

	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								
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه	
V01	0001	DS	ME	120	HY	GCS	BK	

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: 2

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)																	
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نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V01	0001	DS	ME	120	HY	GCS	BK											

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		903.7		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

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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											
COMPRESSOR LOCATION: ☐ MIN DESIGN METAL TEMP °C (6.15.8.1) RELATIVE HUMIDITY: MAX 100 % MIN 0 %											
☐ 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											

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PART LOAD OPERATING CONDITIONS <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">CAPACITY CONTROL</td> <td style="width: 10%;">BY:</td> <td style="width: 20%;"> ☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER </td> <td style="width: 10%; text-align: center;">NOTE 8</td> </tr> <tr> <td>(NOTE 7)</td> <td>FOR:</td> <td> ☐ PART LOAD COND. ☐ START-UP ONLY ☒ BOTH </td> <td></td> </tr> <tr> <td></td> <td>WITH:</td> <td> ☒ AUTO LOADING DELAY INTERLOCK (7.6.2.4) ☐ AUTO IMMEDIATE UNLOADING </td> <td></td> </tr> <tr> <td></td> <td>USING:</td> <td> ☒ FIXED VOLUME POCK. ☒ SUCTION VALVE UNLOADERS: ☒ FINGER ☐ PLUG ☐ OTHER </td> <td></td> </tr> <tr> <td></td> <td></td> <td colspan="2">ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)</td> </tr> <tr> <td></td> <td></td> <td colspan="2">NUMBER OF STEPS: ☐ ONE ☐ THREE ☒ FIVE ☐ OTHER _____</td> </tr> <tr> <td></td> <td></td> <td colspan="2">☐ RAIN COVER REQUIRED OVER UNLOADERS</td> </tr> </table>			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 POCK. ☒ 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																																																																																																												
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 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 : 6 از 24
	نسخه 01 0001 DS ME 120 HY GCS BK پروژه بسته کاری صادر کننده تسهیلات رشته نوع مدرک	

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شماره پیمان: 053 - 073 - 9184	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES	شماره صفحه: 8 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																																																																																																												
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		ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)																																																																																																												
		NUMBER OF STEPS: ☐ ONE ☐ THREE ☒ FIVE ☒ OTHER _____																																																																																																												
		☐ RAIN COVER REQUIRED OVER UNLOADERS																																																																																																												
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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> <td colspan="5">Continuous</td> </tr> <tr> <td colspan="5">2nd</td> </tr> <tr> <td colspan="5">Winter</td> </tr> <tr> <td>0</td> <td>25</td> <td>50</td> <td>75</td> <td>100</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>8343.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>8668.6</td> </tr> <tr> <td>HE S & CE S</td> <td>HE F & CE S</td> <td>HE S or CE S</td> <td>HE F</td> <td>-</td> </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>59.9</td> <td>59.9</td> <td>59.9</td> <td>59.9</td> <td>59.9</td> </tr> <tr> <td>17.40</td> <td>17.40</td> <td>17.40</td> <td>17.40</td> <td>17.40</td> </tr> <tr> <td>54.90</td> <td>54.90</td> <td>54.90</td> <td>54.90</td> <td>54.90</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>150.0</td> </tr> <tr> <td>- / -</td> <td>37.29 / -</td> <td>74.58 / 74.58</td> <td>37.29 / 74.58</td> <td>74.58 / 74.58</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> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>468.5</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					2nd					Winter					0	25	50	75	100					8343.5					8668.6	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	59.9	59.9	59.9	59.9	59.9	17.40	17.40	17.40	17.40	17.40	54.90	54.90	54.90	54.90	54.90					150.0	- / -	37.29 / -	74.58 / 74.58	37.29 / 74.58	74.58 / 74.58																									468.5										
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(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 APPROACH
1, EMPIRICAL PULSATION SUPPRESSION DEVICE SIZING
2, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS
3, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS PLUS MECHANICAL 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)
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

NOTE: MANUFACTURER SHALL RECOMMEND
BEST TYPE OF COOLING AFTER
FINAL ENGINEERING REVIEW OF ALL
OPERATING CONDITIONS

 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																
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● 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

REMARKS:



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 : 11 از 24

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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

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

COOLING WATER FOR:	COMPRESSOR CYLINDERS	COOLERS
TYPE WATER	TYPE WATER	TYPE WATER
SUPP.: PRESS	3 barg MAX/MIN /	SUPP.: PRESS barg MAX/MIN /
(NORM.) TEMP	58 °C MAX/MIN /	(NORM.) TEMP °C MAX/MIN /
R'T'RN: PRESS	barg MAX/MIN /	R'T'RN: PRESS barg MAX/MIN /
(NORM.) TEMP	65 °C MAX/MIN /	(NORM.) TEMP °C MAX/MIN /

COOLING FOR ROD PACKING:

TYPE FLUID	GLYCOL H2O	SUPPLY PRESSURE	3 barg @	58 °C	RETURN	barg @	65 °C
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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
(قرارداد BK-HD-GCS-CO-0008_03)



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

شماره صفحه : 13 از 24

شماره پیمان:

053 - 073 - 9184

نسخه 01 سریال 0001 نوع مدرک DS رشته ME تسهیلات 120 صادرکننده HY بسته کاری پروژه

BK GCS HY 120 ME DS 0001 01

CONSTRUCTION FEATURES

1							
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	☐	☐	☐	☐	☐	☐

MATERIALS OF CONSTRUCTION

10	CYLINDER(S)	A395 Gr. 60-40-18					
11	CYLINDER LINER(S)	A278 CL.NO.40					
12	PISTON(S)	A395 Gr. 60-40-18					
13	PISTON RINGS	Filled PTFE					
14	WEAR BANDS ☒ REQUIRED	Filled PTFE					
15	PISTON ROD(S): MATERIAL/YIELD, N/mm ²	A564 Type 630 / / / / / /					
16	THREAD ROOT STRESS @ MACRL * @ X-HD END						
17	PISTON ROD HARDNESS, BASE MATERIAL, Rc						
18	PISTON ROD COATING ☒ REQUIRED	TC					
19	COATING HARDNESS, Rc						
20	VALVE SEATS / SEAT PLATE	A276 Type 420					
21	VALVE SEAT MIN HARDNESS, Rc						
22	VALVE GUARDS (STOPS)	A276 Type 420					
23	VALVE DISCS	PEEK (Non-Metallic)					
24	VALVE SPRINGS	B637 (Inconel X-750)					
25	ROD PRESSURE PACKING RINGS	Filled PTFE					
26	ROD PRESSURE PACKING CASE	A276 TP316L					
27	ROD PRESSURE PACKING SPRINGS						
28	SEAL / BUFFER PACKING, DISTANCE PIECE						
29	SEAL / BUFFER PACKING, INTERMEDIATE						
30	WIPER PACKING RINGS						
31	MAIN JOURNAL BEARINGS, CRANKSHAFT	A668 CL.D					
32	CONNECTING ROD BEARING, CRANKPIN						
33	CONNECTING ROD BUSHING, X-HD END						
34	CROSSHEAD (X-HD) PIN BUSHING						
35	CROSSHEAD PIN						
36	CROSSHEAD	A216 Gr.WCB					
37	CROSSHEAD SHOES	A278CL.NO.35 "Wj2"Coating					
38	INSTRUMENTATION IN COLD SIDE						
39	CONTACT W/PROCESS GAS HOT SIDE						

* MACRL = MAXIMUM ALLOWABLE COMBINED ROD LOAD

41	☒ COMPRESSOR CYLINDER ROD PACKING	DISTANCE PIECE(S): ☐ TYPE A ☐ TYPE B ☒ TYPE C ☐ TYPE D	
42	☐ FULL FLOATING PACKING		REF. FIGURE G-3
43	☒ VENTED TO: ☒ FLARE @ _____ barg ☐ ATMOS.	COVERS: ☒ SOLID METAL	☐ SCREEN ☐ LOUVERED
44	☐ SUCTION PRESSURE @ 0.8 barg	CYLINDER COMPARTMENT: (Outboard Distance Piece)	☒ VENTED TO Flare @ 0.8 barg
45	☒ FORCED LUBRICATED ☐ NON-LUBE		☒ PURGED AT 1.8 barg
46	☒ WATER COOLED, _____ STAGE(S), _____ GPM REQ'D		☐ PRESSURIZED TO _____ barg
47	☒ OIL COOLED, _____ STAGE(S), _____ GPM REQ'D		☐ WITH RELIEF VALVE
48	☒ WATER FILTER ☐ PROV.FUTURE WATER/OIL COOLING	FRAME COMPARTMENT: (Inboard Distance Piece)	☒ VENTED TO ATM barg
49	☐ VENT/BUFFER GAS SEAL PACKING ARR. (REF. FIG I-1)		☒ PURGED AT 0.5 ~ 1 barg
50	☒ CONSTANT OR ☐ VARIABLE DISPOSAL SYSTEM		☐ PRESSURIZED TO _____ barg
51	☐ BUFFER GAS PRESSURE, _____ barg		☐ WITH RELIEF VALVE
52	☐ SPLASH GUARDS FOR WIPER PACKING	☐ DISTANCE PIECE MAWP _____ barg	

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		01	0001	DS	ME	120	HY	GCS	BK

☒ CONSTRUCTION FEATURES (CONTINUED)																																																																																																																																																																			
1 ☐ FABRICATED CYLINDER, HEADS, & CONNECTION 2 SKETCHES FOR DESIGN REVIEW 3 BY PURCHASER. (6.15.5.13)		4 ☒ BUFFER GAS PACKING ARR. REF: ANNEX I 5 ☐ OIL WIPER PACKING PURGE FIGURES I-1, I-2 & I-3 6 ☒ INTERMEDIATE PARTITION PURGE 7 INERT BUFFER PURGE GAS: ☒ N ₂ ☐ OTHER _____ 8 ☒ VENT, DRAIN, PURGE PIPING BY MFG'R ☐ NO ☒ YES																																																																																																																																																																	
9 ☒ COUPLING(S) ☒ LOW-SPEED ☐ HI-SPEED 10 Between Compressor & Driver or Gear Between Driver & Gear 11 ☒ BY MANUFACTURER TBD 12 ☒ MODEL TBD 13 ☒ TYPE TBD 14 API-671 APPLIES ☒ YES ☐ NO		15 ☐ V-BELT DRIVE DRIVEN SHEAVE DRIVE SHEAVE (COMPRESSOR SHAFT) (DRIVER SHAFT) 16 RPM (EXPECTED) _____ 17 PITCH DIA. (IN.) _____ 18 ☒ QTY & GROOVE X-SEC. _____ 19 POWER TRANSMITT'D _____ Incl. Belt Losses 20 DRIVER NAMEPLATE HP RATING _____ 21 ☒ CENTER DISTANCE (IN.) _____ 22 ☒ QTY, TYPE, _____ 23 X-SEC., & LENGTH BELTS _____ 24 ☒ BELT SERVICE FACTOR (RELATIVE TO DRIVER NAMEPLATE HP RATING) _____																																																																																																																																																																	
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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 : 16 از 24

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

☐ SPEED

☐ COUPLING
REQ'D

☐ MECH. SEAL
REQ'D

lit/min

barg

kW

R/MIN

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	
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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 COOL'G	THERMO SYPHON	STAND PIPE	FLOW m ³ /h	PRESSURE barg	INLET TEMP °C	OUTLET TEMP °C	FLOW 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	○	○	○					○	
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 @ NORMAL OPERATING LEVEL ◇ 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									
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● 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 as per sub vendor list ● PUMP COUPLING(S) as per sub vendor list ● ELECTRIC MOTORS as per sub vendor list ◇ STEAM TURBINES ◇ ◇									

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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 %																		
☒ SUPPRESSOR TAG NUMBER ☒ COMBINATION INLET SUPP SEPARATOR/INTERNAL ☐ YES ☒ NO / ☐ YES ☒ NO ☒ NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE 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)	INLET SUPPRESSOR DISCHARGE SUPPRESSOR 1.438 / 0.5 m³ 0.911 / 0.339 m³	DISCHARGE SUPPRESSOR 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 صادر کننده بسته کاری پروژه							
		BK GCS HY 120 ME DS 0001 01							
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/HEAD ● YES ○ NO				SHELL & HEADS WELDS 3 mm			
8 ■ CORROSION ALLOWANCE., mm		● REQUIRED				SHELL & HEADS WELDS TBD mm/ TBD mm			
9 ■ WALL THICKNESS, mm		SHELL/HEAD				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		%/ %				%/ %			
20 ☒ SUPPORTS, TYPE/QUANTITY									
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) ● PER ANSI 16.5									
26 ● INSPECTION OPENINGS REQUIRED		● YES ○ NO ● BLINDED				● YES ○ NO ● BLINDED			
27 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING									
28 ◇ * QTY. SIZE, /FLG TYPE & RATING									
29 ● VENT CONNECTIONS REQUIRED		● YES ○ NO				● YES ○ NO			
30 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING									
31 ◇ * QTY. SIZE, /FLG TYPE & RATING									
32 ● DRAIN CONNECTIONS REQUIRED		● YES ○ NO				● YES ○ NO			
33 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING									
34 ◇ * QTY. SIZE, /FLG TYPE & RATING									
35 ● PRESSURE CONNECTIONS REQUIRED		● YES ○ NO				● YES ○ NO			
36 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING									
37 ◇ * QTY. SIZE, /FLG TYPE & RATING									
38 ● TEMPERATURE CONNECTIONS REQUIRED		● YES ○ NO				● YES ○ NO			
39 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING									
40 ○ CYL NOZZLE ○ MAIN BODY									
41 ◇ * QTY. SIZE, /FLG TYPE & RATING									
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 (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 : 20 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه 01 0001 DS ME 120 HY GCS BK	

1	☒ INSTRUMENTATION									
2	PURCHASER TO FILL IN (☐ ☐ ☐) AFTER COMMODITY TO INDICATE: ☐ BY COMP. MFR. ☐ BY PURCH. ☐ BY OTHERS									
3	INSTRUMENT & CONTROL ● ONE FOR EA. UNIT ○ ONE COMMON TO ALL UNITS									
4	PANEL (☐ ☐ ☐): ○ MACHINE M'T'ED ● FREE STANDING (OFF UNIT) ● LOCAL ○ REMOTE ○ OUTDOORS									
5	○ PNEUMATIC ○ ELEC. ○ ELECTRONIC ○ HYDRAULIC ● PROGRAMMABLE CONT'L'R									
6	○ NEMA 7, CLASS T3 , GROUP IIB , DIVISION 2 ● INTRINSICALLY SAFE (refer to NOTE...16)									
7	○ I/S BARRIERS (☐ ☐ ☐)									
8	○ NEMA 4, WATERTIGHT & DUSTTIGHT ○ PURGED TO NFPA 496 TYPE ○ X ○ Y ○ Z									
9	○ OTHER NEMA LOW PURGE PRESS. ○ ALARM ○ SHUTDOWN									
10	○ VIB, ISOLATORS ○ STRIP HEATERS ○ PURGE CONN. ○ EXTRA CUTOUTS									
11	● ANNUNCIATOR W/FIRST-OUT INDICATION LOCATED ON CONTROL PANEL									
12	○ PURCHASER'S CONN. BROUGHT OUT TO TERMINAL BOX BY VENDOR									
13	BUFFER GAS CONTROL ○ ONE FOR EA. UNIT ○ ONE COMMON TO ALL UNITS									
14	PANEL (☐ ☐ ☐): ○ MACHINE M'T'ED ○ FREE STANDING (OFF UNIT) ○ WITH STAND ○ OUTDOORS									
15	○ CLASS , GROUP , DIVISION									
16	○ CONSTANT PRESSURE DISPOSAL SYSTEM ○ VARIABLE PRESSURE DISPOSAL SYSTEM									
17	ADDITIONAL PANEL REMARKS: IP 42 FOR INDOOR(ITR) UCP CONTROL PANEL									
18										
19										
20	☐ INSTRUMENTATION SUITABLE FOR: ○ INDOORS ● OUTDOORS ○ OTHER									
21	☐ PREFERRED INSTRUMENT SUPPLIERS, (TO BE COMPLETED BY PURCHASER), OTHERWISE MFR'S STANDARD APPLIES									
22	PRESSURE GAUGES	MFR	As per Sub vendor List	SIZE & TYPE	See Instrument Data Sheet	MTL	See data sheet			
23	TEMPERATURE GAUGES	MFR	As per Sub vendor List	SIZE & TYPE	See Instrument Data Sheet	MTL	See data sheet			
24	LIQUID LEVEL GAUGES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
25	DIFF. PRESSURE GAUGES	MFR	As per Sub vendor List	SIZE & TYPE	See Instrument Data Sheet	MTL	See data sheet			
26	PRESS. TRANSMITTERS	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
27	LIQUID LEV. TRANSMITTER	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
28	PRESSURE SWITCHES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
29	TEMPERATURE SWITCHES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
30	LIQUID LEVEL SWITCHES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
31	DIFF. PRESSURE SWITCHES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
32	CONTROL VALVES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
33	PRESSURE SAFETY VALVES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
34	SIGHT FLOW INDICATORS	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
35	VIBRATION MONITORS & EQUIP.	MFR	As per Sub vendor List (NOTE17)	TYPE	See Instrument Data Sheet	MTL	See data sheet			
36	THERMOCOUPLES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
37	RTD'S	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
38	SOLENOID VALVES	MFR	As per Sub vendor List	TYPE	See Instrument Data Sheet	MTL	See data sheet			
39	ANNUNCIATOR	MFR	MODEL & (QTY SPARE POINTS)		()					
40	PROGRAMMABLE CONTROLLER	MFR	As per Sub vendor List	TYPE	SEE PANEL DATA SHHET	MTL				
41		MFR		TYPE		MTL				
42	● PRESSURE GAUGE REQUIREMENTS ● LIQUID-FILLED PRESSURE GAUGES: ● YES ○ NO									
43		LOCALLY		PANEL		LOCALLY		PANEL		
44	FUNCTION	MOUNTED	MOUNTED	MOUNTED	MOUNTED	MOUNTED	MOUNTED	MOUNTED	MOUNTED	
45	LUBE OIL MAIN PUMP DISCHAR.	(☐ ☐ ☐)	(☐ ☐ ☐)	PROCESS GAS: INLET PRESS.	(☐ ☐ ☐)	(☐ ☐ ☐)				
46	LUBE OIL AUX. PUMP DISCHARG.	(☐ ☐ ☐)	(☐ ☐ ☐)	@ EA. STAGE	(☐ ☐ ☐)	(☐ ☐ ☐)				
47	LUBE OIL PRESS. AT FRAME HEADER (	(☐ ☐ ☐)	(☐ ☐ ☐)	DISCH. PRESS.	(☐ ☐ ☐)	(☐ ☐ ☐)				
48	LUBE OIL FILTER Δ P	(☐ ☐ ☐)	(☐ ☐ ☐)	@ EA. STAGE	(☐ ☐ ☐)	(☐ ☐ ☐)				
49	COOLING H ₂ O INLET HEADER	(☐ ☐ ☐)	(☐ ☐ ☐)		(☐ ☐ ☐)	(☐ ☐ ☐)				
50		(☐ ☐ ☐)	(☐ ☐ ☐)		(☐ ☐ ☐)	(☐ ☐ ☐)				
51	REMARKS: It is according to PID latest Revision									
52										



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	ALARM	SHUT DOWN	ANNUNCIATION POINTS				TOTAL NO. OF POINTS
			ALARM		SHUTDOWN		
			IN PNL BY MFR	IN CTL ROOM PNL OTH'RS	IN PNL BY MFR	IN CTL ROOM PNL OTH'RS	
LOW LUBE OIL PRESS. @ BEARING HEADER	(■ ○ ○)	(■ ○ ○)	●	●	●	●	Later
HIGH LUBE OIL Δ P ACR P ACROSS FILTER	(■ ○ ○)	(□ ○ ○)	●	●	○	○	Later
LOW LUBE OIL LEVEL, FRAME	(■ ○ ○)	(□ ○ ○)	●	●	○	○	
AUX LUBE OIL PUMP, FAIL TO START	(■ ○ ○)	(□ ○ ○)	●	●	○	○	
CYL LUBE SYSTEM PROTECTION	(■ ○ ○)	(□ ○ ○)	●	●	○	○	Later
COMPR. VIBRATION, SHUTDOWN ONLY		(□ ○ ○)	○	○	○	○	
VIBRATION, W/ CONTINUOUS MONITORING	(■ ○ ○)	(■ ○ ○)	●	●	○	○	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 revisor	(□ ○ ○)	(□ ○ ○)	○	○	○	○	

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



نگهداشت و افزایش تولید میدان نفتی بینک
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خرید پکیج های کمپرسور گاز (رفت 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 : 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

(☐ ☐ ☐)

FOR:

ALARM HORN & ACK'N/MT TEST BUTTON

(☐ ☐ ☐)

FOR:

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

(☐ ☐ ☐)

FOR:

TEST VALVES

(☐ ☐ ☐)

FOR:

DRAIN VALVES

(☐ ☐ ☐)

FOR:

Cooler , damper

GAUGE GLASS(ES)

(☐ ☐ ☐)

FOR:

Oil, Lubricator, Distance Piece Pot, Crank case frame

TACHOMETER

(☐ ☐ ☐)

FOR:

SPEED RANGE _____ TO _____ r/min

CRANKSHAFT KEY PHASER

(☐ ☐ ☐)

FOR:

AND TRANSDUCER

(☐ ☐ ☐)

FOR:

As per PID latest revision

(☐ ☐ ☐)

FOR:

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

As per PID latest revision

(☐ ☐ ☐)

Later

Later

Later

Later

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 صادر کننده بسته کاری پروژه		
	BK GCS HY 120 ME DS 0001 01		

NOTES

1	1	Train 1 is including one "two stages compressor" , C 2101 A as stage 1, C 2102 A as stage 2.	Rev
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 .	

 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 : 24 از 24																
	<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	
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