

	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 : 1 از 24		
	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه		
	V02	0001	DS	ME	120	HY	GCS	BK		

1- Manufacturer Data sheet shall be attached
HY: Noted.

2- All sub-vendors shall be specified
HY: Sub-vendors have been reported where-
ever the data-sheet format demands and the
purchase order has been finalized.

3- MAWP for cylinder shall be specified as
6.8.1.1, API618
HY: Already considered

4-Vendor shall specify the necessity of
provisions for heat tracing and insulation for
piping, pulsation suppression devices and
knockout vessels at the initial and interstage
suction points
HY: Already shown on the P&ID.

5-please revise all (/) to (.) wherever is
applicable, it seems this data sheet filled-in by
a junior expert in havayar.
HY: the originally submitted document has
been attached to this reply-sheet. you may
need to check your system settings if you
notice any further format corruption.

5-Motor data & sectional DWG and GA sheet
shall be submitted in next revision otherwise
this document would be rejected.
HY: Sectional Drawing and GA have submitted
via their respective documents. motor data is
reported as the API data-sheet format
required. further data regarding the motor has
been submitted in the respective document
(motor data-sheet)

طرح نگهداشت و افزا

COMPRESSOR (API-618) WITH CERTIFICATES

نگهداشت و افزایش تول

	M. Fakharian	S.Faramarzpour	
	M. Fakharian	A.M. Mohseni	
	M. Fakharian	A.M. Mohseni	
	Checked By	Approved By	Client Approval

IFI: Issued For Information
AFC: Approved For Construction



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

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
V02	0001	DS	ME	120	HY	GCS	BK

شماره صفحه : 2 از 24

Revision Record Sheet

PAGE	V00	V01	V02	V03	V04
1	X	X	X		
2	X	X	X		
3	X	X	X		
4	X	X	X		
5	X	X	X		
6	X		X		
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9	X	X	X		
10	X	X	X		
11	X	X	X		
12	X	X	X		
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PAGE	V00	V01	V02	V03	V04
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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: 3 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

1	APPLICABLE TO: ☐ PROPOSALS ☒ PURCHASE ☐ AS BUILT
2	FOR/USER: NISOC SITE/LOCATION: Binak Oil Field SERVICE: Sour Gas NO. REQ'D 3(2Operating/1Spare)
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 (SR23006)
6	COMPR. THROWS: TOTAL NO. 2 NO. WITH CYLS. 2 NOMINAL FRAME RATING 1070 BkW @ RATED R/MIN OF 420(14P)
7	☐ MAX/MIN ALLOWABLE SPEED / r/min
8	DRIVER MFR: Wolong Nanyang DRIVER NAMEPLATE kW/OPERATING r/min 1070 @ Site condition / 420(14P)
9	DRIVE SYSTEM: ☒ DIRECT COUPLED ☐ GEARED & COUPLED ☐ V-BELT
10	TYPE OF DRIVER: ☒ IND. MOTOR ☐ SYN. MOTOR ☐ STEAM TURBINE ☐ G
11	CYLINDERS CONSTRUCTION: ☒ LUBE ☐ N
13	☒ MAX ACCEPTABLE AVG PISTON SPEED 4 m/s

Vendor shall calculate actual piston speed and add in notes of data sheet
 HY: Already reported in page 12.

OPERATING CONDITIONS (EACH MA				
15	☒ SERVICE OR ITEM NO.	Continious Continious Contin		
16	☒ STAGE	1st 2nd 1st		
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 16/956 4/9 16/956		
24	☒ PRESSURE (barg) @ CYL. FLANGE	4/805 16/856 4/805 16/856		
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	17/956 54/898 17/956 54/898		
32	☒ PRESS. (barg) @ PUL. SUPP. OUTLET	17/856 54/8 17/856 54/8		
33	☐ TEMP., ADIABATIC, °C	117/9 153/7 105 158/7		
34	☒ TEMP., PREDICTED, °C	129 148 116 150		
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)	1613/1 1613/1		
44	☒ Nm ³ /h (1.013 bar & 0°C)	8162/9 8668/6 8668/6		
45	☒ BkW/STAGE	441/1 463/0 435/2 481/3		
46	☒ TOTAL BkW @ COMPRESSOR SHAFT	904/1 916/5		
47	☒ TOTAL kW INCLUDING			
48	V-BELT & GEAR LOSSES			
49	* CAPACITY FOR NNT	REMARKS: 10% over design is considered for winter case has been considered (8343.5 kg/h)		
50	MANUFACTURER'S = REQUIRED ÷ 0.97	10% over-design is considered for winter case based on basic documents.		
51	THEREFORE REQUIRED = MFR'S x 0.97	Total kW including loss at PSV set pressure (62 barg): 963.9 kw		

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CHLOR. HCl</td> <td>36.461</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>31</td> <td>CHLORINE Cl₂</td> <td>70.914</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>32</td> <td>CHLORIDES - TRACES</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>33</td> <td colspan="2">CALCULATED MOL WT.</td> <td>24/52</td> <td>24/52</td> <td>21/56</td> <td>21/56</td> </tr> <tr> <td>34</td> <td colspan="2">C_p/C_v (K) @ Suction Line Temperature °C</td> <td>1/245</td> <td>1/278</td> <td>1/28</td> <td>1/295</td> </tr> </tbody> </table> NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINUTE TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUDED ABOVE.	GAS ANALYSIS AT OPERATING CONDITIONS MOLE % (BY VOLUME) ONLY			REMARKS				SERVICE/ITEM NO.	STAGE	NORMAL OR ALT	Continuous		Continuous		1st	2nd	1st	2nd	Summer		Winter				M.W.					7	AIR	28.966					8	OXYGEN O ₂	32.000					9	NITROGEN N ₂	28.016	0/2984	0/2984	0/3101	0/3101	10	WATER VAPOR H ₂ O	18.016	1/0314	1/0314	0/3638	0/3638	11	CARBON MONOX. CO	28.010					12	CARBON DIOX. CO ₂	44.010	3/1606	3/1606	2/5202	2/5202	13	HYDRO. 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HCl	36.461					31	CHLORINE Cl ₂	70.914					32	CHLORIDES - TRACES						33	CALCULATED MOL WT.		24/52	24/52	21/56	21/56	34	C _p /C _v (K) @ Suction Line Temperature °C		1/245	1/278	1/28	1/295	APPLICABLE SPECIFICATIONS - API 618, RECIPROCATING COMPRESSORS FOR PETROLEUM, CHEMICAL AND GAS INDUSTRY SERVICES - NACE MR-0175 (6.15.1.11) - BK-GCS-PEDCO-120-ME-SP-0002_D05
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21	n-BUTANE C ₄ H ₁₀	58.120	1/8594	1/8594	0/8130	0/8130																																																																																																																																																																																																																												
22	I-PENTANE C ₅ H ₁₂	72.146	0/6968	0/6968	0/3066	0/3066																																																																																																																																																																																																																												
23	n-PENTANE C ₅ H ₁₂	72.146	0/3774	0/3774	0/1450	0/1450																																																																																																																																																																																																																												
24	n-HEXANE C ₆ H ₁₄	86/180	0/6549	0/6549	0/2224	0/2224																																																																																																																																																																																																																												
25	n-HEPTANE C ₇ H ₁₆	100/20	0/1956	0/1956	0/0542	0/0542																																																																																																																																																																																																																												
26	n-OCTANE C ₈ H ₁₈	114/23	0/0596	0/0596	0/0149	0/0149																																																																																																																																																																																																																												
27	n-NONANE C ₉ H ₂₀	128/26	0/0297	0/0297	0/0071	0/0071																																																																																																																																																																																																																												
28	n-DECANE C ₁₀ H ₂₂	142/28	0/0099	0/0099	0/0000	0/0000																																																																																																																																																																																																																												
29	AMMONIA NH ₃	17.031																																																																																																																																																																																																																																
30	HYDRO. CHLOR. HCl	36.461																																																																																																																																																																																																																																
31	CHLORINE Cl ₂	70.914																																																																																																																																																																																																																																
32	CHLORIDES - TRACES																																																																																																																																																																																																																																	
33	CALCULATED MOL WT.		24/52	24/52	21/56	21/56																																																																																																																																																																																																																												
34	C _p /C _v (K) @ Suction Line Temperature °C		1/245	1/278	1/28	1/295																																																																																																																																																																																																																												
NOTE 22 SITE/LOCATION CONDITIONS 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) INDOOR HEATED UNHEATED OUTDOOR NO ROOF UNDER ROOF OFF-SHORE WEATHER PROTECTION REQ. WINTERIZATION REQUIRED UNUSUAL CONDITIONS: CORROSIVES DUST FUMES OTHER ELECTRICAL CLASSIFICATIONS HAZARDOUS MAIN UNIT ZONE 2 GROUP GR.IIB TEMP CLASS T4 L.O. CONSOLE ZONE 2 GROUP GR.IIB TEMP CLASS T4 CW CONSOLE ZONE 2 GROUP GR.IIB TEMP CLASS T4 NON-HAZARDOUS																																																																																																																																																																																																																																		

 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 : 5 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه V02 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 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			

ALL UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 3.					
INLET AND DISCHARGE PRESSURE ARE		☒ AT CYLINDER FLANGES ☐ PULSATION SUPPRESSOR FLANGE			
☒ SERVICE OR ITEM NO. ☐ STAGE ☐ NORMAL OR ALTERN ☐ PERCENT CAPACITY ☐ WEIGHT FLOW, kg/h ☐ Nm ³ /h (1.013 bar & 0°C) ☐ POCKETS/VALVES OF ☐ POCKET CLEARANCE ☐ TYPE UNLOADERS, P ☐ INLET TEMPERATURE ☐ INLET PRESSURE, bar ☐ DISCHARGE PRESSU ☐ DISCHARGE TEMP., A ☐ DISCHARGE TEMP., P ☐ VOLUMETRIC EFF., % ☐ CALC. GAS ROD LOAD, kN, C ** ☐ CALC. GAS ROD LOAD, kN, T ** ☒ COMB. ROD LOAD, kN C (GAS & INERTIA) ☒ COMB. ROD LOAD, kN T (GAS & INERTIA) ☒ ROD REV., DEGREES MIN @ X-HD PIN *** ☐ KW/STAGE ☐ TOTAL KW @ COMPRESSOR SHAFT ☐ TOTAL KW INCL. V-BELT & GEAR LOSSES		Continuous 1st Summer			
		25	50	75	100
		2233/9	4467/8	6701/6	8935/5
		2040/7	4081/5	6122/2	8162/9
		HE F & CE S	HE S or CE S	HE F	-
		25% (Head Side)	25% (Head Side)		
		Finger	Finger	Finger	Finger
		36/8	36/8	36/8	36/8
		4/80	4/80	4/80	4/80
		18/25	18/25	18/25	18/25
		117/9	117/9	117/9	117/9
		129/0	129/0	129/0	129/0
		73.57 / 73.57	73.57 / 73.57	73.57 / 73.57	73.57 / 73.57
		3/7	236/9	239/6	236/9
		3/7	3/7	3/7	221/2
		133	133	189	130/7
		173/4	3/4	107/5	158/1
		199/9	19/3	64/7	168/2
		441/1	441/1	441/1	441/1
		420	541	662	782/9
					903/9

* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

HEAD END = HE OR CRANK END = CE	PLUS }	SUCTION VALVE(S) UNLOADED = S OR 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, 4 barg

CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER _____

PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN 8 / 4/5 barg

REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH

Discharge pressure in not same as specified value in page 3. please clarify
HY: Noted and Revised

Vendor shall recheck and provide volumetric eff. calculation for each case. or clarify how reached to these
HY: The volumetric efficiency is obtained from the kwangshin's calculation software.

 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 : 7 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

1	PART LOAD OPERATING CONDITIONS					
2	CAPACITY CONTROL	BY:	☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER			NOTE 8
3	(NOTE 7)	FOR:	☐ PART LOAD COND. ☐ START-UP ONLY ☒ BOTH			
4		WITH:	☒ AUTO LOADING DELAY INTERLOCK (7.6.2.4) ☐ AUTO IMMEDIATE UNLOADING			
5		USING:	☒ FIXED VOLUME POCK. ☒ SUCTION VALVE UNLOADERS: ☒ FINGER ☐ PLUG ☐ OTHER			
6			ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)			
7			NUMBER OF STEPS: ☐ ONE ☒ THREE ☒ FIVE ☐ OTHER _____			
8			☐ RAIN COVER REQUIRED OVER UNLOADERS			
9	ALL UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 3.					
10	INLET AND DISCHARGE PRESSURE ARE		☒ AT CYLINDER FLANGES ☐ PULSATION SUPPRESSOR FLANGES			
11	☒ SERVICE OR ITEM NO.	Continuous				
12	☒ STAGE	1st				
13	☒ NORMAL OR ALTERNATE CONDITION	Winter				
14	☒ PERCENT CAPACITY	0	25	50	75	100
15	☒ WEIGHT FLOW, kg/h	-	2085/9	4171/8	6257/6	8343/5
16	☒ Discharge pressure in not same as specified value in page 3. please clarify HY: Noted and Revised	-	2167/2	4334/3	6501/5	8668/6
17		HE S & CE S	HE F & CE S	HE S or CE S	HE F	-
18		25% (Head Side)	25% (Head Side)	25% (Head Side)	25% (Head Side)	25% (Head Side)
19		Finger	Finger	Finger	Finger	Finger
20		18/9	18/9	18/9	18/9	18/9
21		4/80	4/80	4/80	4/80	4/80
22		18/25	18/25	18/25	18/25	18/25
23	☐	105/0	105/0	105/0	105/0	105/0
24		116/0	116/0	116/0	116/0	116/0
25	☒ VOLUMETRIC EFF., %HE/%CE	75.79/ 75.79	75.79 / 75.79	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79
26	☒ CALC. GAS ROD LOAD, KN, C **	3/7	236/9	236/9	236/9	236/9
27	☒ CALC. GAS ROD LOAD, KN, T **	3/7	3/7	3/7	221/2	221/2
28	☒ COMB. ROD LOAD, KN C (GAS & INERTIA)	133	193/3	193/3	136/5	193/3
29	☒ COMB. ROD LOAD, KN T (GAS & INERTIA)	173/4	110/2	110/2	161/1	161/1
30	☒ ROD REV., DEGREES MIN @ X-HD PIN ***	199/9	65/1	65/1	168/9	187/2
31	☒ KW/STAGE	435/2	435/2	435/2	435/2	435/2
32	☒ TOTAL KW @ COMPRESSOR SHAFT	420	544/1	668/2	792/2	916/3
33	☒ TOTAL KW INCL. V-BELT & GEAR LOSSES					
34						
35	* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:					
36	HEAD END = HE		SUCTION VALVE(S) UNLOADED = S			
37	OR		OR			
38	CRANK END = CE		FIXED POCKET OPEN = F			
39			OR			
40			VARIABLE POCKET OPEN = V			
41						
42	EXAMPLE: HE-F/CE-S = HEAD END FIXED POCKET OPEN / CRANK END SUCTION VALVE(S) UNLOADED.					
43	* * C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD					
44	☒ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, 4 barg					
45	CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER					
46	☒ PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN 8 / 4/5 barg					
47	REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH					
48						
49						
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 : 8 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادر کننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

1	PART LOAD OPERATING CONDITIONS									
2	CAPACITY CONTROL	BY:	☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER	NOTE 8						
3			☐ LOAD COND. ☐ START-UP ONLY ☒ BOTH							
4			LOADING DELAY INTERLOCK (7.6.2.4) ☒ AUTO IMMEDIATE UNLOADING							
5			VOLUME POCK. ☒ SUCTION VALVE UNLOADERS:	☒ FINGER	☐ PLUG	☐ OTHER				
6			ACTION:	☐ DIRECT (AIR-TO-UNLOAD)	☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)					
7			NUMBER OF STEPS:	☐ ONE	☐ THREE	☒ FIVE	☒ OTHER			
8			☐ RAIN COVER REQUIRED OVER UNLOADERS							
9	UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 3.									
10	INLET A		☒ AT CYLINDER FLANGES	☐ PULSATION SUPPRESSOR FLANGES						
11	☒ SEF		Continuous							
12	☒ STAGE		2nd							
13	☒ NORMAL OR ALTERNATE CONDITION		Winter							
14	☒ PERCENT CAPACITY		0	25	50	75	100			
15	☒ WEIGHT FLOW, kg/h		-	2085/9	4171/8	6257/6	8343/5			
16	☐ Nm3/h (1.013 bar & 0°C)		-	2167/2	4334/3	6501/5	8668/6			
17			HE S & CE S	HE F & CE S	HE S or CE S	HE F	-			
18			25% (Head Side)	25% (Head Side)						
19			Finger	Finger	Finger	Finger	Finger			
20			59/9	59/9	59/9	59/9	59/9			
21			17/40	17/40	17/40	17/40	17/40			
22			54/90	54/90	54/90	54/90	54/90			
23			158/7	158/7	158/7	158/7	158/7			
24			150/0	150/0	150/0	150/0	150/0			
25			75.79/ 75.79	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79	/		
26	☒ CALC. GAS ROD LOAD, KN, C **		11/5	244/5	244/5	244/5	244/5			
27	☒ CALC. GAS ROD LOAD, KN, T **		11/5	11/5	11/5	197/4	197/4			
28	☒ COMB. ROD LOAD, KN C (GAS & INERTIA)		122/1	208/1	208/1	161/1	208/1			
29	☒ COMB. ROD LOAD, KN T (GAS & INERTIA)		140	73/7	73/7	146/6	146/6			
30	☒ ROD REV., DEGREES MIN @ X-HD PIN ***		206/2	53/5	53/5	159/5	182/3			
31	☒ KW/STAGE		468/5	468/5	468/5	468/5	468/5			
32	☒ TOTAL KW @ COMPRESSOR SHAFT		420	544/1	668/2	792/2	916/3			
33	☒ TOTAL KW INCL. V-BELT & GEAR LOSSES									
34										
35	* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:									
36										
37	HEAD END = HE OR CRANK END = CE } PLUS SUCCTION VALVE(S) UNLOADED = S OR FIXED POCKET OPEN = F OR VARIABLE POCKET OPEN = V									
38										
39										
40										
41										
42	EXAMPLE: HE-F/CE-S = HEAD END FIXED POCKET OPEN / CRANK END SUCTION VALVE(S) UNLOADED.									
43	* * C = COMPRESSION T = TENSION *** X - HD = CROSSHEAD									
44	☒ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES,		4 barg							
45	CYLINDER UNLOADING MEDIUM:		☒ AIR	☐ NITROGEN	☐ OTHER					
46	☒ PRESSURE AVAILABLE FOR CYLINDER UNLOADING DEVICES, MAX/MIN		8 / 4/5 barg							
47	REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH									
48										
49										
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 <table border="1"> <tr> <td>نسخه</td> <td>سریال</td> <td>نوع مدرک</td> <td>رشته</td> <td>تسهیلات</td> <td>صادر کننده</td> <td>بسته کاری</td> <td>پروژه</td> </tr> <tr> <td>V02</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	صادر کننده	بسته کاری	پروژه	V02	0001	DS	ME	120	HY	GCS	BK	شماره صفحه: 9 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V02	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 _____ BEARING. ● SLIDE BASE FOR DRIVER (☒ ☐ ☐) ☐ SOLE PLATE FOR DRIVER _____ ● MOTOR STARTING EQUIPMENT (☐ ☐ ☐); DEFINE _____ ● GEAR (☐ ☐ ☐): ☐ BASEPLATE FOR GEAR ☐ API 613 ☐ A _____ ● COUPLING(S) (☒ ☐ ☐): ● LOW SPD. ☐ HI-SPD. ☐ QUILL SHAFT _____ DRV. ☐ OTHER _____ ● API 671 ● V-BELT DRIVE (☐ ☐ ☐): ☐ SHEAVES & V-BELTS (☐ ☐ ☐) ☐ BANDO 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) NOTE: MANUFACTURER SHALL RECOMMEND ☐ STATIC (STAND-PIPE) _____ STAGE CYL'(S) BEST TYPE OF COOLING AFTER ☐ CYL. COOLANT PIPING BY (☒ ☐ ☐) ● MATCH M'RKED FINAL ENGINEERING REVIEW OF ALL ☐ SINGLE INLET/OUTLET MANIFOLD & VALVES ● SIGHT GL'SS(ES) OPERATING CONDITIONS ☐ INDIVIDUAL INLET/ OUTLET PER CYL. ● VALVE(S) ● CLOSED SYSTEM WITH PUMP, COOLER, SURGE TANK, & PIPING																		

	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)															
053 - 0	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES <table border="1"> <tr> <th>نسخه</th> <th>سریال</th> <th>نوع مدرک</th> <th>رشته</th> <th>تسهیلات</th> <th>صادر کننده</th> <th>بسته کاری</th> </tr> <tr> <td>V02</td> <td>0001</td> <td>DS</td> <td>ME</td> <td>120</td> <td>HY</td> <td>GCS</td> </tr> </table>	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	V02	0001	DS	ME	120	HY	GCS	شماره صفحه : 10 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری										
V02	0001	DS	ME	120	HY	GCS										
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 46 47 48 49 50 51	SCOPE OF BASIC SUPPLY (Cont'd) ● ONE FOR EA. TAG ○ ONE CMMN TO ALL UNITS ● DUAL PUMPS (AUX. & MAIN) ARRANGED FOR HEATING JACKET WATER AS WELL AS COOLING ○ SHOP RUN EM (☐ ☐ ☐): ○ 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: Compressor Package Inlet and Outlet Lines and Counter Flanges (+gaskets) Shall Be Supplied 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 TRAIN ○ ONE COMMON TO ALL TRAIN ○ 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 ● COMPLETE SHOP 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) ● MANUFACTURER'S STANDARD ● SPECIAL AS PER: BK-GNRL-PEDCO-000-PI-SP-0006 ○ 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:															

it shall be rechecked
an finalized based
on Vendor motor
data.
HY: Noted

shipment shall be
Export
HY: Noted

 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 <table border="1"> <tr> <td>نسخه</td> <td>سریال</td> <td>نوع مدرک</td> <td>رشته</td> <td>تسهیلات</td> <td>صادر کننده</td> <td>بسته کاری</td> <td>پروژه</td> </tr> <tr> <td>V02</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	صادر کننده	بسته کاری	پروژه	V02	0001	DS	ME	120	HY	GCS	BK	شماره صفحه : 11 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V02	0001	DS	ME	120	HY	GCS	BK											
1 UTILITY CONDITIONS																		
2 ELECTRICAL POWER: AC VOLTS / PHASE / HERTZ DC VOLTS																		
3 ● MAIN DRIVER 11000 / 3 / 50																		
4 ● AUXILIARY MOTORS 400 / 3 / 50																		
5 ● HEATERS 230 / 1 / 50																		
6																		
7 Note: Heater below than 3kw is 230Vac.																		
8 INSTRUMENT AIR: NORMAL PRESSURE 4 barg MAX/MIN 8/5 / 4 barg																		
9 NITROGEN: NORMAL PRESSURE 7/5 barg MAX/MIN / / barg								V03										
10 STEAM FOR: DRIVERS																		
11 INLET: PRESS barg MAX/MIN / / barg																		
12 (NORM.) TEMP °C MAX/MIN / / °C																		
13 EXH'ST: PRESS barg MAX/MIN / / barg																		
14 (NORM.) TEMP °C MAX/MIN / / °C																		
15																		
16																		
17 COOLING WATER FOR: COMPRESSOR CYLINDERS																		
18 TYPE WATER																		
19 SUPP.: PRESS 3 barg MAX/MIN / / barg																		
20 (NORM.) TEMP 58 °C MAX/MIN / / °C																		
21 R'TRN: PRESS barg MAX/MIN / / barg																		
22 (NORM.) TEMP 65 °C MAX/MIN / / °C																		
23																		
24 COOLING FOR ROD PACKING:																		
25 TYPE FLUID GLYCOL H2O SUPPLY PRESSURE 3 barg @ 63 °C RETURN barg @ 70 °C																		
26 FUEL GAS: NORMAL PRESSURE barg MAX/MIN / / barg LHV MJ/m³																		
27 COMPOSITION																		
28																		
29 REMARKS/SPECIAL REQUIREMENTS:																		
30																		
31																		
32																		
33																		
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شماره پیمان: 053 - 073 - 9184		DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES						شماره صفحه: 12 از 24									
		نسخه		سریال		نوع مدرک		رشته		تسهيلات		صادرکننده		بسته کاری		پروژه	
		V02		0001		DS		ME		120		HY		GCS		BK	

☒ CYLINDER DATA AT FULL LOAD CONDITION																		
SERVICE/ITEM NO.		Sour Gas																
3	STAGE	1st	2nd															
4	INLET PRESSURE, barg	4/81	16/86															
5	DISCHARGE PRESSURE, barg	18/96	54/90															
6	CYLINDERS PER STAGE	1	1															
7	SINGLE OR DOUBLE ACTING	DA	DA															
8	BORE, mm	475	280															
9	STROKE, mm	250	250															
10	RPM:	420																
11	PISTON SPEED, m/s:	3.5	4.0															
12	CYLINDER LINER, YES/NO	Yes	Yes															
13	LINER NOMINAL THICKNESS, mm	15	15															
14	PISTON DISPLACEMENT, m ³ /h	2192/71	735/77															
15	CYLINDER DESIGN CLEARANCE, % AV	10/0	13/5															
16	VOLUMETRIC EFFICIENCY, % AVERAG	73/57	76/71															
17	VALVES, INLET/DISCHARGE, QTY PER	4 / 4	4 / 4															
18	TYPE OF VALVES	Plate	Plate															
19	VALVE LIFT, INLET/DISCHARGE, mm	1.8 / 1.8	1.6 / 1.6															
20	VALVE VELOCITY, m/s																	
21	SUCTION VALVE(S)	38/35	26/22															
22	DISCHARGE VALVE(S)	38/35	26/22															
23	ROD DIAMETER, mm	90	90															
24	MAX ALLOW. COMBINED ROD LOADING, kN, C *	392/3	392/3															
25	MAX ALLOW. COMBINED ROD LOADING, kN, T *	392/3	392/3															
26	CALCULATED GAS ROD LOAD, kN, C *	236/9	244/5															
27	CALCULATED GAS ROD LOAD, kN, T *	221/2	197/4															
28	COMBINED ROD LOAD (GAS + INERTIA), kN, C *	189	206/2															
29	COMBINED ROD LOAD (GAS + INERTIA), kN, T *	158/1	145/5															
30	ROD REV., DEGREES MIN @ X-HD PIN**	187/2	182/7															
31	RECIP WT. (PISTON, ROD, X-HD & NUTS), kg**	580	480															
32	MAX ALLOW. WORKING PRESSURE, barg	24/5	62															
33	MAX ALLOW. WORKING TEMPERATURE, °C	180	180															
34	HYDROSTATIC TEST PRESSURE, barg	36/8	93															
35	GAS LEAKAGE TEST PRESSURE, barg	-	-															
36	INLET FLANGE SIZE/RATING	10" / 300	6" / 600															
37	FACING	FF	FF															
38	DISCHARGE FLANGE SIZE/RATING	10" / 300	6" / 600															
39	FACING	FF	FF															
40	DISCHARGE RELIEF VALVE SETTING DATA AT INLET PRESSURES GIVEN ABOVE:																	
41	RECOMMENDED SETTING, barg	24/5	62															
42	GAS ROD LOAD, kN, C *		271															
43	GAS ROD LOAD, kN, T *		254															
44	COMBINED ROD LOAD, kN, C *		211/2															
45	COMBINED ROD LOAD, kN, T *		183															
46	ROD REVERSAL, °MIN @ X-HD PIN**		187															
47	NOTE: CALCULATED AT INLET PRESSURES																	
48	GIVEN ABOVE & RECOMMENDED SETTING.																	
49	SETTLE-OUT GAS PRESSURE	22 barg																
50	(DATA REQUIRED FOR STARTING)																	
51	* C = COMPRESSION * T = TENSION **X-HD = CROSSHEAD																	
NOTES/REMARKS:																		

		نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قوارداد BK-HD-GCS-CO-0008_03)															
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		V02	

☒ CONSTRUCTION FEATURES	
1 SERVICE ITEM NO.	Sour Gas
2 STAGE	2
4 CYLINDER SIZE (BORE DIA), mm	475 / 280
5 ROD RUN-OUT: NORMAL COLD VERTICAL (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	Min HRc 28
18 PISTON ROD COATING ☒ REQUIRED	"Tc" Coating
19 COATING HARDNESS, Rc	50 AS MIN. AT PACKING TRAVEL AREA (TUNGSTEN CARBIDE)
20 VALVE SEATS / SEAT PLATE	A276 Type 420
21 VALVE SEAT MIN HARDNESS, Rc	HRc 18~22
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	B637 (Inconel X-750)
28 SEAL / BUFFER PACKING, DISTANCE PIECE	Filled PTFE
29 SEAL / BUFFER PACKING, INTERMEDIATE	Filled PTFE
30 WIPER PACKING RINGS	ASTM B23 NO.1
31 MAIN JOURNAL BEARINGS, CRANKSHAFT	ASTM A53 Gr.A (ASTM B23 WM2 Coating)
32 CONNECTING ROD BEARING, CRANKPIN	ASTM A53 Gr.A (ASTM B23 WM2 Coating)
33 CONNECTING ROD BUSHING, X-HD END	ASTM A53 Gr.A (ASTM B584 C93700 Coating)
34 CROSSHEAD (X-HD) PIN BUSHING	ASTM A53 Gr.A (ASTM B584 C93700 Coating)
35 CROSSHEAD PIN	ASTM A534 NO. B25 Equiv. (Cr-Mo Alloy Steel)
36 CROSSHEAD	ASTM A216 Gr.WCB
37 CROSSHEAD SHOES	ASTM A278CL.NO.35 "Wj2"Coating
38 INSTRUMENTATION IN COLD SIDE	N/A
39 CONTACT W/PROCESS GAS HOT SIDE	N/A
* MACRL = MAXIMUM ALLOWABLE COMBINED ROD LOAD	
☒ 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	
(Outboard Distance Piece) ☒ PURGED AT 1/8 barg	
☐ PRESSURIZED TO _____ barg	
☐ WITH RELIEF VALVE	
FRAME COMPARTMENT: ☒ VENTED TO ATM barg	
(Inboard Distance Piece) ☒ PURGED AT 0.5 ~ 1 barg	
☐ PRESSURIZED TO _____ barg	
☐ WITH RELIEF VALVE	
☒ DISTANCE PIECE MAWP 2/8 barg	

to be specified
HY: Noted

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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 صادر کننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

CONSTRUCTION FEATURES (CONTINUED)																																																																																																																									
which model? HY: further details of model (NPE-B API 840S Panflex) has been reported in coupling ☐ FABRICATED CYLINDER, HEADS, & CONNECTION SKETCHES FOR DESIGN REVIEW BY PURCHASER. (6.15.5.13) ☒ COUPLING(S) ☒ LOW-SPEED Between Compressor & Driver or Gear ☒ BY MANUFACTURER Nara Corp. ☒ MODEL NPE-B API ☒ TYPE Flexible API-671 APPLIES ☒ YES ☐ NO ☒ INSPECTION AND SHOP TESTS (REF. 8.1.5) <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">REQ'D</th> <th style="text-align: center;">WITN.</th> <th style="text-align: center;">OBSER.</th> </tr> </thead> <tbody> <tr><td>*SHOP INSPECTION</td><td style="text-align: center;">☒</td><td style="text-align: center;">☒</td><td style="text-align: center;">☐</td></tr> <tr><td>ACTUAL RUNNING CLEARANCES AND RECORDS</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td></tr> <tr><td>MFG STANDARD SHOP TESTS</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td></tr> <tr><td>CYLINDER HYDROSTATIC TEST</td><td style="text-align: center;">☒</td><td style="text-align: center;">☒</td><td style="text-align: center;">☐</td></tr> <tr><td>CYLINDER PNEUMATIC TEST</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td><td style="text-align: center;">☐</td></tr> <tr><td>CYLINDER HELIUM LEAK TEST</td><td style="text-align: center;">☒</td><td style="text-align: center;">☒</td><td style="text-align: center;">☐</td></tr> <tr><td>CYL. 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QTY, TYPE, X-SEC., & LENGTH BELTS BELT SERVICE FACTOR (RELATIVE TO DRIVER NAMEPLATE HP RATING) ☒ CYLINDER LUBRICATION ☐ NON-LUBE STAGE(S)/SERVICE _____ ☒ LUBRICATED 2 STAGE(S)/SERVICE _____ TYPE OF LUBE OIL: ☐ SYNTHETIC ISO VG#1 _____ ☒ HYDROCARBON LUBRICATOR ☐ COMP. CRANKSHAFT, DIRECT DRIVE BY: ☐ CHAIN, FROM CRANKSHAFT ☒ ELECTRIC MOTOR ☐ OTHER _____ ☒ LUBRICATOR MFR SLOAN Lubrication Systems MODEL MD-00090 TYPE LUBRICATOR: ☒ SINGLE PLUNGER PER POINT (6.14.3) ☐ DIVIDER BLOCKS ☐ COMPARTMT, TOTAL QTY. 1 Per each compressor ☐ PLUNGERS (PUMPS), TOTAL QTY. 7 Per each compressor ☐ SPARE PLUNGERS, QTY. _____ ☐ SPARE COMPARTMT W/OUT PLUNGERS _____ ☒ HEATERS: ☒ ELECTRIC W/THERM.(S) ☐ ST _____ ☐ ESTIMATED WEIGHTS AND NOMINAL DIMENSIONS ☐ TOTAL COMPR. WT, LESS DRIVER & GEAR ☐ WT, OF COMPLETE UNIT, (LESS CONSOLES) kg ☐ MAXIMUM ERECTION WEIGHT kg ☐ MAXIMUM MAINTENANCE WEIGHT kg ☐ DRIVER WEIGHT/GEAR WEIGHT / kg ☐ LUBE OIL/COOLANT CONSOLE / kg ☐ FREE STANDING PANEL <table style="width:100%;"> <tr> <td>SPACE REQUIREMENTS, m:</td> <td>LENGTH</td> <td>WIDTH</td> <td>HEIGHT</td> </tr> <tr> <td>COMPLETE UNIT</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>LUBE OIL CONSOLE</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>CYLINDER COOLANT CONSOLE</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>FREE STANDING PANEL</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>PISTON ROD REMOVAL DIST.</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> </table> OTHER EQUIPMENT SHIPPED LOOSE (DEFINE) ☐ PULSATION SUPP., WEIGHT kg ☐ PIPING kg ☐ INTERSTAGE EQUIPMENT kg	DRIVEN SHEAVE (COMPRESSOR SHAFT)	DRIVE SHEAVE (DRIVER SHAFT)	PITCH DIA. (IN.) QTY & GROOVE X-SEC. 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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 : 15 از 24

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه
V02	0001	DS	ME	120	HY	GCS	BK

UTILITY CONSUMPTION

ELECTRIC MOTORS NOTE20

FOR INDUCTION
MOTORS SEE NOTE
OF 7.1.2.6 AND
MOTOR DATA SHEET

NAMEPLATE
kW

LOCKED ROTOR
AMPS

to be filled-in next
revision
HY reply:Added

DRIVER NON-STEADY
AMPS AT COMPRES-
SED HORSEPOWER
(INDUCTION MOTORS ONLY)

	NAMEPLATE kW	LOCKED ROTOR AMPS	
MAIN DRIVER	1050	HOLD	HOLD
MAIN LUBE OIL PUMP	SHAFT DRIVEN	SHAFT DRIVEN	SHAFT DRIVEN
AUX LUBE OIL PUMP	7/5	HOLD	HOLD
MAIN CYLINDER COOLANT PUMP	7/5	HOLD	HOLD
AUX CYLINDER COOLANT PUMP	7/5	HOLD	HOLD
MAIN ROD PKG COOLANT PUMP			
AUX ROD PKG COOLANT PUMP			
CYLINDER LUBRICATOR	0/4	HOLD	HOLD
FAN MOTOR	HOLD		
BARRING DEVICE	2/2	HOLD	HOLD

ELECTRIC HEATERS

	WATTS	VOLTS	HERTZ
FRAME OIL HEATER(S)	1500	230	50
CYLINDER COOLANT HEATER(S)	12000	400	50
CYL. LUBRICATOR HEATER(S)	400	230	50
MAIN DRIVER SPACE HEATER(S)			

STEAM

	FLOW	PRESSURE	TEMPERATURE	BACK PRESSURE
MAIN DRIVER	kg/h @	barg	°CTT TO	barg
FRAME OIL HEATER(S)	kg/h @	barg	°CTT TO	barg
CYL. LUB. HEATER(S)	kg/h @	barg	°CTT TO	barg
	kg/h @	barg	°CTT TO	barg
	kg/h @	barg	°CTT TO	barg

COOLING WATER REQUIREMENTS

	FLOW m ³ /h	INLET TEMP °C	OUTLET TEMP °C	INLET PRESS barg	OUTLET PRESS barg	MAX PRESS barg
CYLINDER JACKETS	14/9	63	70	3		
CYLINDER COOLANT CONSOLE						
FRAME LUBE OIL COOLER						
ROD PRESSURE PACKING*						
PACKING COOLANT CONSOLE (NOTE 1)	0/4	63	70	3		
INTERCOOLER(S)						
AFTERCOOLER						
TOTAL QUANTITY, m ³ /h	15/3					

REMARKS/SPECIAL REQUIREMENTS:

*ROD PACKING COOLANT MAY BE OTHER THAN WATER

	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بکيج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)																		
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پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدرک	سريال	نسخه												
BK	GCS	HY	120	ME	DS	0001	V02												
1 ☐ FRAME LUBE OIL SYSTEM	2 ☐ BASIC LUBE OIL SYSTEM FOR FRAME: 3 ☐ REF: TYPE MAIN BEARINGS: 4 ☐ PRESSURE SYSTEM: 5 ☐ MAIN OIL PUMP DRIVEN BY: 6 ☐ PSV FOR MAIN PUMP EXTERNAL TO CRANKCASE 7 ☐ AUX OIL PUMP DRIVEN BY: 8 ☐ HAND OPERATED PRE-LUBE PUMP FOR STARTING 9 ☐ CONTINUOUS OIL FLOW THROUGH SWITCH SENSING LINE (7.7.2.5) 10 ☐ SEP. CONSOLE FOR PRESS. LUBE SYS: 11 Note: Instrumentation to be listed on Instrumentation Data Sheets. 12 ☐ ELECTRICAL CLASSIFICATION: I ZONE 2 GROUP IIB TEMP CLASS T4 ☐ NON-HAZARDOUS																		
13 ☐ BASIC SYS. REQ'MTS (NORM. OIL FLOWS & VOLUMES)	14 ☐ LUBE OIL 15 FLOW PRESSURE VISCOSITY SUMP VOLUME 16 lit/min barg SSU @ 40°C SSU @ 100°C m³ 17 COMPRESSOR FRAME 131 5 0/35 18 DRIVER 19 GEAR 20 ☐ SYSTEM PRESSURES: DESIGN 8 barg HYDROTEST AS PER CODE barg 21 ☐ PRESSURE CONTROL VALVE SETTING 6 barg PUMP REL'F VALVE(S) SET 7/5 barg																		
22 ☐ PIPING MATERIALS:	23 CARBON STEEL STAINLESS STEEL WITH SS FLANGES STAINLESS STEEL WITH CARBON STEEL FLANGES 24 ☐ UPSTREAM OF PUMPS & FILTERS 25 ☐ DOWNSTREAM OF FILTERS 26 ☐																		
27 ☐ PUMPS (Gear or Screw Type Only)	28 RAT'D FL'W PRESSURE COLD START DRIVER SPEED COUPLING MECH. SEAL 29 lit/min barg REQ'D kW kW R/MIN REQ'D REQ'D 30 MAIN 131 5 5 Shaft Driven 420 31 AUXILIARY 131 5 7/5 1450 32 ☐ PUMP CASING MATERIAL (Ref. 6.14.2.1.5): MAIN PUMP Cast Iron AUX PUMP Cast Iron 33 ☐ GUARD(S) REQ. FOR COUPLING(S): MAIN PUMP AUX PUMP 34 ☐ AUXILIARY PUMP CONTROL: MANUAL AUTOMATIC 35 ON-OFF-AUTO SEL. SWITCH: BY PURCH. BY MFR. 36 WIRING TO TERMINAL BOX: BY PURCH. BY MFR. 37 SWITCHES RTD'S/THERMOCOUPLES																		
38 ☐ COOLERS:	39 ☐ DUAL W/TTRANSFER VALVE ☐ MFG'S STD. ☐ TEMA C ☐ TEMA R (API 660) 40 ☐ WATER COOLED ☐ AIR COOLED (API-661) 41 ☐ VALVE: ☐ MANUAL ☐ AUTO 42 HANGER DATA SHEETS FOR DETAILS, SPECIFY % GLYCOL ON COOLING WATER SIDE																		
43 ☐ FILTER(S)	44 ☐ SINGLE ☐ DUAL W/TTRANSFER VALVE ☐ ASME CODE DESIGN ☐ ASME CODE STAMPED 45 ☐ DESIGN PRESSURE, barg ☐ Δ P CLEAN, barg ☐ Δ P COLLAPSE, barg 46 ☐ MICRON RATING, ☐ CARTRIDGE MATERIAL, ☐ CARTRIDGE P/N 47 ☐ BONNET MATERIAL, ☐ CASING MATERIAL, SS 316 ☐ FURN.SPARE CARTR.,QTY 2																		
48 ☐ SYS. COMPONENT SUPP.	49 MANUFACTURER MODEL MANUFACTURER MODEL 50 MAIN PUMP KwangShin 50F - 108 - 70 51 AUXILIARY PUMP As per sub vendor list 52 MECHANICAL SEALS As per sub vendor list 53 ELECTRIC MOTORS As per sub vendor list 54 STEAM TURBINES As per sub vendor list 55 OIL FILTER(S) As per sub vendor list 56 OIL COOLER(S) As per sub vendor list 57 TRANSFER VALVE(S) As per sub vendor list 58 PUMP COUPLING(S) As per sub vendor list 59 SUCTION STRAINER(S) As per sub vendor list 60 CHECK VALVE(S) As per sub vendor list																		

?
HY: Pump Seal
type is not
mechanical seal

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (دفت و برگشتی) بینک (قوارداد 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: 17 از 24
نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK		

☒ COOLANT SYSTEM									
● BASIC COOLING SYS. FOR: ● COMPRESSOR CYL.(S) ● ROD PACKING(S) ○ PROCESS COOLER(S) ○ OIL COOLER(S)									
● 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 T4 ○ NON-HAZARDOUS									
☒ BASIC SYS. REQ'MTS (NORM. COOLANT FLOW DATA) ● COOLANT TO BE 50 % 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	●	○	○	14/9	3	63	70	●	
CYLINDER(S), 2nd STAGE	●	○	○		3	63	70	●	
CYLINDER(S), STAGE	○	○	○					○	
CYLINDER(S), STAGE	○	○	○					○	
CYLINDER(S), STAGE	○	○	○					○	
CYLINDER(S), STAGE	○	○	○					○	
PISTON ROD PACK'G TOTAL	●			0/4	3	63	70	●	
INTERCOOLER(S) TOTAL	○							○	
AFTERCOOLER	○							○	
OIL COOLER(S)	○							○	
TOTAL FLOW				15/3					
■ 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									
	m ³ /h	barg		kW	kW	r/min	REQ'D	REQ'D	
MAIN	15/3	4			7/5		●	○	
AUXILIARY	15/3	4			7/5		●	○	
■ 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	as per sub vendor list			◆ 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 (قرارداد BK-HD-GCS-CO-0008_03)																	
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>V02</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	V02	0001	DS	ME	120	HY	GCS	BK	شماره صفحه: 18 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه											
V02	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 RADIOGRAPHY (X-RAY OF WELDS): ☐ NONE ☐ SPOT ☒ 100% ☐ IMPACT TEST ☒ SHOP INSPECTION ☒ WITNESS HYDROTEST ☒ OUTDOOR STORAGE OVER 6 MONTHS ☒ SPECIAL PAINT SPEC ☐ WITNESSED ☐ OBSERVED																																																										
CYLINDER, GAS, OPERATING, AND SUPPRESSOR DESIGN DATA <table border="1"> <tr> <td>SERVICE</td> <td>Wet HC gas</td> <td>STAGE NO.</td> <td>1st / 2nd</td> </tr> <tr> <td>COMPRESSOR MANUFACTURER'S RATED CAPACITY</td> <td>Kg/h 8935/5 m3/h 1589 Nm3/h 8162/9</td> <td colspan="2"></td> </tr> <tr> <td>LINE SIDE OPERATING PRESSURE</td> <td>INLET, 4.9 / 17.4 bar</td> <td colspan="2">DISCHARGE 18.25 / 54.8 bar</td> </tr> <tr> <td>OPERATING TEMP. WITHIN</td> <td>INLET, 36.8 / 59.9 °C</td> <td colspan="2">DISCHARGE 129 / 148 °C</td> </tr> <tr> <td>ALLOWABLE PRESSURE DR</td> <td>Δ P 68 / 65 mbar / 1.16 / 1.12 %</td> <td colspan="2">Δ P 223/215 mbar / 1.16 / 1.12 %</td> </tr> <tr> <td>SUPPRESSOR TAG NUMBER</td> <td>INLET SUPPRESSOR</td> <td colspan="2">DISCHARGE SUPPRESSOR</td> </tr> <tr> <td>COMBINATION INLET SUPP SEPARATOR/INTERNAL</td> <td>☐ YES ☒ NO / ☐ YES ☒ NO</td> <td colspan="2">☐ YES ☒ NO</td> </tr> <tr> <td>NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE</td> <td>1 / 1</td> <td colspan="2">1 / 1</td> </tr> <tr> <td>ALLOWABLE PEAK-PEAK PULSE @ LINE SIDE NOZZLE</td> <td>bar / %</td> <td colspan="2">bar / %</td> </tr> <tr> <td>ALLOWABLE PEAK-PEAK PULSE @ CYL FLANGE NOZZLE</td> <td>bar / %</td> <td colspan="2">bar / %</td> </tr> <tr> <td>DESIGN FOR FULL VACUUM CAPABILITY</td> <td>☐ YES ☒ NO</td> <td colspan="2">☐ YES ☒ NO</td> </tr> <tr> <td>MIN. REQ'D WORKING PRESSURE & TEMPERATURE</td> <td>barg, @ °C</td> <td colspan="2">barg, @ °C</td> </tr> <tr> <td>INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2</td> <td>1.438 / 0.5 m³</td> <td colspan="2">0.911 / 0.339 m³</td> </tr> <tr> <td>AS BUILT VOLUME (m³)</td> <td>m³</td> <td colspan="2">m³</td> </tr> </table>			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	INLET, 36.8 / 59.9 °C	DISCHARGE 129 / 148 °C		ALLOWABLE PRESSURE DR	Δ P 68 / 65 mbar / 1.16 / 1.12 %	Δ P 223/215 mbar / 1.16 / 1.12 %		SUPPRESSOR TAG NUMBER	INLET SUPPRESSOR	DISCHARGE SUPPRESSOR		COMBINATION INLET SUPP SEPARATOR/INTERNAL	☐ YES ☒ NO / ☐ 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	☐ YES ☒ NO		MIN. REQ'D WORKING PRESSURE & TEMPERATURE	barg, @ °C	barg, @ °C		INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2	1.438 / 0.5 m ³	0.911 / 0.339 m ³		AS BUILT VOLUME (m ³)	m ³	m ³	
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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 : 19 از 24			
		BK	GCS	HY	120	ME	DS	0001	V02

1 PULSATION SUPPRESSION DEVICES FOR RECIPROCATING COMPRESSORS (CONT'D) 2 THESE SHEETS TO BE FILLED OUT FOR COMPRESSION 3 CONSTRUCTION REQUIREMENTS & DATA 4 ● SUPPRESSOR TAG NUMBER 5 ● BASIC MATERIAL REQUIRED, CS, SS, E 6 ◆ ACTUAL MATERIAL DESIGNATION 7 ○ SPECIAL HARDNESS LIMITATIONS, Rc 8 ■ CORROSION ALLOWANCE., mm 9 ◆ WALL THICKNESS, mm 10 ■ NOM. SHELL DIA X OVERALL LGTH. (INCH/VOL.mm³) 11 ■ PIPE OR ROLLED PLATE CONSTRUCTION 12 ◆ ACT. MAX ALLOW. WORKING PRESS. AND TEMPERATURE 13 ● MINIMUM DESIGN METAL TEMP (6.15.8.1) 14 ● INLET SUPPRESS. TO BE SAME MAWP AS DISCH'RG SUPPRESS. 15 ◇ MAX EXPECTED PRESSURE DROP(Δ P, %) LINE PRESS 16 ◇ WEIGHT (kg EACH) 17 ○ INSUL NUTS & ALLOW. FOR INSULATION REQUIRED (X) 18 ◇ EXPECTED P-P PULSE @ LINE SIDE/CYL FLG, % LINE PRESS 19 BASED ON FINAL SUPPRESSOR DESIGN 20 □ SUPPORTS, TYPE/QUANTITY	SERVICE Sour Gas STAGE NO. 1st / 2nd	
	INLET SUPPRESSOR DISCHARGE SUPPRESSOR C-2101-D1 / C-2102-D1 C-2101-D2 / C-2102-D2 Carbon Steel (NOTE13) Carbon Steel (NOTE 13)	
	SHELL & HEADS WELDS SHELL & HEADS WELDS 3 mm 3 mm	
	TBD mm/ TBD mm TBD mm/ TBD mm TBC x TBC mm/ TBD mm³ TBC x TBC mm/ TBD mm³	
	PIPE ROLLED PLATE PIPE ROLLED PLATE 24.5 / 62 bar @ 180 °C 24.5 / 62 bar @ 180 °C -26 °C -26 °C	
	Δ P bar/ % Δ P bar/ % kg kg	
	%/ % %/ %	
	CONNECTION REQUIREMENTS & DATA 22 ● LINE SIDE FLANGE. SIZE/RATING/FACING/TYPE 23 ● COMP CYL FLANGE(S), QTY/SIZE/RATING/FACING/TYPE 24 ● FLANGE FINISH, ○ PER 7.9.5.1.16 ○ SPECIAL (SPECIFY) 25 >125 <250 ● PER ANSI 16.5 26 ● INSPECTION OPENINGS REQUIRED 27 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING 28 ◇ * QTY. SIZE, /FLG TYPE & RATING 29 ● VENT CONNECTIONS REQUIRED 30 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING 31 ◇ * QTY. SIZE, /FLG TYPE & RATING 32 ● DRAIN CONNECTIONS REQUIRED 33 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING 34 ◇ * QTY. SIZE, /FLG TYPE & RATING 35 ● PRESSURE CONNECTIONS REQUIRED 36 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING 37 ◇ * QTY. SIZE, /FLG TYPE & RATING 38 ● TEMPERATURE CONNECTIONS REQUIRED 39 ○ SPEC. QTY. SIZE, /FLG TYPE & RATING 40 ○ CYL NOZZLE ○ MAIN BODY 41 ◇ * QTY. SIZE, /FLG TYPE & RATING	
	OTHER DATA AND NOTES 47 ◆ COMPRESSOR MFG'S SUPP. OUTLINE OR DRAWING NO. 48 ◇ SUPP. MFG'S OUTLINE OR DRAWING NO. 49 NOTES * = AS BUILT	

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

شماره صفحه: 20 از 24

053 - 073 - 9184

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
V02	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'TED ☒ FREE STANDING (OFF UNIT) ☒ LOCAL ☒ REMOTE ☐ OUTDOORS									
5	☐ PNEUMATIC ☐ ELEC. ☐ ELECTRONIC ☐ HYDRAULIC ☒ PROGRAMMABLE CONT'L'R									
6	☐ NEMA 7, CLASS <u>T4</u> , GROUP <u>IIB</u> , DIVISION <u>2</u> ☒ INTRINSICALLY SAFE (refer to NOTE...6)									
7	☐ I/S BARRIERS (☒ ☐ ☐)									
8	☐ NEMA 4, WATERTIGHT & DUSTTIGHT ☐ PURGED TO NFPA 496 TYPE ☐ X ☐ Y ☐ Z									
9	☐ OTHER NEMA <u> </u> 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'TED ☐ FREE STANDING (OFF UNIT) ☐ WITH STAND ☐ OUTDOORS									
15	☐ CLASS <u> </u> , GROUP <u> </u> , DIVISION <u> </u>									
16	☐ CONSTANT PRESSURE DISPOSAL SYSTEM ☐ VARIABLE PRESSURE DISPOSAL SYSTEM									
17	ADDITIONAL PANEL REMARKS: IP 54 FOR INDOOR(ITR) UCP CONTROL PANEL RITTAL Type									
18										
19										
20	☐ INSTRUMENTATION SUITABLE FOR: ☐ INDOORS ☒ OUTDOORS ☐ OTHER <u> </u>									
21	☐ PREFERRED INSTRUMENT SUPPLIERS, (TO BE COMPLETED BY PURCHASER), OTHERWISE MFR'S STANDARD APPL									
22	PRESSURE GAUGES	MFR	SANGAN	SIZE & TYPE	160mm Bourdon	MTL	HOLD			
23	TEMPERATURE GAUGES	MFR	SANGAN	SIZE & TYPE	160mm Bimetal	MTL	HOLD			
24	LIQUID LEVEL GAUGES	MFR	HOLD	TYPE	HOLD	MTL	HOLD			
25	DIFF. PRESSURE GAUGES	MFR	SANGAN	SIZE & TYPE	160mm Diaphragm	MTL	HOLD			
26	PRESS. TRANSMITTERS	MFR	HOLD	TYPE	Diaphragm	MTL	HOLD			
27	LIQUID LEV. TRANSMITTER	MFR	HOLD	TYPE	Diff pressure	MTL	HOLD			
28	PRESSURE SWITCHES	MFR	HOLD	TYPE	HOLD	MTL	HOLD			
29	TEMPERATURE SWITCHES	MFR	HOLD	TYPE	Bimetal	MTL	HOLD			
30	LIQUID LEVEL SWITCHES	MFR	N/A	TYPE	N/A	MTL	HOLD			
31	DIFF. PRESSURE SWITCHES	MFR	N/A	TYPE	N/A	MTL	HOLD			
32	CONTROL VALVES	MFR	HOLD	TYPE	HOLD	MTL	HOLD			
33	PRESSURE SAFETY VALVES	MFR	Kiasa	TYPE	Conventional	MTL	HOLD			
34	SIGHT FLOW INDICATORS	MFR	HOLD	TYPE	HOLD	MTL	HOLD			
35	VIBRATION MONITORS & EQUIP.	MFR	As per Sub vendor List (NOTE16)	TYPE	HOLD	MTL	HOLD			
36	THERMOCOUPLES	MFR	N/A	TYPE	N/A	MTL	N/A			
37	RTD'S	MFR	HOLD	TYPE	HOLD	MTL	HOLD			
38	SOLENOID VALVES	MFR	Asco	TYPE	Pilot operated	MTL	HOLD			
39	ANNUNCIATOR	MFR	N/A	MODEL & (QTY SPARE POINTS)			()			
40	PROGRAMMABLE CONTROLLER	MFR	Siemens	TYPE	S7-400FH	MTL				
41		MFR		TYPE		MTL				
42	☒ PRESSURE GAUGE REQUIREMENTS ☒ LIQUID-FILLED PRESSURE GAUGES: ☒ YES ☐ NO									
43		LOCALLY MOUNTED		PANEL MOUNTED		LOCALLY MOUNTED		PANEL MOUNTED		
44	FUNCTION	(☒ ☐ ☐)	(☐ ☐ ☐)			(☒ ☐ ☐)	(☐ ☐ ☐)			
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										



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: 22 از 24

نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه
V02	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 & ACK'N'LT TEST BUTTON (☐ ☐ ☐) _____

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

TEST VALVES (☐ ☐ ☐) FOR: _____

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

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

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

(☐ ☐ ☐) PHASER FOR: _____

AND TRANSDUCER (☐ ☐ ☐) _____

As per Approved PID (☐ ☐ ☐) _____

SEPARATE LUBE OIL CONSOLE INSTRUMENTATION:

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

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

As per Approved PID (☐ ☐ ☐) _____

SEPARATE COOLING WATER CONSOLE INSTRUMENT:

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

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

(☐ ☐ ☐) _____

As per Approved PID (☐ ☐ ☐) _____

RELIEF VALVE

to be filled in next revision

BY

MANUFACTURER TYPE SIZE SETTING

1 st Disch (☐ ☐ ☐) Later Later Later Later

2nd Disch (☐ ☐ ☐) 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 Approved PID (☐ ☐ ☐) _____

NOTES: SEE MOTOR DATA SHEET FOR ADDITIONAL MOTOR INSTRUMENTATION REQUIREMENTS

As per Approved PID

PID number shall be referred
HY: Noted

ADDITIONAL INSTRUMENTATION REMARKS/SPECIAL REQUIREMENTS:

As per PID latest revision

	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 : 23 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>V02</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	V02	0001	DS	ME	120	HY	GCS	BK
	نسخه		سریال	نوع مدرک	رشته	تسهیلات	صادرکننده	بسته کاری	پروژه									
V02	0001	DS	ME	120	HY	GCS	BK											

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
9		Discharge Design Pressure (barg)	24.5
10			62
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	Three Spill Back Valves to be supplied by Vendor. (Location as per P&ID)	
24			
25	9	Discharge of each stage is protected from overpressure through PSV set at design pressure, PSVs according to P&ID are in vendor 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 considered 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 c	
36			
37			
38	15	Complete Electrical and Instrumentation Installation, JB, Tube and Fitting, Cabling, Tray,... Inside of skid is in Vendor's scope o	
39			
40			
41	16	Vibration , tempearture & rod drop sensor & monitoring as per approval OVERAL CONTROL/SAFETY SYSTEM CONFIGURATION DIAGRAM document.	
42			
43	17	Voltage, Electric Power, Current and Power factor will be specified	
44			
45	18	Suction and Discharge line Diameters/ Ratings:	
46			
47		2nd Stage	
48		Rating Diameter Rating	
49		300# 6" 600#	
50		300# 6" 600#	
51	19	Vendor is responsible to	
52		required for monitoring	
53			
54	20	For electric motors, star	

pulsation study as per approach 2 shall be provided by havayar and relevant document number shall be provided in VPIS

Havayar as a responsible of whole pacakge shall provide his recommendation and if there is no risk to be mentioned

selected vendor for condition monitoring and relevant data for be provided and this note shall be correct and referred to relevant document
HY reply:Vibration sensor brand is Shinkawa & Metrix brand. (Refer to page 20)

?

Please negotiate with electrical department

	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						شماره صفحه : 24 از 24		
DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES									
نسخه		سریال		نوع مدرک		رشته		تسهیلات	
V02		0001		HY		GCS		BK	

PID number referred and set pressure value shall be mentioned here
HY: Noted

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	23	LCP for each compressor IP66,Ex certificate will be subbply by vendor as per project specification .	
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