐

☒ DOWNSTREAM OF FILTERS

☐

☒

☐

☐

☐

☐

☐

☐

☐

☐

☐

PUMPS (Gear or Screw Type Only)

☐ RAT'D FL'W

☐ PRESSURE

☐ COLD START REQ'D kW

☐ DRIVER kW

☐ SPEED R/MIN

☐ COUPLING REQ'D

☐ MECH. SEAL REQ'D

MAIN

136

6

Shaft Driven

420

☐

☐

AUXILIARY

136

6

7.5

1450

☒

☒

☒ PUMP CASING MATERIAL (Ref. 6.14.2.1.5):

MAIN PUMP

Cast Iron

AUX PUMP

Cast Iron

☒ GUARD(S) REQ. FOR COUPLING(S):

☐ MAIN PUMP

☒ AUX PUMP

☒ GUARD TYPE OR CODE

Non-sparking

☒ AUXILIARY PUMP CONTROL:

☐ MANUAL

☒ AUTOMATIC

☒ ON-OFF-AUTO SEL. SWITCH:

☐ BY PURCH.

☒ BY MFR.

☒ WIRING TO TERMINAL BOX:

☒ BY PURCH.

☒ BY MFR.

☒ SWITCHES

☐ RTD'S/THERMOCOUPLES

COOLERS:

☐

SHELL & TUBE

☐

SINGLE

☐ DUAL W/TRANSFER VALVE

☐ MFG'S STD.

☐ TEMA C

☐ TEMA R (API 660)

☐

REMOVABLE BUNDLE

☐

WATER COOLED

☒ AIR COOLED (API-661)

☒

W/BYPASS & TEMP CONTROL VALVE:

☐ MANUAL

☒ AUTO

☐

SEE SEPARATE HEAT EXCHANGER DATA SHEETS FOR DETAILS, SPECIFY % GLYCOL ON COOLING WATER SIDE

FILTER(S)

☐

SINGLE ☒ DUAL W/TRANSFER VALVE

☒ ASME CODE DESIGN

☐ ASME CODE STAMPED

☐

DESIGN PRESSURE, barg

☐ Δ P CLEAN, barg

☐ Δ P COLLAPSE, barg

☐

MICRON RATING,

☐ CARTRIDGE MATERIAL,

☐ CARTRIDGE P/N

☐

BONNET MATERIAL,

☐ CASING MATERIAL,

SS 316

☐ FURN.SPARE CARTR.,QTY

SYS. COMPONENT SUPP.

MANUFACTURER

MODEL

MANUFACTURER

MODEL

☒ MAIN PUMP

As per sub vendor list

☒ OIL COOLER(S)

As per sub vendor list

☒ AUXILIARY PUMP

As per sub vendor list

☒ TRANSFER VALVE(S)

As per sub vendor list

☐ MECHANICAL SEALS

As per sub vendor list

☒ PUMP COUPLING(S)

As per sub vendor list

☒ ELECTRIC MOTORS

As per sub vendor list

☒ SUCTION STRAINER(S)

As per sub vendor list

☐ STEAM TURBINES

As per sub vendor list

☒ CHECK VALVE(S)

As per sub vendor list

☒ OIL FILTER(S)

As per sub vendor list

☐

As per sub vendor list

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)						
شماره پیمان: 053 - 073 - 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES					شماره صفحه: 17 از 24	
		نسخه: 01 سریال: 0001 نوع مدرک: DS رشته: ME تسهیلات: 120 صادرکننده: HY بسته کاری: GCS پروژه: BK						

COOLANT SYSTEM									
● BASIC COOLING SYS. FOR: ● COMPRESSOR CYL.(S) ● ROD PACKING(S) ○ PROCESS COOLER(S) ○ OIL COOLER(S) ● HEATERS REQ'D FOR PRE-HEATING: ● ELEC.W/ THERMOSTAT(S) ○ STEAM ● PRESSURE FORCED CIRCULATING SYS: ○ OPEN, PIPING BY: ○ PURCH. ○ MFR ● CLOSED, PIPING BY MFR. MAIN COOLANT PUMP DRIVEN BY: ● ELEC. MOTOR ○ STEAM TURBINE ○ OTHER AUX COOLANT PUMP DRIVEN BY: ● ELEC. MOTOR ○ STEAM TURBINE ○ OTHER ● SEP. CONSOLE FOR COOLANT SYSTEM.: ● ONE CONSOLE FOR EA. COMP. ○ ONE CONSOLE FOR COMP'RS NOTE: Instrumentation to be listed on instrumentation data sheets. ○ CONSOLE TO BE OF DECK PLATE TYPE CONSTRUCTION SUITABLE FOR MULTI-POINT SUPPORT AND GROUTING WITH GROUT & VENT HOLES. ○ ELECTRICAL CLASSIFICATION: C ZONE 2 GROUP IIB TEMP CLASS T3 ○ NON-HAZARDOUS									
○ BASIC SYS. REQ'MTS (NORM. COOLANT FLOW DATA) ○ COOLANT TO BE % ETHYLENE GLYCOL SITE									
		FORCED	THERMO	STAND	FLOW	PRESSURE	INLET TEMP	OUTLET TEMP	FLOW
		COOL'G	SYPHON	PIPE	m ³ /h	barg	°C	°C	IND'TR
CYLINDER(S),	1st STAGE	●	○	○	15.3	3	58	65	●
CYLINDER(S),	2nd STAGE	●	○	○		3	58	65	●
CYLINDER(S),	STAGE	○	○	○					○
CYLINDER(S),	STAGE	○	○	○					○
CYLINDER(S),	STAGE	○	○	○					○
CYLINDER(S),	STAGE	○	○	○					○
PISTON ROD PACK'G TOTAL		●			0.4	3	58	65	●
INTERCOOLER(S) TOTAL		○							○
AFTERCOOLER		○							○
OIL COOLER(S)		○							○
TOTAL FLOW					15.7				
● SYS. PRESSURES: ● DESIGN, 5 barg ● HYDROTEST, 7.5 barg ○ RELIEF VALVE(S), SETTING barg ○ COOLANT RESERVOIR: ◇ SIZE, mm IN DIA X mm IN HT. ◇ CAPACITY 1.5 m ³ ◇ RESERVOIR MATERIAL ◇ INTERNAL COATING, TYPE Carbon Steel / Epoxy Paint ● LEVEL GAUGE ● LEVEL TRANSMITTER ● DRAIN VALVE ● INSPECTION & CLEAN-OUT OPENINGS ● PUMPS: (CENTRIFUGAL ONLY) ◇ RAT'D FL'W ◇ PRESS. ◇ REQ'D ◇ DRIVER ◇ SPEED COUPLING MECH.SEAL MAIN 15.7 m ³ /h 3.5 barg kW 7.5 kW r/min REQ'D REQ'D AUXILIARY 15.7 m ³ /h 3.5 barg kW 7.5 kW r/min REQ'D REQ'D ● PUMP CASING MATERIAL (Ref 6.14.2.1.5): MAIN PUMP Cast Iron AUX PUMP Cast Iron ● GUARD(S) REQ'D FOR COUP'G(S) ● MAIN PUMP ● AUX PUMP ○ GUARD TYPE OR CODE ○ AUX.PUMP CONTROL: ○ MANUAL ● AUTO ● ON-OFF-AUTO SEL. SWITCH: ○ BY PURCH. ● BY MANUFACTURER ● WIRING TO TERMINAL BOX: ● BY PURCH. ○ BY MANUFACTURER									
● COOLANT HEAT EXCHANGER: ○ SHELL & TUBE ○ SINGLE ○ DUAL W/TRANSFER VALVE ○ TEMA C ○ TEMA R (API 660) (DATA SHEETS ATTACHED) ● AIR COOLED EXCHANGER ● W/BYPASS & TEM. CONTROL VALVE ○ MANUAL ● AUTO ○ LOUVERS FOR AIR EXCH. ○ SEE SEPARATE COOLER DATA SHEET FOR DETAILS; SPECIFY % GLYCOL ON BOTH SIDES OF SHELL & TUBE									
SYS. COMPONENT SUPP. MANUFACTURER MODEL MANUFACTURER MODEL									
● MAIN PUMP		as per sub vendor list		● TEMP CONTROL VALVE(S)		as per sub vendor list			
● AUXILIARY PUMP		as per sub vendor list		● TRANSFER VALVE(S)		as per sub vendor list			
◇ MECHANICAL SEALS				● PUMP COUPLING(S)		as per sub vendor list			
● ELECTRIC MOTORS		as per sub vendor list							
◇ STEAM TURBINES									
◇									
◇									
◇									

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (BK-HD-GCS-CO-0008_03 قرارداد)																	
شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES <table border="1"> <tr> <td>نسخه</td> <td>سریال</td> <td>نوع مدرک</td> <td>رشته</td> <td>تسهیلات</td> <td>صادرکننده</td> <td>بسته کاری</td> <td>پروژه</td> </tr> <tr> <td>01</td> <td>0001</td> <td>DS</td> <td>ME</td> <td>120</td> <td>HY</td> <td>GCS</td> <td>BK</td> </tr> </table>	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	01	0001	DS	ME	120	HY	GCS	BK	شماره صفحه: 18 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه											
01	0001	DS	ME	120	HY	GCS	BK											
PULSATION SUPPRESSION DEVICES FOR RECIPROCATING COMPRESSORS THESE SHEETS TO BE FILLED OUT FOR EACH SERVICE AND/OR STAGE OF COMPRESSION																		
APPLICABLE TO: ☐ PROPOSALS ☒ PURCHASE ☐ AS BUILT FOR/USER National Iranian South Oil Company (NISOC) SITE/LOCATION Binak Oil Field AMBIENT TEMPERATURE MIN/MAX 5 / 50 °C COMPRESSOR SERVICE Sour Gas NUMBER OF COMPRESSORS 3 COMPRESSOR MFG. Havayar / Kwangshin MODEL/TYPE KSOPT SUPPRESSOR MFG. AVL NOTE: ☐ Ind.Data Comp.'d Purch. ☐ By Compr/Supp.Mfg.w/Proposal ☒ By Mfg(s) after order ☐ By Mfg(s)/Purchaser as Applicable																		
GENERAL INFORMATION APPLICABLE TO ALL SUPPRESSORS TOTAL NUMBER OF SERVICES AND/OR STAGES 2 TOTAL NUMBER OF COMPRESSOR CYL. 2 TOTAL NUMBER OF CRANKTHROWS 2 STROKE 250 r/min 420 ☐ ASME CODE STAMP ☐ GOVERNMENTAL CODES OF ASME sec. VIII Div.1 CODE REGULATIONS APPLY ☒ OTHER APPLICABLE PRESSURE VESSEL SPEC. OR CODE ☒ LUBE SERVICE ☐ NON-LUBE SERV. ☐ NO OIL ALLOWED INTERNALLY DRY TYPE INTER.CORR.COATING ☐ YES ☐ NO RADIOGRAPHY (X-RAY OF WELDS): ☐ NONE ☐ SPOT ☒ 100% ☐ IMPACT TEST ☐ SPECIAL WELDING REQUIREMENTS ☒ SHOP INSPECTION ☒ WITNESS HYDROTEST ☒ OUTDOOR STORAGE OVER 6 MONTHS ☒ SPECIAL PAINT SPEC ☐ WITNESSED ☐ OBSERVED																		
CYLINDER, GAS, OPERATING, AND SUPPRESSOR DESIGN DATA																		
SERVICE Wet HC gas STAGE NO. 1st / 2nd																		
COMPRESSOR MANUFACTURER'S RATED CAPACITY Kg/h 8935.5 m3/h 1589 Nm3/h 8162.9																		
☒ LINE SIDE OPERATING PRESSURE INLET, 4.9 / 17.4 bar DISCHARGE 18.25 / 54.8 bar																		
☒ OPERATING TEMP. WITHIN SUPPRESSORS INLET, 36.8 / 59.9 °C DISCHARGE 129 / 146 °C																		
☒ ALLOWABLE PRESSURE DROP THROUGH SUPPRESSORS Δ P 68 / 65 mbar / 1.16 / 1.12 % Δ P 223/215 mbar / 1.16 / 1.12 %																		
INLET SUPPRESSOR DISCHARGE SUPPRESSOR																		
☒ SUPPRESSOR TAG NUMBER																		
☒ COMBINATION INLET SUPP SEPARATOR/INTERNAL ☐ YES ☒ NO / ☐ YES ☒ NO																		
☒ NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE 1 / 1 1 / 1																		
☒ ALLOWABLE PEAK-PEAK PULSE @ LINE SIDE NOZZLE bar / % bar / %																		
☒ ALLOWABLE PEAK-PEAK PULSE @ CYL FLANGE NOZZLE bar / % bar / %																		
☒ DESIGN FOR FULL VACUUM CAPABILITY ☐ YES ☒ NO																		
☒ MIN. REQ'D WORKING PRESSURE & TEMPERATURE																		
NOTE: After design, the actual MAWP & temp are to be determined based on the weakest component and stamped on the vessel. The actual MAWP is to be shown on pg.14 line 12 and on the U1A Forms.																		
☒ INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2																		
NOTE: This is a Reference																		
☒ AS BUILT VOLUME (m³)																		
1.438 / 0.5 m³ 0.911 / 0.339 m³																		

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)						 	
شماره پیمان: 053 - 073 - 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES						شماره صفحه: 19 از 24	
		نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه 01 0001 DS ME 120 HY GCS BK							
1	PULSATION SUPPRESSION DEVICES FOR RECIPROCATING COMPRESSORS (CONT'D)						SERVICE		Sour Gas
2	THESE SHEETS TO BE FILLED OUT FOR EACH SERVICE AND/OR STAGE OF COMPRESSION						STAGE NO.		1st / 2nd
3	CONSTRUCTION REQUIREMENTS & DATA						INLET SUPPRESSOR		DISCHARGE SUPPRESSOR
4	● SUPPRESSOR TAG NUMBER						C-2101-D1 / C-2102-D1		C-2101-D2 / C-2102-D2
5	● BASIC MATERIAL REQUIRED, CS, SS, ETC.						Carbon Steel (NOTE13)		Carbon Steel (NOTE 13)
6	◆ ACTUAL MATERIAL DESIGNATION						/		/
7	○ SPECIAL HARDNESS LIMITATIONS, Rc						SHELL & HEADS		WELDS
8	● CORROSION ALLOWANCE., mm						3 mm		3 mm
9	● WALL THICKNESS, mm						TBD mm/ TBD mm		TBD mm/ TBD mm
10	■ NOM. SHELL DIA X OVERALL LGTH. (INCH/VOL.mm³)						TBC x TBC mm/ TBD mm³		TBD x TBC mm/ TBD mm³
11	■ PIPE OR ROLLED PLATE CONSTRUCTION						□ PIPE ■ ROLLED PLATE		□ PIPE ■ ROLLED PLATE
12	◆ ACT. MAX ALLOW. WORKING PRESS. AND TEMPERATURE						24.5 / 62 bar @ 180 °C		24.5 / 62 bar @ 180 °C
13	● MINIMUM DESIGN METAL TEMP (6.15.8.1)						-26 °C		-26 °C
14	● INLET SUPPRESS. TO BE SAME MAWP AS DISCH'RG SUPPRESS.						● YES ○ NO		
15	◇ MAX EXPECTED PRESSURE DROP(Δ P, %) LINE PRESS						Δ P bar/ %		Δ P bar/ %
16	◇ WEIGHT (kg EACH)						kg		kg
17	○ INSUL NUTS & ALLOW. FOR INSULATION REQUIRED (X)								
18	◇ EXPECTED P-P PULSE @ LINE SIDE/CYL FLG, % LINE PRESS BASED ON FINAL SUPPRESSOR DESIGN						% / %		% / %
19	□ SUPPORTS, TYPE/QUANTITY								
20									
21	CONNECTION REQUIREMENTS & DATA								
22	● LINE SIDE FLANGE. SIZE/RATING/FACING/TYPE						10" 300lb RF / Single 6" 600lb RF		10" 300lb RF / Single 6" 600lb RF
23	● COMP CYL FLANGE(S), QTY/SIZE/RATING/FACING/TYPE						Single 10" 300lb FF / Single 6" 600lb FF		Single 10" 300lb FF / Single 6" 600lb FF
24	● FLANGE FINISH, ○ PER 7.9.5.1.16 >125 <250 ○ SPECIAL (SPECIFY)								
25	● INSPECTION OPENINGS REQUIRED						● YES ○ NO ● BLINDED		● YES ○ NO ● BLINDED
26	○ SPEC. QTY. SIZE, /FLG TYPE & RATING								
27	◇ * QTY. SIZE, /FLG TYPE & RATING								
28	● VENT CONNECTIONS REQUIRED						● YES ○ NO		● YES ○ NO
29	○ SPEC. QTY. SIZE, /FLG TYPE & RATING								
30	◇ * QTY. SIZE, /FLG TYPE & RATING								
31	● DRAIN CONNECTIONS REQUIRED						● YES ○ NO		● YES ○ NO
32	○ SPEC. QTY. SIZE, /FLG TYPE & RATING								
33	◇ * QTY. SIZE, /FLG TYPE & RATING								
34	● PRESSURE CONNECTIONS REQUIRED						● YES ○ NO		● YES ○ NO
35	○ SPEC. QTY. SIZE, /FLG TYPE & RATING								
36	◇ * QTY. SIZE, /FLG TYPE & RATING								
37	● TEMPERATURE CONNECTIONS REQUIRED						● YES ○ NO		● YES ○ NO
38	○ SPEC. QTY. SIZE, /FLG TYPE & RATING								
39	○ CYL NOZZLE ○ MAIN BODY								
40	◇ * QTY. SIZE, /FLG TYPE & RATING								
41									
42									
43									
44									
45									
46	OTHER DATA AND NOTES								
47	◆ COMPRESSOR MFG'S SUPP. OUTLINE OR DRAWING NO.						BK-GCS-HY-120-ME-DW-0032		BK-GCS-HY-120-ME-DW-0032
48	◇ SUPP. MFG'S OUTLINE OR DRAWING NO.								
49	NOTES * = AS BUILT								
50									
51									

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (BK-HD-GCS-CO-0008_03 قرارداد)	 HAVAYAR INDUSTRIAL GROUP																																																																																																																																																			
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1 2 PURCHASER TO FILL IN (☐ ☐ ☐) AFTER COMMODITY TO INDICATE: ☐ BY COMP. MFR. ☐ BY PURCH. ☐ BY OTHERS 3 INSTRUMENT & CONTROL 4 PANEL (☐ ☐ ☐): 5 6 7 8 9 10 11 12 13 BUFFER GAS CONTROL 14 PANEL (☐ ☐ ☐): 15 16 17 ADDITIONAL PANEL REMARKS: 18 19	INSTRUMENTATION ☒ ONE FOR EA. UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MT'ED ☒ FREE STANDING (OFF UNIT) ☒ LOCAL ☐ REMOTE ☐ PNEUMATIC ☐ ELEC. ☐ ELECTRONIC ☐ HYDRAULIC ☒ PRO ☐ NEMA 7, CLASS T3, GROUP IIB, DIVISION 2 ☒ INTRINS ☐ I/S BARRIERS (☐ ☐ ☐) ☐ NEMA 4, WATERTIGHT & DUSTTIGHT ☐ PURGED TO NFPA 496 TYPE ☐ X ☐ Y ☐ Z ☐ OTHER NEMA LOW PURGE PRESS. ☐ ALARM ☐ SHUTDOWN ☐ VIB, ISOLATORS ☐ STRIP HEATERS ☐ PURGE CONN. ☐ EXTRA CUTOUTS ☒ ANNUNCIATOR W/FIRST-OUT INDICATION LOCATED ON CONTROL PANEL ☐ PURCHASER'S CONN. BROUGHT OUT TO TERMINAL BOX BY VENDOR ☐ ONE FOR EA. UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MT'ED ☐ FREE STANDING (OFF UNIT) ☐ WITH STAND ☐ OUTDOORS ☐ CLASS , GROUP , DIVISION ☐ CONSTANT PRESSURE DISPOSAL SYSTEM ☐ VARIABLE PRESSURE DISPOSAL SYSTEM IP 42 FOR INDOOR(ITR) UCP CONTROL PANEL	IN: This note is not applicable. HY reply: Modified.																																																																																																																																																			
20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41	☐ INSTRUMENTATION SUITABLE FOR: ☐ INDOORS ☒ OUTDOORS ☐ OTHER ☐ PREFERRED INSTRUMENT SUPPLIERS, (TO BE COMPLETED BY PURCHASER), OTHERWISE MFR'S STANDARD APPLIES <table border="1"> <thead> <tr> <th>FUNCTION</th> <th>MFR</th> <th>As per Sub vendor List</th> <th>SIZE & TYPE</th> <th>See Instrument Data Sheet</th> <th>MTL</th> <th>See data sheet</th> </tr> </thead> <tbody> <tr><td>PRESSURE GAUGES</td><td>MFR</td><td>As per Sub vendor List</td><td>SIZE & TYPE</td><td>See Instrument Data Sheet</td><td>MTL</td><td>See data sheet</td></tr> <tr><td>TEMPERATURE GAUGES</td><td>MFR</td><td>As per Sub vendor List</td><td>SIZE & TYPE</td><td>See Instrument Data Sheet</td><td>MTL</td><td>See data sheet</td></tr> <tr><td>LIQUID LEVEL GAUGES</td><td>MFR</td><td>As per Sub vendor List</td><td>TYPE</td><td>See Instrument Data Sheet</td><td>MTL</td><td>See data sheet</td></tr> <tr><td>DIFF. 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NISOC

نگهداشت و افزایش تولید میدان نفتی بینک
سطح الارض و ابنیه تحت الارض

خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک
(قرارداد BK-HD-GCS-CO-0008_03)



HAVAYAR
INDUSTRIAL GROUP

شماره پیمان:

053 - 073 - 9184

DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
01	0001	DS	ME	120	HY	GCS	BK

شماره صفحه : 21 از 24

INSTRUMENTATION (CONT'D)

FUNCTION	LOCALLY MOUNTED	PANEL MOUNTED	GAUGE W/ CAPILLARY	THERMO CPL SYS	RTD SYS	I/S SYS
LUBE OIL INLET TO OUT OF FRAME	() () ()	() () ()	()	()	()	()
LUBE OIL INLET TO OUT OF COOLER	() () ()	() () ()	()	()	()	()
MAIN JRNL BEARINGS (THERMOCOUPLES OR RTD'S ONLY)	() () ()	() () ()	()	()	()	()
MOTOR BEARING(S) (THERMOCOUPLES OR RTD'S ONLY)	() () ()	() () ()	()	()	()	()
CYL. COOLANT MANIFOLD: INLET OUTLET	() () ()	() () ()	()	()	()	()
CYL. JKT. COOLANT: INLET OUTLET EA. CYL	() () ()	() () ()	()	()	()	()
PROCESS GAS: INLET DISCH. EACH CYL	() () ()	() () ()	()	()	()	()
INTERCOOLER(S) INLET GAS COOLANT	() () ()	() () ()	()	()	()	()
OUTLET GAS COOLANT	() () ()	() () ()	()	()	()	()
AFTERCOOLER: INLET GAS COOLANT	() () ()	() () ()	()	()	()	()
OUTLET GAS COOLANT	() () ()	() () ()	()	()	()	()
PKG COOLANT INLET OUTLET	() () ()	() () ()	()	()	()	()
PRESS. PGK CASE, CYL PIST ROD (THRM/CPLS OR RTD'S ONLY)	() () ()	() () ()	()	()	()	()
COMPRESSOR VALVES SUCT. DISCH. TC'S OR RTD'S ONLY	() () ()	() () ()	()	()	()	()
all alarm and shut down are according to PID latest revision	() () ()	() () ()	()	()	()	()

ALARM & SHUTDOWN SYSTEM REQ'MTS

NOTE: ALARM & SHUTDOWN DEVICES SHALL BE INDIVIDUALLY SEPARATE

FUNCTION	SHUT DOWN	ANNUNCIATION POINTS				TOTAL NO. OF POINTS
		ALARM IN PNL BY MFR	IN CTL ROOM PNL OTH'RS	SHUTDOWN IN PNL BY MFR	IN CTL ROOM PNL OTH'RS	
LOW LUBE OIL PRESS	() () ()	()	()	()	()	Later
HIGH LUBE OIL Δ P	() () ()	()	()	()	()	Later
LOW LUBE OIL LEVEL	() () ()	()	()	()	()	
AUX LUBE OIL PUMP	() () ()	()	()	()	()	
CYL LUBE SYSTEM P	() () ()	()	()	()	()	Later
COMPR. VIBRATION,	() () ()	()	()	()	()	
VIBRATION, W/ CONT	() () ()	()	()	()	()	Later
ROD DROP DETECTOR, CONTACT TYPE(1/CYL)	() () ()	()	()	()	()	
ROD DROP PROXIMITY PROBE (1/CYL)	() () ()	()	()	()	()	Later
OIL TEMP OUT OF FRAME	() () ()	()	()	()	()	Later
HIGH GAS DISCH. TEMP EACH CYLINDER	() () ()	()	()	()	()	Later
HIGH JACKET COOLANT TEMP., EA. CYL	() () ()	()	()	()	()	
LOW SUCTION PRESS., FIRST STG INLET	() () ()	()	()	()	()	Later
HI DISCH. PRESS. FINAL EA STG	() () ()	()	()	()	()	Later
HI CYL. GAS Δ P, EACH STAGE	() () ()	()	()	()	()	
HI LIQ. LEV., EA. MOISTURE SEPARATOR	() () ()	()	()	()	()	Later
LOW PURGE GAS PRESS, DISTANCE PIECE(S)	() () ()	()	()	()	()	Later
HI X-HD PIN TEMP	() () ()	()	()	()	()	
PRESS PKG CASE (PISTON ROD TEMP)	() () ()	()	()	()	()	Later
all alarm and shut down are according to PID latest revision	() () ()	()	()	()	()	

TOTAL NUMBER OF ANNUNCIATION POINTS

SWITCH CONTACT OPERATION

NOTE: EACH SWITCH SHALL BE MINIMUM SPDT ARRANGEMENT

ALARM CONTACTS SHALL:

- OPEN (DE-ENER.) TO SOUND ALARM & BE ENERGIZED WHEN COMPR. IS IN OPERATION
- CLOSE (ENERGIZE) TO SOUND ALARM & BE DE-ENERGIZED WHEN COMPR. IS IN OPERATION

SHUTDOWN CONTACTS SHALL:

- OPEN (DE-ENERGIZED) TO SHUTDOWN & BE ENERGIZE WHEN COMPR. IS IN OPERATION
- CLOSE (ENERGIZE) TO SHUTDOWN & BE DE-ENERGIZE WHEN COMPR. IS IN OPERATION

REF: 7.6.6.2 FOR MINIMUM RECOMMENDED PROTECTION REQUIREMENTS

IN: Note that High Level in separator will shutdown Compressor.

HY Reply: The separator is not in HAVAYAR Scope of work and supply. One ESD signal will be received from DCS/ESD to each UCP.



نگهداشت و افزایش تولید میدان نفتی بینک
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DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES

شماره پیمان:

053 - 073 - 9184

شماره صفحه : 22 از 24

نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه

01 0001 DS ME 120 HY GCS BK

INSTRUMENTATION (CONT'D)

MISCELLANEOUS INSTRUMENTATION

SIGHT FLOW IND. (COOLANT ONLY) (☐ ☐ ☐) FOR: ☐ INTERCOOLER(S) ☐ AFTER CLR ☐ OIL COOLER
☒ CYL JACKET COOLANT ☒ ROD PRESS. PKG COOLANT

PNEUMATIC PRESSURE TRANSMITTERS (☐ ☐ ☐) FOR: _____

PRESSURE TRANSMITTERS (ELEC. OUTP.) (☐ ☐ ☐) FOR: Valve Unloader

PNEUMATIC LEVEL TRANSMITTERS (☐ ☐ ☐) _____

ALARM HORN & ACKN'LMT TEST BUTTON (☐ ☐ ☐) _____

CONDUIT & WIRING W/JUNCT. BOXES (CON-SOLES) (☐ ☐ ☐) _____

TEST VALVES (☐ ☐ ☐) FOR: _____

DRAIN VALVES (☐ ☐ ☐) FOR: Cooler , damper

GAUGE GLASS(ES) (☐ ☐ ☐) FOR: Oil, Lubricator, Distance Piece Pot, Crank case frame

TACHOMETER (☐ ☐ ☐) _____ SPEED RANGE _____ TO _____ r/min

CRANKSHAFT KEY PHASER (☐ ☐ ☐) FOR: _____

AND TRANSDUCER (☐ ☐ ☐) _____

As per PID latest revision (☐ ☐ ☐) _____

SEPARATE LUBE OIL CONSOLE INSTRUMENTATION:

PURCH. TO LIST REQ'MTS IN ADDITION TO ANY ABOVE REQ'MTS

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

As per PID latest revision (☐ ☐ ☐) _____

SEPARATE COOLING WATER CONSOLE INSTRUMENT:

PURCH. TO LIST REQ'MTS IN ADDITION TO ANY ABOVE REQ'MTS

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

As per PID latest revision (☐ ☐ ☐) _____

RELIEF VALVES

LOCATION

BY

MANUFACTURER

TYPE

SIZE

SETTING

1 st Discharge (☐ ☒ ☐) Later Later Later Later

2nd Discharge (☐ ☒ ☐) Later Later Later Later

Main Oil Pump Discharge Discharge (☐ ☒ ☐) Later Later Later Later

Aux Oil Pump Discharge Discharge (☐ ☒ ☐) Later Later Later Later

N2 Gas Supply for Rod Packing (☐ ☒ ☐) Later Later Later Later

N2 Gas Supply for Intermediate Packing (☐ ☒ ☐) Later Later Later Later

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As per PID latest revision (☐ ☐ ☐) _____

NOTES: SEE MOTOR DATA SHEET FOR ADDITIONAL MOTOR INSTRUMENTATION REQUIREMENTS

As per PID latest revision

ADDITIONAL INSTRUMENTATION REMARKS/SPECIAL REQUIREMENTS:

As per PID latest revision

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)	 HAVAYAR INDUSTRIAL GROUP
شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES	شماره صفحه : 23 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه	
	01 0001 DS ME 120 HY GCS BK	

NOTES

Rev		
1	1	Train 1 is including one "two stages compressor" , C 2101 A as stage 1, C 2102 A as stage 2.
2		Train 2 is including one "two stages compressor" , C 2101 B as stage 1, C 2102 B as stage 2.
3		Train 3 is including one "two stages compressor" , C 2101 C as stage 1, C 2102 C as stage 2.
4		2 trains as operating+1 train as stand-by
5		
6	2	Design Data:
7		1st stage 2nd stage
8		Discharge Design Temperature (°c) 180 180
9		Discharge Design Pressure (barg) 24.5 62
10		
11	3	In Utility Condition Section, Power Factor and Efficiency at 25%, 50%, 75% and 100% of Load Values will be specified
12		
13	4	In Space Heater, Frame Lube Oil System and Coolant System Sections, If Lube Oil System is done by Electric motor,
14		
15	5	Inlet gas are in saturated condition
16		
17	6	Refer to hazardous area classification layout, instrumentation devices shall be suitable for Zone 2 , Gas Group IIB ,
18		Temperature Class T4, and electrical devices shall be suitable for Zone 2, Gas Group IIB, Temperature Class T3, IP 65
19		
20	7	The control type of compressor is C. High available system with redundant CPU and power supply to be considered for UCP.
21		One dedicatedUCP for each train to be provided
22		
23	8	Spill Back Valve to be supplied by Vendor.
24		
25	9	Discharge of each stage is protected from overpressure through PSV set at design pressure, PSV is in client scope
26		
27	10	Pulsation dampeners are required on discharge of each stage.
28		
29	11	Process turndown is 35% of Winter Case Flowrate.
30		
31	12	the risk of hydrate formation.should be consideredd after the coolers by client, out of havayar B.L
32		
33	13	Material requirement in contact with wet process gas shall be in compliance with NACE MR 0175/ISO 15156
34		
35	14	Instruments and control shall be supplied according to specification for instrumentation. And specification for instrument and control of package unit system.
36		
37		
38	15	Complete Electrical and Instrumentation Installation, JB, Tube and Fitting, Cabling, Tray,... Inside of skid is in Vendor's scope of supply.
39		
40		
41	16	Vibration, temperature and rod drop sensor will be connected to UCP for monitoring
42		
43	17	Voltage, Electric Power, Current and Power factor will be specified
44		
45	18	Suction and Discharge line Diameters/ Ratings:
46		1st Stage 2nd Stage
47		Diameter Rating Diameter Rating
48		Suction line: 10" 300# 6" 600#
49		Discharge line: 10" 300# 6" 600#
50		
51	19	Vendor is responsible to provide PC based operator workstation, and all required software source and licenses
52		required for monitoring and configuration.
53		
54	20	For electric motors, starting method is D.O.L .

IN: This note shall be considered in all instrument sections.
HY reply:Noted.

IN: 3 Spill Back Valves shall be considered according to Contract.
HY Reply: Noted.

IN: There is discrepancy between note and API-618, in addition According to meeting's MOM is on 7/04/1402, New solution or C seal of approval shall be given.
HY reply: Note will be modified to " Vibration , tempearture & rod drop sen monitoring as per approval OVERAL CONTROL/SAFETY SYSTEM CONFIGURATION DIAGRAM docum

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	<table><tr><td>نسخه</td><td>سریال</td><td>نوع مدرک</td><td>رشته</td><td>تسهیلات</td><td>صادرکننده</td><td>بسته کاری</td><td>پروژه</td></tr><tr><td>01</td><td>0001</td><td>DS</td><td>ME</td><td>120</td><td>HY</td><td>GCS</td><td>BK</td></tr></table>		نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه	01	0001	DS	ME	120	HY	GCS	BK
	نسخه		سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه									
01	0001	DS	ME	120	HY	GCS	BK											

NOTES

1	21	Safety Valve Set Pressure (Inlet / Discharge) refer to PID	Rev
2			
3	22	Site Condition:	
4		Min .Ambient temperature(°C): 5 °C	
5		Max .Ambient temperature(°C): 50 °C	
6		Maximum Relative Humidity: 100 %	
7		Minimum Relative Humidity: 0	
8		Elevation from sea level ~ 12.5 m	
9			
10			
11			
12		General Comments:	
13		1- LCP to be mentioned.	
14		HY reply:Noted.	
15		2- Instrumentation project reference document like	
16		Specification for control package and specification for	
17		instrumentation and cable , ... to be added.	
18		HY reply:Not applicable. This document is depended to	
19		many document of project.	
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