

	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
	V02	0001	DS	ME	120		HY
	طرح نگهداشت و افزایش تولید ۲۷ مخزن						
	DETAILED D/SH FOR COMPRESSOR (API-618) WITH CERTIFICATES نگهداشت و افزایش تولید میدان نفتی بینک						
Rev	Date	Purpose of Issue / Status	Prepared By	Checked By	Approved By	Client Approval	
Status IFA: Issued For Approval IFR: Issued For Review IFI: Issued For Information AFC: Approved For Construction	V02	DEC.2023	IFR	Havayar Co.	M. Fakharian	S.Faramarzpour	
	V01	JUN.2023	IFR	Havayar Co.	M. Fakharian	A.M. Mohseni	
	V00	FEB.2023	IFR	Havayar Co.	M. Fakharian	A.M. Mohseni	



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		
7	X		X		
8	X		X		
9	X	X	X		
10	X	X	X		
11	X	X	X		
12	X	X	X		
13	X	X	X		
14	X	X	X		
15	X	X	X		
16	X	X	X		
17	X	X	X		
18	X	X	X		
19	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. MFRG: 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 MFRG: 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 ☐ GAS TURBINE ☐ ENGINE ☐ OTHER
11	CYLINDERS CONSTRUCTION: ☒ LUBE ☐ NON-LUBE
13	☒ MAX ACCEPTABLE AVG PISTON SPEED 4 m/s

OPERATING CONDITIONS (EACH MACHINE)					
15 ☒ SERVICE OR ITEM NO. 16 ☒ STAGE 17 ☒ NORM. OR ALT. CONDITION 18 ☒ CERTIFIED PT. (X) MARK ONE 19 ☒ MOLECULAR WEIGHT 20 ☒ Cp/Cv (K) @ 65°C OR °C 21 ☒ INLET CONDITIONS: AT INLET TO: ☒ PULSE DEVICES ☒ COMPRESSOR CYLINDER FLANGES 22 NOTE: ☐ SIDE STREAM TO STAGE(S), THESE INLET PRESS. ARE FIXED	Continious 1st Summer x 24/52 1/245	Continious 2nd Winter 24/52 1/278	Continious 1st 21/56 1/28	Continious 2nd 21/56 1/295	
23 ☒ PRESSURE (barg) @ PUL. SUPP. INLET 24 ☒ PRESSURE (barg) @ CYL. FLANGE 25 ☒ TEMPERATURE (°C) 26 ☐ REC: SIDE STREAM TEMPS (°C) 27 ☒ COMPRESSIBILITY (Z _s) 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	4/9 4/805 36/8 0/975	4/9 4/805 59/9 0/936	4/9 4/805 18/9 0/977	16/956 16/856 59/9 0/951	
31 ☒ PRESSURE (barg) @ CYL. FLANGE 32 ☒ PRESS. (barg) @ PUL. SUPP. OUTLET 33 ☐ TEMP., ADIABATIC, °C 34 ☒ TEMP., PREDICTED, °C 35 ☒ COMPRESSIBILITY (Z ₂) OR (Z _{AVG}) 36 * CAPACITY AT INLET TO COMPRESSOR, NO NEGATIVE TOLERANCE (-0%) 37 kg/h CAPACITY SPECIFIED 38 IS ☒ WET ☐ DRY 39 Nm ³ /h (1 atm & 0 °C) 40 * MFRG.'S RATED CAPACITY (AT INLET TO COMPRESSOR & kW @ CERTIFIED TOLERANCE OF ±3% FOR CAP. & ±3% FOR KW) 41 kg/h CAPACITY SPECIFIED 42 IS ☒ WET ☐ DRY 43 INLET VOLUME FLOW (m ³ /h) 44 Nm ³ /h (1.013 bar & 0°C) 45 BkW/STAGE 46 TOTAL BkW @ COMPRESSOR SHAFT 47 TOTAL kW INCLUDING 48 V-BELT & GEAR LOSSES 49 * CAPACITY FOR NNT 50 MANUFACTURER'S = REQUIRED ÷ 0.97 51 THEREFORE REQUIRED = MFR'S x 0.97	17/956 17/856 117/9 129 0/964	54/898 54/8 153/7 148 0/923	17/956 17/856 105 116 0/970	54/898 54/8 158/7 150 0/948	
	8664 7918	8664 7918	7585 7887	7585 7887	
	8935/5 1613/1 8162/9 441/1	8935/5 1613/1 8162/9 463/0	8343/5 1613/1 8668/6 435/2	8343/5 1613/1 8668/6 481/3	
	904/1	916/5			

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 (62 barg): 963.9 kw
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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																																																																																																																																																																																																																																																																																																
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CO</td> <td></td> <td>28.010</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td>CARBON DIOX. CO₂</td> <td></td> <td>44.010</td> <td>3/1606</td> <td>3/1606</td> <td>2/5202</td> <td>2/5202</td> </tr> <tr> <td>13</td> <td>HYDRO. SULFIDE H₂S</td> <td></td> <td>34.076</td> <td>5/4119</td> <td>5/4119</td> <td>4/7056</td> <td>4/7056</td> </tr> <tr> <td>14</td> <td>HYDROGEN H₂</td> <td></td> <td>2.016</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td>METHANE CH₄</td> <td></td> <td>16.042</td> <td>63/8921</td> <td>63/8921</td> <td>73/9809</td> <td>73/9809</td> </tr> <tr> <td>16</td> <td>ETHYLENE C₂H₄</td> <td></td> <td>28.052</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>17</td> <td>ETHANE C₂H₆</td> <td></td> <td>30.068</td> <td>13/7515</td> <td>13/7515</td> <td>11/4249</td> <td>11/4249</td> </tr> <tr> <td>18</td> <td>PROPYLENE C₃H₆</td> <td></td> <td>42.078</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>19</td> <td>PROPANE C₃H₈</td> <td></td> <td>44.094</td> <td>7/7314</td> <td>7/7314</td> <td>4/7371</td> <td>4/7371</td> </tr> <tr> <td>20</td> <td>I-BUTANE C₄H₁₀</td> <td></td> <td>58.120</td> <td>0/8394</td> <td>0/8394</td> <td>0/3942</td> <td>0/3942</td> </tr> <tr> <td>21</td> <td>n-BUTANE C₄H₁₀</td> <td></td> <td>58.120</td> <td>1/8594</td> <td>1/8594</td> <td>0/8130</td> <td>0/8130</td> </tr> <tr> <td>22</td> <td>I-PENTANE C₅H₁₂</td> <td></td> <td>72.146</td> <td>0/6968</td> <td>0/6968</td> <td>0/3066</td> <td>0/3066</td> </tr> <tr> <td>23</td> <td>n-PENTANE C₅H₁₂</td> <td></td> <td>72.146</td> <td>0/3774</td> <td>0/3774</td> <td>0/1450</td> <td>0/1450</td> </tr> <tr> <td>24</td> <td>n-HEXANE C₆H₁₄</td> <td></td> <td>86/180</td> <td>0/6549</td> <td>0/6549</td> <td>0/2224</td> <td>0/2224</td> </tr> <tr> <td>25</td> <td>n-HEPTANE C₇H₁₆</td> <td></td> <td>100/20</td> <td>0/1956</td> <td>0/1956</td> <td>0/0542</td> <td>0/0542</td> </tr> <tr> <td>26</td> <td>n-OCTANE C₈H₁₈</td> <td></td> <td>114/23</td> <td>0/0596</td> <td>0/0596</td> <td>0/0149</td> <td>0/0149</td> </tr> <tr> <td>27</td> <td>n-NONANE C₉H₂₀</td> <td></td> <td>128/26</td> <td>0/0297</td> <td>0/0297</td> <td>0/0071</td> <td>0/0071</td> </tr> <tr> <td>28</td> <td>n-DECANE C₁₀H₂₂</td> <td></td> <td>142/28</td> <td>0/0099</td> <td>0/0099</td> <td>0/0000</td> <td>0/0000</td> </tr> <tr> <td>29</td> <td>AMMONIA NH₃</td> <td></td> <td>17.031</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>30</td> <td>HYDRO. CHLOR. HCl</td> <td></td> <td>36.461</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>31</td> <td>CHLORINE Cl₂</td> <td></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> <td></td> </tr> <tr> <td>33</td> <td colspan="2">CALCULATED MOL WT.</td> <td></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></td> <td>1/245</td> <td>1/278</td> <td>1/28</td> <td>1/295</td> </tr> <tr> <td>36</td> <td colspan="7">NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINUTE TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUDED ABOVE.</td> </tr> </tbody> </table>	GAS ANALYSIS AT OPERATING CONDITIONS			MOLE % (BY VOLUME) ONLY				REMARKS	SERVICE/ITEM NO.	STAGE	NORMAL OR ALT	Continious	Continious	Continious	Continious	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. SULFIDE H ₂ S		34.076	5/4119	5/4119	4/7056	4/7056	14	HYDROGEN H ₂		2.016					15	METHANE CH ₄		16.042	63/8921	63/8921	73/9809	73/9809	16	ETHYLENE C ₂ H ₄		28.052					17	ETHANE C ₂ H ₆		30.068	13/7515	13/7515	11/4249	11/4249	18	PROPYLENE C ₃ H ₆		42.078					19	PROPANE C ₃ H ₈		44.094	7/7314	7/7314	4/7371	4/7371	20	I-BUTANE C ₄ H ₁₀		58.120	0/8394	0/8394	0/3942	0/3942	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	36	NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINUTE TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUDED ABOVE.							<table border="1"> <thead> <tr> <th colspan="2">APPLICABLE SPECIFICATIONS</th> </tr> </thead> <tbody> <tr> <td>●</td> <td>API 618, RECIPROCATING COMPRESSORS FOR PETROLEUM, CHEMICAL AND GAS INDUSTRY SERVICES</td> </tr> <tr> <td>●</td> <td>NACE MR-0175 (6.15.1.11)</td> </tr> <tr> <td>●</td> <td>BK-GCS-PEDCO-120-ME-SP-0002_D05</td> </tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> <tr><td>○</td><td></td></tr> </tbody> </table>	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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13	HYDRO. SULFIDE H ₂ S		34.076	5/4119	5/4119	4/7056	4/7056																																																																																																																																																																																																																																																																																											
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15	METHANE CH ₄		16.042	63/8921	63/8921	73/9809	73/9809																																																																																																																																																																																																																																																																																											
16	ETHYLENE C ₂ H ₄		28.052																																																																																																																																																																																																																																																																																															
17	ETHANE C ₂ H ₆		30.068	13/7515	13/7515	11/4249	11/4249																																																																																																																																																																																																																																																																																											
18	PROPYLENE C ₃ H ₆		42.078																																																																																																																																																																																																																																																																																															
19	PROPANE C ₃ H ₈		44.094	7/7314	7/7314	4/7371	4/7371																																																																																																																																																																																																																																																																																											
20	I-BUTANE C ₄ H ₁₀		58.120	0/8394	0/8394	0/3942	0/3942																																																																																																																																																																																																																																																																																											
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																																																																																																																																																																																																																																																																																											
36	NOTE: IF WATER VAPOR AND/OR CHLORIDES ARE PRESENT, EVEN MINUTE TRACES, IN THE GAS BEING COMPRESSED, IT MUST BE INCLUDED ABOVE.																																																																																																																																																																																																																																																																																																	
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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 <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 15%;">نسخه</td> <td style="width: 15%;">سریال</td> <td style="width: 15%;">نوع مدرک</td> <td style="width: 15%;">رشته</td> <td style="width: 15%;">تسهیلات</td> <td style="width: 15%;">صادر کننده</td> <td style="width: 15%;">بسته کاری</td> <td style="width: 15%;">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 : 5 از 24
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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																																																																																																																											
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		ACTION: ☐ DIRECT (AIR-TO-UNLOAD) ☒ REVERSE (AIR-TO-LOAD/FAIL SAFE)																																																																																																																											
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ALL UNLOADING STEPS BASIS MANUFACTURERS CAPACITY SHOWN ON PAGE 3.																																																																																																																													
INLET AND DISCHARGE PRESSURE ARE		☒ AT CYLINDER FLANGES ☐ PULSATION SUPPRESSOR FLANGES																																																																																																																											
SERVICE OR ITEM NO. STAGE NORMAL OR ALTERNATE CONDITION PERCENT CAPACITY WEIGHT FLOW, kg/h Nm ³ /h (1.013 bar & 0°C) POCKETS/VALVES OPERATION * POCKET CLEARANCE ADDED % TYPE UNLOADERS, PLUG/FINGER INLET TEMPERATURE, °C INLET PRESSURE, barg DISCHARGE PRESSURE, barg ☐ DISCHARGE TEMP., ADIABATIC °C ☐ DISCHARGE TEMP., PREDICTED °C VOLUMETRIC EFF., %HE/%CE 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	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="5">Continuous</th> </tr> <tr> <th colspan="5">1st</th> </tr> <tr> <th colspan="5">Summer</th> </tr> <tr> <th>0</th> <th>25</th> <th>50</th> <th>75</th> <th>100</th> </tr> <tr> <td>-</td> <td>2233/9</td> <td>4467/8</td> <td>6701/6</td> <td>8935/5</td> </tr> <tr> <td>-</td> <td>2040/7</td> <td>4081/5</td> <td>6122/2</td> <td>8162/9</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>36/8</td> <td>36/8</td> <td>36/8</td> <td>36/8</td> <td>36/8</td> </tr> <tr> <td>4/80</td> <td>4/80</td> <td>4/80</td> <td>4/80</td> <td>4/80</td> </tr> <tr> <td>18/25</td> <td>18/25</td> <td>18/25</td> <td>18/25</td> <td>18/25</td> </tr> <tr> <td>117/9</td> <td>117/9</td> <td>117/9</td> <td>117/9</td> <td>117/9</td> </tr> <tr> <td>129/0</td> <td>129/0</td> <td>129/0</td> <td>129/0</td> <td>129/0</td> </tr> <tr> <td>73.57/ 73.57</td> <td>73.57 /73.57</td> <td>73.57/ 73.57</td> <td>73.57/ 73.57</td> <td>73.57/ 73.57</td> </tr> <tr> <td>3/7</td> <td>236/9</td> <td>239/6</td> <td>236/9</td> <td>236/9</td> </tr> <tr> <td>3/7</td> <td>3/7</td> <td>3/7</td> <td>221/2</td> <td>221/2</td> </tr> <tr> <td>133</td> <td>133</td> <td>189</td> <td>130/7</td> <td>189</td> </tr> <tr> <td>173/4</td> <td>3/4</td> <td>107/5</td> <td>158/1</td> <td>158/1</td> </tr> <tr> <td>199/9</td> <td>19/3</td> <td>64/7</td> <td>168/2</td> <td>187/2</td> </tr> <tr> <td>441/1</td> <td>441/1</td> <td>441/1</td> <td>441/1</td> <td>441/1</td> </tr> <tr> <td>420</td> <td>541</td> <td>662</td> <td>782/9</td> <td>903/9</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					Continuous					1st					Summer					0	25	50	75	100	-	2233/9	4467/8	6701/6	8935/5	-	2040/7	4081/5	6122/2	8162/9	HE S & CE S	HE F & CE S	HE S or CE S	HE F	-		25% (Head Side)		25% (Head Side)		Finger	Finger	Finger	Finger	Finger	36/8	36/8	36/8	36/8	36/8	4/80	4/80	4/80	4/80	4/80	18/25	18/25	18/25	18/25	18/25	117/9	117/9	117/9	117/9	117/9	129/0	129/0	129/0	129/0	129/0	73.57/ 73.57	73.57 /73.57	73.57/ 73.57	73.57/ 73.57	73.57/ 73.57	3/7	236/9	239/6	236/9	236/9	3/7	3/7	3/7	221/2	221/2	133	133	189	130/7	189	173/4	3/4	107/5	158/1	158/1	199/9	19/3	64/7	168/2	187/2	441/1	441/1	441/1	441/1	441/1	420	541	662	782/9	903/9										
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REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH																																																																																																																													

 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 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 PCK. ☒ 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

	Continuous				
	2nd				
	Summer				
	0	25	50	75	100
11 ☒ SERVICE OR ITEM NO.	-	2233/9	4467/8	6701/6	8935/5
12 ☒ STAGE	-	2040/7	4081/5	6122/2	8162/9
13 ☒ NORMAL OR ALTERNATE CONDITION	HE S & CE S	HE F & CE S	HE S or CE S	HE F	-
14 ☒ PERCENT CAPACITY		25% (Head Side)		25% (Head Side)	
15 ☒ WEIGHT FLOW, kg/h	Finger	Finger	Finger	Finger	Finger
16 ☒ Nm ³ /h (1.013 bar & 0°C)	59/9	59/9	59/9	59/9	59/9
17 ☒ POCKETS/VALVES OPERATION *	17/40	17/40	17/40	17/40	17/40
18 ☒ POCKET CLEARANCE ADDED %	54/90	54/90	54/90	54/90	54/90
19 ☒ TYPE UNLOADERS, PLUG/FINGER	153/7	153/7	153/7	153/7	153/7
20 ☒ INLET TEMPERATURE, °C	146/0	146/0	146/0	146/0	146/0
21 ☒ INLET PRESSURE, barg	73.57/73.57	73.57/73.57	73.57/73.57	73.57/73.57	73.57/73.57
22 ☒ DISCHARGE PRESSURE, barg	11/5	244/5	244/5	244/5	244/5
23 ☐ DISCHARGE TEMP., ADIABATIC °C	11/5	11/5	11/5	197/4	197/4
24 ☐ DISCHARGE TEMP., PREDICTED °C	122/1	158/9	206/2	158/9	206/2
25 ☒ VOLUMETRIC EFF., %HE/%CE	140	16/2	72/6	145/5	145/5
26 ☒ CALC. GAS ROD LOAD, kN, C **	206/2	-	53/5	158/7	182/7
27 ☒ CALC. GAS ROD LOAD, kN, T **	450/8	450/8	450/8	450/8	450/8
28 ☒ COMB. ROD LOAD, kN C (GAS & INERTIA)	420	541	662	782/9	903/9
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					

34 * SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

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

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

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

37 ☒ MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, 4 barg

38 CYLINDER UNLOADING MEDIUM: ☒ AIR ☐ NITROGEN ☐ OTHER _____

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

40 REMARKS, SPECIAL REQUIREMENTS, AND/OR SKETCH

41

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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
(قرارداد BK-HD-GCS-CO-0008_03)



شماره پیمان:

053 - 073 – 9184

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

نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه

BK GCS HY 120 ME DS 0001 V02

شماره صفحه : 7 از 24

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 FLANGES

	Continuous				
	1st				
	Winter				
	0	25	50	75	100
☒ SERVICE OR ITEM NO.	-	2085/9	4171/8	6257/6	8343/5
☒ STAGE	-	2167/2	4334/3	6501/5	8668/6
☒ NORMAL OR ALTERNATE CONDITION	HE S & CE S	HE F & CE S	HE S or CE S	HE F	-
☒ PERCENT CAPACITY		25% (Head Side)		25% (Head Side)	
☒ WEIGHT FLOW, kg/h	Finger	Finger	Finger	Finger	Finger
☒ Nm3/h (1.013 bar & 0°C)	18/9	18/9	18/9	18/9	18/9
☒ POCKETS/VALVES OPERATION *	4/80	4/80	4/80	4/80	4/80
☒ POCKET CLEARANCE ADDED %	18/25	18/25	18/25	18/25	18/25
☒ TYPE UNLOADERS, PLUG/FINGER	105/0	105/0	105/0	105/0	105/0
☒ INLET TEMPERATURE, °C	116/0	116/0	116/0	116/0	116/0
☒ INLET PRESSURE, barg	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79	75.79/ 75.79
☒ DISCHARGE PRESSURE, barg	3/7	236/9	236/9	236/9	236/9
☐ DISCHARGE TEMP., ADIABATIC °C	3/7	3/7	3/7	221/2	221/2
☒ DISCHARGE TEMP., PREDICTED °C	133	193/3	193/3	136/5	193/3
☒ VOLUMETRIC EFF., %HE/%CE	173/4	110/2	110/2	161/1	161/1
☒ CALC. GAS ROD LOAD, kN, C **	199/9	65/1	65/1	168/9	187/2
☒ CALC. GAS ROD LOAD, kN, T **	435/2	435/2	435/2	435/2	435/2
☒ COMB. ROD LOAD, kN C (GAS & INERTIA)	420	544/1	668/2	792/2	916/3
☒ 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					

* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

HEAD END = HE	} PLUS {	SUCTION VALVE(S) UNLOADED = S
OR		OR
CRANK END = CE		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

 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	شماره صفحه : 8 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادر کننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

NOTE 8 NOTE 7)	PART LOAD OPERATING CONDITIONS CAPACITY CONTROL BY: ☐ MFG'S CAP. CONTROL ☐ PURCHASERS BY-PASS ☒ BOTH ☐ OTHER FOR: ☐ PART LOAD COND. ☐ START-UP ONLY ☒ BOTH WITH: ☒ AUTO LOADING DELAY INTERLOCK (7.6.2.4) ☒ AUTO IMMEDIATE UNLOADING USING: ☒ FIXED VOLUME 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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* SHOW OPERATION WITH THE FOLLOWING SYMBOLS:

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

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

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

MINIMUM PRESSURE REQUIRED TO OPERATE CYLINDER UNLOADING DEVICES, 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

 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: 9 از 24
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V02	0001	DS	ME	120	HY	GCS	BK											
<table border="1"> <tr> <td colspan="2"> SCOPE OF BASIC SUPPLY PURCHASER TO FILL IN (☐ ☐ ☐) AFTER COMMODITY TO INDICATE: ☐ BY COMPR. 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STUDY (☒ ☐ ☐): DESIGN APPROACH CHECK ONLY ONE, SEE 7.9.4.1.1, TABLE 6) ● 3, ACOUSTIC SIMULATION AND PIPING RESTRAINT ANALYSIS PLUS MECHANICAL ANALYSIS ● COMP. OPER. IN PARALLEL ☐ ALTERNATE GASES ☐ WITH EXISTING COMP. AND PIPING SYSTEMS ● PIPING SYSTEM FLEXIBILITY </td> </tr> <tr> <td colspan="2"> NOTE: SEE APPENDIX N FOR INFORMATION REQUIRED FOR STUDY </td> </tr> <tr> <td colspan="2"> 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. 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نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
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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) ● SEPARATE COOLING CONSOLE (☐ ☐ ☐): ● ONE FOR EA. TAG ☐ ONE CMMN TO ALL UNITS ● DUAL PUMPS (AUX. & MAIN) ☐ SHOP RUN ● ARRANGED FOR HEATING JACKET WATER AS WELL AS COOLING ● 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: 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 ● 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:																		

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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:																		
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		BK GCS HY 120 ME DS 0001 V02							
☒ CYLINDER DATA AT FULL LOAD CONDITION									
SERVICE/ITEM NO.		Sour Gas							
STAGE		1st 2nd							
INLET PRESSURE, barg		4/81		16/86					
DISCHARGE PRESSURE, barg		18/96		54/90					
CYLINDERS PER STAGE		1		1					
SINGLE OR DOUBLE ACTING (SA OR DA)		DA		DA					
BORE, mm		475		280					
STROKE, mm		250		250					
RPM:		420							
PISTON SPEED, m/s:		3.5		4.0					
CYLINDER LINER, YES/NO		Yes		Yes					
LINER NOMINAL THICKNESS, mm		15		15					
PISTON DISPLACEMENT, m ³ /h		2192/71		735/77					
CYLINDER DESIGN CLEARANCE, % AVERAGE		10/0		13/5					
VOLUMETRIC EFFICIENCY, % AVERAGE		73/57		76/71					
VALVES, INLET/DISCHARGE, QTY PER CYL.		4 / 4		4 / 4		/		/	
TYPE OF VALVES		Plate		Plate					
VALVE LIFT, INLET/DISCHARGE, mm		1.8 / 1.8		1.6 / 1.6		/		/	
VALVE VELOCITY, m/s									
SUCTION VALVE(S)		38/35		26/22					
DISCHARGE VALVE(S)		38/35		26/22					
ROD DIAMETER, mm		90		90					
MAX ALLOW. COMBINED ROD LOADING, kN, C *		392/3		392/3					
MAX ALLOW. COMBINED ROD LOADING, kN, T *		392/3		392/3					
CALCULATED GAS ROD LOAD, kN, C *		236/9		244/5					
CALCULATED GAS ROD LOAD, kN, T *		221/2		197/4					
COMBINED ROD LOAD (GAS + INERTIA), kN, C *		189		206/2					
COMBINED ROD LOAD (GAS + INERTIA), kN, T *		158/1		145/5					
ROD REV., DEGREES MIN @ X-HD PIN**		187/2		182/7					
RECIP WT. (PISTON, ROD, X-HD & NUTS), kg**		580		480					
MAX ALLOW. WORKING PRESSURE, barg		24/5		62					
MAX ALLOW. WORKING TEMPERATURE, °C		180		180					
HYDROSTATIC TEST PRESSURE, barg		36/8		93					
GAS LEAKAGE TEST PRESSURE, barg		-		-					
INLET FLANGE SIZE/RATING		10" / 300		6" / 600		/		/	
FACING		FF		FF					
DISCHARGE FLANGE SIZE/RATING		10" / 300		6" / 600		/		/	
FACING		FF		FF					
DISCHARGE RELIEF VALVE SETTING DATA AT INLET PRESSURES GIVEN ABOVE:									
RECOMMENDED SETTING, barg		24/5		62					
GAS ROD LOAD, kN, C *				271					
GAS ROD LOAD, kN, T *				254					
COMBINED ROD LOAD, kN, C *				211/2					
COMBINED ROD LOAD, kN, T *				183					
ROD REVERSAL, °MIN @ X-HD PIN**				187					
NOTE: CALCULATED AT INLET PRESSURES									
GIVEN ABOVE & RECOMMENDED SETTING.									
☒ SETTLE-OUT GAS PRESSURE (DATA REQUIRED FOR STARTING)		22 barg							
* 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	
		پرژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
		BK	GCS	HY	120	ME	DS	0001	V02	

1 CONSTRUCTION FEATURES										
2	SERVICE ITEM NO.	Sour Gas								
3	STAGE	2								
4	CYLINDER SIZE (BORE DIA), mm	475 / 280								
5	ROD RUN-OUT: NORMAL COLD VERTICAL (per Annex C)									
6										
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-Metalic)								
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								
40	* 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					COVERS: ☒ SOLID METAL ☐ SCREEN ☐ LOUVERED				
43	☒ VENTED TO: ☒ FLARE @ _____ barg ☐ ATMOS.					CYLINDER COMPARTMENT: ☒ SOLID METAL ☐ SCREEN ☐ LOUVERED				
44	☐ SUCTION PRESSURE@ _____ 0/8 barg					(Outboard Distance Piece) ☒ VENTED TO Flare @ 0.8 barg ☐ PURGED AT 1/8 barg ☐ PRESSURIZED TO _____ barg ☐ WITH RELIEF VALVE				
45	☒ FORCED LUBRICATED ☐ NON-LUBE					FRAME COMPARTMENT: ☒ SOLID METAL ☐ SCREEN ☐ LOUVERED				
46	☒ WATER COOLED, _____ STAGE(S), _____ GPM REQ'D					(Inboard Distance Piece) ☒ VENTED TO ATM barg ☐ PURGED AT 0.5 ~ 1 barg ☐ PRESSURIZED TO _____ barg ☐ WITH RELIEF VALVE				
47	☒ OIL COOLED, _____ STAGE(S), _____ GPM REQ'D									
48	☐ WATER FILTER ☐ PROV.FUTURE WATER/OIL COOLING									
49	☐ VENT/BUFFER GAS SEAL PACKING ARR. (REF. FIG I-1) ☒ CONSTANT OR ☐ VARIABLE DISPOSAL SYSTEM									
50	☐ BUFFER GAS PRESSURE, _____ barg									
51	☐ SPLASH GUARDS FOR WIPER PACKING									
52						DISTANCE PIECE MAWP 2/8 barg				

 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	شماره صفحه: 14 از 24
	نسخه سریال نوع مدرک رشته تسهیلات صادر کننده بسته کاری پروژه V02 0001 DS ME 120 HY GCS BK	

1	CONSTRUCTION FEATURES (CONTINUED)			
2	☐ FABRICATED CYLINDER, HEADS, & CONNECTION SKETCHES FOR DESIGN REVIEW BY PURCHASER. (6.15.5.13)	☒ BUFFER GAS PACKING ARR. REF: ANNEX I ☐ OIL WIPER PACKING PURGE FIGURES I-1, I-2 & I-3 ☒ INTERMEDIATE PARTITION PURGE INERT BUFFER PURGE GAS: ☒ N ₂ ☐ OTHER _____ ☒ VENT, DRAIN, PURGE PIPING BY MFG'R ☐ NO ☒ YES		
7	☒ COUPLING(S)	☒ LOW-SPEED ☐ HI-SPEED Between Compressor & Driver or Gear Between Driver & Gear		
10	☒ BY MANUFACTURER Nara Corp.			
11	☒ MODEL NPE-B API			
12	☒ TYPE Flexible			
14	API-671 APPLIES ☒ YES ☐ NO			
15	☒ INSPECTION AND SHOP TESTS (REF. 8.1.5)			
16		REQ'D WITN. OBSER.		
17	*SHOP INSPECTION	☒ ☒ ☐		
18	ACTUAL RUNNING CLEARANCES	☐ ☐ ☐		
19	AND RECORDS			
20	MFG STANDARD SHOP TESTS	☐ ☐ ☐		
21	CYLINDER HYDROSTATIC TEST	☒ ☒ ☐		
22	CYLINDER PNEUMATIC TEST	☐ ☐ ☐		
23	CYLINDER HELIUM LEAK TEST	☒ ☒ ☐		
24	CYL. JACKET WATER HYDRO TEST (For Cooler)	☒ ☐ ☐		
25	*MECHANICAL RUN TEST (4 HOUR)	☒ ☒ ☐		
26	BAR-OVER TO CHECK ROD RUNOUT	☒ ☒ ☐		
27	*LUBE OIL CONSOLE RUN/TEST (4 HOUR)	☐ ☐ ☐		
28	*COOLING H ₂ O CONSOLE RUN/TEST	☐ ☐ ☐		
29	RADIOGRAPHY BUTT WELDS	☒ ☐ ☐		
30	☒ GAS ☐ OIL ☐ FAB CYLS.			
31	MAG PARTICLE/LIQUID	☐ ☐ ☐		
32	PENETRANT OF WELDS			
33	SPECIFY ADDITIONAL			
34	REQUIREMENTS (8.2.1.3)			
35		☐ ☐ ☐		
36	SHOP FIT-UP OF PULSATION SUPPL.	☐ ☐ ☐		
37	DEVICES & ALL ASSOCIATED			
38	GAS PIPING			
39	*CLEANLINESS OF EQUIP., PIPING, & APPURTENANCES	☐ ☐ ☐		
40				
41	*HARDNESS OF PARTS, WELDS &	☒ ☐ ☐		
42	HEAT AFFECTED ZONES (For H2S Wetted Parts)			
43	*NOTIFICATION TO PURCHASER OF	☐		
44	ANY REPAIRS TO MAJOR			
45	COMPONENTS			
46		☐ ☐ ☐		
47		☐ ☐ ☐		
48	*SPECIFIC REQUIREMENTS TO BE DEFINED,			
49	FOR EXAMPLE, DISMANTLING, AUX EQUIPMENT			
50	OPERATIONAL & RUN TESTS.			
51	ANNEX K COMPLIANCE: ☐ VENDOR			
52	☐ PURCHASER			
53	NOTE: TEST LIST AND REQUIREMENTS WILL FOLLOW THE APPROVED ITP			
54				
55				

2	☐ V-BELT DRIVE	DRIVEN SHEAVE (COMPRESSOR SHAFT) DRIVE SHEAVE (DRIVER SHAFT)
3	RPM (EXPECTED)	_____
4	PITCH DIA. (IN.)	_____
5	QTY & GROOVE X-SEC.	_____
6	POWER TRANSMITT'D	_____ Incl. Belt Losses
7	DRIVER NAMEPLATE HP RATING	_____
8	CENTER DISTANCE (IN.)	_____
9	QTY, TYPE, X-SEC., & LENGTH BELTS	_____
10	BELT SERVICE FACTOR (RELATIVE TO DRIVER NAMEPLATE HP RATING)	_____
11	CYLINDER LUBRICATION	
12	☐ NON-LUBE	STAGE(S)/SERVICE _____
13	☒ LUBRICATED	2 STAGE(S)/SERVICE
14	TYPE OF LUBE OIL:	☐ SYNTHETIC ☒ HYDROCARBON ISO VG#100
15	LUBRICATOR	☐ COMP. CRANKSHAFT, DIRECT
16	DRIVE BY:	☐ CHAIN, FROM CRANKSHAFT
17		☒ ELECTRIC MOTOR
18		☒ OTHER _____
19	☒ LUBRICATOR MFR	SLOAN Lubrication Systems
20	☒ MODEL	MD-00090
21	TYPE LUBRICATOR:	☒ SINGLE PLUNGER PER POINT
22	(6.14.3)	☐ DIVIDER BLOCKS _____
23	COMPARTMT, TOTAL QTY.	1 Per each compressor
24	PLUNGERS (PUMPS), TOTAL QTY.	7 Per each compressor
25	SPARE PLUNGERS, QTY.	_____
26	SPARE COMPARTMT W/OUT PLUNGERS	_____
27	☒ HEATERS: ☒ ELECTRIC W/THERM.(S) ☐ STEAM	
28	ESTIMATED WEIGHTS AND NOMINAL DIMENSIONS	
29	☐ TOTAL COMPR. WT, LESS DRIVER & GEAR	_____ kg
30	☐ WT, OF COMPLETE UNIT, (LESS CONSOLES)	_____ kg
31	☐ MAXIMUM ERECTION WEIGHT	_____ kg
32	☐ MAXIMUM MAINTENANCE WEIGHT	_____ kg
33	☐ DRIVER WEIGHT/GEAR WEIGHT	_____ / _____ kg
34	☐ LUBE OIL/COOLANT CONSOLE	_____ / _____ kg
35	☐ FREE STANDING PANEL	_____
36	SPACE REQUIREMENTS, m:	LENGTH WIDTH HEIGHT
37	☐ COMPLETE UNIT	_____
38	☐ LUBE OIL CONSOLE	_____
39	☐ CYLINDER COOLANT CONSOLE	_____
40	☐ FREE STANDING PANEL	_____
41	☐ PISTON ROD REMOVAL DIST.	_____
42	OTHER EQUIPMENT SHIPPED LOOSE (DEFINE)	
43	☐ PULSATION SUPP., WEIGHT	_____ kg
44	☐ PIPING	_____ kg
45	☐ INTERSTAGE EQUIPMENT	_____ kg



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

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	FULL LOAD STEADY STATE AMPS	MAIN DRIVER NON-STEADY STATE AMPS AT COMPRESSOR RATED HORSEPOWER (INDUCTION MOTORS ONLY)
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MAIN DRIVER	1050	HOLD	HOLD	AMPS
MAIN LUBE OIL PUMP	SHAFT DRIVEN	SHAFT DRIVEN	SHAFT DRIVEN	@ COMPRESSOR RATED
AUX LUBE OIL PUMP	7/5	HOLD	HOLD	kW OF
MAIN CYLINDER COOLANT PUMP	7/5	HOLD	HOLD	@ CURRENT PULSATIONS
AUX CYLINDER COOLANT PUMP	7/5	HOLD	HOLD	OF %
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)																		
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>تسهيلات</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	تسهيلات	صادرکننده	بسته کاری	پروژه	V02	0001	DS	ME	120	HY	GCS	BK	شماره صفحه : 16 از 24
نسخه	سریال	نوع مدرک	رشته	تسهيلات	صادرکننده	بسته کاری	پروژه												
V02	0001	DS	ME	120	HY	GCS	BK												
1	☒ FRAME LUBE OIL SYSTEM																		
2	☒ BASIC LUBE OIL SYSTEM FOR FRAME:																		
3	☒ REF: TYPE MAIN BEARINGS: ☒ SPLASH ☒ PRESSURE (FORCED) ☒ HEATERS REQUIRED:																		
4	☒ PRESSURE SYSTEM: ☒ TAP'RD ROLL'R ☒ PRECISION SL'VE ☒ ELEC. W/THERMOSTAT(S) ☐ STEAM																		
5	☒ MAIN OIL PUMP DRIVEN BY: ☒ COMP. CRANKSHAFT ☐ ELEC. MOTOR ☐ OTHER																		
6	☒ PSV FOR MAIN PUMP EXTERNAL TO CRANKCASE ☒ CHECK VALVE ON MAIN PUMP (FIG G-5)																		
7	☒ AUX OIL PUMP DRIVEN BY: ☒ ELEC. MOTOR ☐ OTHER																		
8	☐ HAND OPERATED PRE-LUBE PUMP FOR STARTING ☐ OPERATIONAL TEST & 4 HOUR MECH RUN TEST																		
9	☐ CONTINUOUS OIL FLOW THROUGH SWITCH SENSING LINE (7.7.2.5)																		
10	☒ SEP. CONSOLE FOR PRESS. LUBE SYS: ☒ ONE CONSOLE FOR EA. COMP. ☐ ONE CONSOLE FOR COMPRESSORS																		
11	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.																		
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 lit/min barg SSU @ 40°C SSU @ 100°C m ³																		
16	☒ COMPRESSOR FRAME 131 5																		
17	☐ DRIVER																		
18	☐ GEAR																		
19	☒ SYSTEM PRESSURES: ☒ DESIGN 8 barg ☒ HYDROTEST AS PER CODE barg																		
20	☒ PRESSURE CONTROL VALVE SETTING 6 barg ☒ PUMP REL'F VALVE(S) SET 7/5 barg																		
21	☒ PIPING MATERIALS:																		
22	CARBON STEEL STAINLESS STEEL WITH SS FLANGES STAINLESS STEEL WITH CARBON STEEL FLANGES																		
23	☒ UPSTREAM OF PUMPS & FILTERS																		
24	☒ DOWNSTREAM OF FILTERS																		
25	☐																		
26	☐																		
27	☒ PUMPS (Gear or Screw Type Only)																		
28	RAT'D FL'W PRESSURE COLD START DRIVER SPEED COUPLING MECH. SEAL lit/min barg REQ'D kW kW R/MIN REQ'D REQ'D																		
29	MAIN 131 5 420																		
30	AUXILIARY 131 5 1450																		
31	☒ PUMP CASING MATERIAL (Ref. 6.14.2.1.5): MAIN PUMP Cast Iron AUX PUMP Cast Iron																		
32	☒ GUARD(S) REQ. FOR COUPLING(S): ☐ MAIN PUMP ☒ AUX PUMP ☒ GUARD TYPE OR CODE Non-sparking																		
33	☒ AUXILIARY PUMP CONTROL: ☐ MANUAL ☒ AUTOMATIC ☒ ON-OFF-AUTO SEL. SWITCH: ☐ BY PURCH. ☒ BY MFR.																		
34	☒ WIRING TO TERMINAL BOX: ☒ BY PURCH. ☒ BY MFR.																		
35	☒ SWITCHES ☐ RTD'S/THERMOCOUPLES																		
36	☒ COOLERS:																		
37	☐ SHELL & TUBE ☐ SINGLE ☐ DUAL W/TTRANSFER VALVE ☐ MFG'S STD. ☐ TEMA C ☐ TEMA R (API 660)																		
38	☐ REMOVABLE BUNDLE ☐ WATER COOLED ☒ AIR COOLED (API-661)																		
39	☒ W/BYPASS & TEMP CONTROL VALVE: ☐ MANUAL ☒ AUTO																		
40	☐ SEE SEPARATE HEAT EXCHANGER DATA SHEETS FOR DETAILS, SPECIFY % GLYCOL ON COOLING WATER SIDE																		
41	☒ FILTER(S)																		
42	☐ SINGLE ☒ DUAL W/TTRANSFER VALVE ☒ ASME CODE DESIGN ☐ ASME CODE STAMPED																		
43	☐ DESIGN PRESSURE, barg ☐ Δ P CLEAN, barg ☐ Δ P COLLAPSE, barg																		
44	☐ MICRON RATING, ☐ CARTRIDGE MATERIAL, ☐ CARTRIDGE P/N																		
45	☐ BONNET MATERIAL, ☐ CASING MATERIAL, SS 316 ☐ FURN.SPARE CARTR.,QTY 2																		
46	☒ SYS. COMPONENT SUPP.																		
47	MANUFACTURER MODEL																		
48	☒ MAIN PUMP KwangShin 50F - 108 - 70																		
49	☒ AUXILIARY PUMP As per sub vendor list																		
50	☐ MECHANICAL SEALS As per sub vendor list																		
51	☒ ELECTRIC MOTORS As per sub vendor list																		
52	☐ STEAM TURBINES As per sub vendor list																		
53	☒ OIL FILTER(S) As per sub vendor list																		
54	☒ OIL COOLER(S) As per sub vendor list																		
55	☒ TRANSFER VALVE(S) As per sub vendor list																		
56	☒ PUMP COUPLING(S) As per sub vendor list																		
57	☒ SUCTION STRAINER(S) As per sub vendor list																		
58	☒ CHECK VALVE(S) As per sub vendor list																		
59	☐																		



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

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



شماره پیمان:

053 - 073 - 9184

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

شماره صفحه: 17 از 24

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

☒ COOLANT SYSTEM																																																																																																																					
☒ BASIC COOLING SYS. FOR: ☒ COMPRESSOR CYL.(S) ☒ ROD PACKING(S) ☐ PROCESS COOLER(S) ☐ OIL COOLER(S)																																																																																																																					
☒ HEATERS REQ'D FOR PRE-HEATING: ☒ ELEC.,W/ THERMOSTAT(S) ☐ STEAM																																																																																																																					
☒ PRESSURE FORCED CIRCULATING SYS.: ☐ OPEN, PIPING BY: ☐ PURCH. ☐ MFR ☒ CLOSED, PIPING BY MFR.																																																																																																																					
MAIN COOLANT PUMP DRIVEN BY: ☒ ELEC. MOTOR ☐ STEAM TURBINE ☐ OTHER																																																																																																																					
AUX COOLANT PUMP DRIVEN BY: ☒ ELEC. MOTOR ☐ STEAM TURBINE ☐ OTHER																																																																																																																					
☒ SEP. CONSOLE FOR COOLANT SYSTEM.: ☒ ONE CONSOLE FOR EA. COMP. ☐ ONE CONSOLE FOR COMP'RS																																																																																																																					
NOTE: Instrumentation to be listed on instrumentation data sheets. ☒ CONSOLE TO BE OF DECK PLATE TYPE CONSTRUCTION SUITABLE FOR MULTI-POINT SUPPORT AND GROUTING WITH GROUT & VENT HOLES.																																																																																																																					
☐ ELECTRICAL CLASSIFICATION : C ZONE 2 GROUP IIB TEMP CLASS T4 ☐ NON-HAZARDOUS																																																																																																																					
☒ BASIC SYS. REQ'MTS (NORM. COOLANT FLOW DATA) ☒ COOLANT TO BE 50 % ETHYLENE GLYCOL SITE																																																																																																																					
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☒ SYS. PRESSURES: ☒ DESIGN, 5 barg ☒ HYDROTEST, 7/5 barg ☐ RELIEF VALVE(S), SETTING 1/5 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 m ³ /h ☒ PRESS. barg ☐ REQ'D kW ☒ DRIVER kW ☐ SPEED r/min ☐ COUPLING REQ'D ☐ MECH.SEAL REQ'D																																																																																																																					
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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																																																																																																																					
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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	<table border="1"> <tr> <td>SERVICE</td> <td>Wet HC gas</td> <td>STAGE NO.</td> <td>1st / 2nd</td> </tr> <tr> <td colspan="4"> COMPRESSOR MANUFACTURER'S RATED CAPACITY Kg/h 8935/5 m3/h 1589 Nm3/h 8162/9 </td> </tr> <tr> <td colspan="2"> LINE SIDE OPERATING PRESSURE INLET, 4.9 / 17.4 bar </td> <td colspan="2"> DISCHARGE 18.25 / 54.8 bar </td> </tr> <tr> <td colspan="2"> OPERATING TEMP. WITHIN SUPPRESSORS INLET, 36.8 / 59.9 °C </td> <td colspan="2"> DISCHARGE 129 / 148 °C </td> </tr> <tr> <td colspan="2"> ALLOWABLE PRESSURE DROP THROUGH SUPPRESSORS 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 colspan="2"> INLET SUPPRESSOR </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> SUPPRESSOR TAG NUMBER </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> COMBINATION INLET SUPP SEPARATOR/INTERNAL </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE 1 / 1 </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> ALLOWABLE PEAK-PEAK PULSE @ LINE SIDE NOZZLE bar / % </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> ALLOWABLE PEAK-PEAK PULSE @ CYL FLANGE NOZZLE bar / % </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> DESIGN FOR FULL VACUUM CAPABILITY </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> 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. </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2 NOTE: This is a Reference </td> <td colspan="2"> DISCHARGE SUPPRESSOR </td> </tr> <tr> <td colspan="2"> AS BUILT VOLUME (m³) </td> <td colspan="2"> DISCHARGE SUPPRESSOR </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 SUPPRESSORS INLET, 36.8 / 59.9 °C		DISCHARGE 129 / 148 °C		ALLOWABLE PRESSURE DROP THROUGH SUPPRESSORS Δ P 68 / 65 mbar / 1.16 / 1.12 %		Δ P 223/215 mbar / 1.16 / 1.12 %		INLET SUPPRESSOR		DISCHARGE SUPPRESSOR		SUPPRESSOR TAG NUMBER		DISCHARGE SUPPRESSOR		COMBINATION INLET SUPP SEPARATOR/INTERNAL		DISCHARGE SUPPRESSOR		NO. (QTY) OF INLET & DISCH. SUPP. PER STAGE 1 / 1		DISCHARGE SUPPRESSOR		ALLOWABLE PEAK-PEAK PULSE @ LINE SIDE NOZZLE bar / %		DISCHARGE SUPPRESSOR		ALLOWABLE PEAK-PEAK PULSE @ CYL FLANGE NOZZLE bar / %		DISCHARGE SUPPRESSOR		DESIGN FOR FULL VACUUM CAPABILITY		DISCHARGE SUPPRESSOR		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.		DISCHARGE SUPPRESSOR		INITIAL SIZING VOL. PER FORMULA OF 7.9.3.2 NOTE: This is a Reference		DISCHARGE SUPPRESSOR		AS BUILT VOLUME (m³)		DISCHARGE SUPPRESSOR	
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		V02	0001	DS	ME	120	HY	GCS	BK

1	PULSATION SUPPRESSION DEVICES FOR RECIPROCATING COMPRESSORS (CONT'D)		SERVICE	Sour Gas
2	THESE SHEETS TO BE FILLED OUT FOR EACH SERVICE AND/OR STAGE OF COMPRESSION		STAGE NO.	1st / 2nd
3	CONSTRUCTION REQUIREMENTS & DATA		INLET SUPPRESSOR	DISCHARGE SUPPRESSOR
4	● SUPPRESSOR TAG NUMBER		C-2101-D1 / C-2102-D1	C-2101-D2 / C-2102-D2
5	● BASIC MATERIAL REQUIRED, CS, SS, ETC.		Carbon Steel (NOTE13)	Carbon Steel (NOTE 13)
6	◆ ACTUAL MATERIAL DESIGNATION	SHELL/HEAD	/	/
7	○ SPECIAL HARDNESS LIMITATIONS, Rc	● YES ○ NO	SHELL & HEADS	SHELL & HEADS
8	■ CORROSION ALLOWANCE., mm	● REQUIRED	3 mm	3 mm
9	◆ WALL THICKNESS, mm	SHELL/HEAD	TBD mm/ TBD mm	TBD mm/ TBD mm
10	■ NOM. SHELL DIA X OVERALL LGTH. (INCH/VOL.mm³)		TBC x TBC mm/ TBD mm³	TBD x TBC mm/ TBD mm³
11	■ PIPE OR ROLLED PLATE CONSTRUCTION		□ PIPE ■ ROLLED PLATE	□ PIPE ■ ROLLED PLATE
12	◆ ACT. MAX ALLOW. WORKING PRESS. AND TEMPERATURE		24.5 / 62 bar @ 180 °C	24.5 / 62 bar @ 180 °C
13	● MINIMUM DESIGN METAL TEMP (6.15.8.1)		-26 °C	-26 °C
14	● INLET SUPPRESS. TO BE SAME MAWP AS DISCH'RG SUPPRESS.		● YES ○ NO	
15	◆ MAX EXPECTED PRESSURE DROP(Δ P, %) LINE PRESS		Δ P bar/ %	Δ P bar/ %
16	◆ WEIGHT (kg EACH)		kg	kg
17	○ INSUL NUTS & ALLOW. FOR INSULATION REQUIRED (X)			
18	◆ EXPECTED P-P PULSE @ LINE SIDE/CYL FLG, % LINE PRESS		%/ %	%/ %
19	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 ○ SPECIAL (SPECIFY)			
25	>125 <250 ● 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 V02 0001 DS ME 120 HY GCS BK	

INSTRUMENTATION			
PURCHASER TO FILL IN (☐ ☐ ☐) AFTER COMMODITY TO INDICATE: ☐ BY COMP. MFR. ☐ BY PURCH. ☐ BY OTHERS			
INSTRUMENT & CONTROL PANEL (☒ ☐ ☐):	☒ ONE FOR EA. UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MT'ED ☒ FREE STANDING (OFF UNIT) ☒ LOCAL ☐ REMOTE ☐ OUTDOORS ☐ PNEUMATIC ☐ ELEC. ☐ ELECTRONIC ☐ HYDRAULIC ☒ PROGRAMMABLE CONT'L'R ☐ NEMA 7, CLASS T4 , GROUP IIB , DIVISION 2 ☒ INTRINSICALLY SAFE (refer to NOTE...6) ☐ I/S BARRIERS (☒ ☐ ☐) ☐ NEMA 4, WATERTIGHT & DUSTTIGHT ☐ PURGED TO NFPA 496 TYPE ☐ X ☐ Y ☐ Z ☐ OTHER NEMA _____ LOW PURGE PRESS. ☒ ALARM ☐ SHUTDOWN ☐ VIB, ISOLATORS ☐ STRIP HEATERS ☐ PURGE CONN. ☐ EXTRA CUTOUTS ☒ ANNUNCIATOR W/FIRST-OUT INDICATION LOCATED ON CONTROL PANEL ☐ PURCHASER'S CONN. BROUGHT OUT TO TERMINAL BOX BY VENDOR		
BUFFER GAS CONTROL PANEL (☐ ☐ ☐):	☐ ONE FOR EA. UNIT ☐ ONE COMMON TO ALL UNITS ☐ MACHINE MT'ED ☐ FREE STANDING (OFF UNIT) ☐ WITH STAND ☐ OUTDOORS ☐ CLASS _____, GROUP _____, DIVISION _____ ☐ CONSTANT PRESSURE DISPOSAL SYSTEM ☐ VARIABLE PRESSURE DISPOSAL SYSTEM		
ADDITIONAL PANEL REMARKS: IP 54 FOR INDOOR(ITR) UCP CONTROL PANEL RITTAL Type			

☐ INSTRUMENTATION SUITABLE FOR: ☐ INDOORS ☒ OUTDOORS ☐ OTHER _____			
☐ PREFERRED INSTRUMENT SUPPLIERS, (TO BE COMPLETED BY PURCHASER), OTHERWISE MFR'S STANDARD APPLIES			
PRESSURE GAUGES	MFR	SANGAN	SIZE & TYPE 160mm Bourdon MTL HOLD
TEMPERATURE GAUGES	MFR	SANGAN	SIZE & TYPE 160mm Bimetal MTL HOLD
LIQUID LEVEL GAUGES	MFR	HOLD	TYPE HOLD MTL HOLD
DIFF. PRESSURE GAUGES	MFR	SANGAN	SIZE & TYPE 160mm Diaphragm MTL HOLD
PRESS. TRANSMITTERS	MFR	HOLD	TYPE Diaphragm MTL HOLD
LIQUID LEV. TRANSMITTER	MFR	HOLD	TYPE Diff pressure MTL HOLD
PRESSURE SWITCHES	MFR	HOLD	TYPE HOLD MTL HOLD
TEMPERATURE SWITCHES	MFR	HOLD	TYPE Bimetal MTL HOLD
LIQUID LEVEL SWITCHES	MFR	N/A	TYPE N/A MTL HOLD
DIFF. PRESSURE SWITCHES	MFR	N/A	TYPE N/A MTL HOLD
CONTROL VALVES	MFR	HOLD	TYPE HOLD MTL HOLD
PRESSURE SAFETY VALVES	MFR	Kiasa	TYPE Conventional MTL HOLD
SIGHT FLOW INDICATORS	MFR	HOLD	TYPE HOLD MTL HOLD
VIBRATION MONITORS & EQUIP.	MFR	As per Sub vendor List (NOTE16)	TYPE HOLD MTL HOLD
THERMOCOUPLES	MFR	N/A	TYPE N/A MTL N/A
RTD'S	MFR	HOLD	TYPE HOLD MTL HOLD
SOLENOID VALVES	MFR	Asco	TYPE Pilot operated MTL HOLD
ANNUNCIATOR	MFR	N/A	MODEL & (QTY SPARE POINTS) _____ ()
PROGRAMMABLE CONTROLLER	MFR	Siemens	TYPE S7-400FH MTL _____
	MFR		TYPE _____ MTL _____

☒ PRESSURE GAUGE REQUIREMENTS ☒ LIQUID-FILLED PRESSURE GAUGES: ☒ YES ☐ NO			
	LOCALLY MOUNTED	PANEL MOUNTED	
FUNCTION	(☒ ☐ ☐)	(☐ ☐ ☐)	
LUBE OIL MAIN PUMP DISCHAR.	(☒ ☐ ☐)	(☐ ☐ ☐)	PROCESS GAS: INLET PRESS.
LUBE OIL AUX. PUMP DISCHARG.	(☒ ☐ ☐)	(☐ ☐ ☐)	@ EA. STAGE
LUBE OIL PRESS. AT FRAME HEADER (	(☒ ☐ ☐)	(☐ ☐ ☐)	DISCH. PRESS.
LUBE OIL FILTER Δ P	(☒ ☐ ☐)	(☐ ☐ ☐)	@ EA. STAGE
COOLING H ₂ O INLET HEADER	(☒ ☐ ☐)	(☐ ☐ ☐)	
	(☐ ☐ ☐)	(☐ ☐ ☐)	

REMARKS: It is according to PID latest Revision	
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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: 21 از 24

نسخه سریال نوع مدرک رشته تسهیلات صادرکننده بسته کاری پروژه

BK GCS HY 120 ME DS 0001 V02

INSTRUMENTATION (CONT'D)

TEMPERATURE MEASUREMENT REQUIREMENTS

FUNCTION

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

LOCALLY MOUNTED	PANEL MOUNTED	GAUGE W/ CAPILLARY	THERMO CPL SYS	RTD SYS	I/S SYS
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☒	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☒	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☒ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☐ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐
(☐ ☐ ☐)	(☐ ☐ ☐)	☐	☐	☐	☐

ALARM & SHUTDOWN SYSTEM REQ'MTS

NOTE: ALARM & SHUTDOWN DEVICES SHALL BE INDIVIDUALLY SEPARATE

ANNUNCIATION POINTS

ALARM DEVICES: ☒ TRANSMITTER ☐ SWITCH
SHUTDOWN DEVICES ☐ TRANSMITTER ☒ SWITCH

FUNCTION	ALARM		SHUTDOWN		TOTAL NO. OF POINTS
	IN PNL BY MFR	IN CTL ROOM PANEL OTH'RS	IN PNL BY MFR	IN CTL ROOM PANEL 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 revisio	(☐ ☐ ☐)	(☐ ☐ ☐)	☐	☐	

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
سطح الارض و ابنیه تحت الارض

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
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		
GAUGE GLASS(ES)	(☐ ☐ ☐)	FOR:	Oil, Lubricator, Distance Piece Pot, Crank case frame		
TACHOMETER	(☐ ☐ ☐)		SPEED RANGE _____ TO _____ r/min		
CRANKSHAFT KEY PHASER	(☐ ☐ ☐)	FOR:			
AND TRANSDUCER					
As per 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 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 Approved PID	(☐ ☐ ☐)				

NOTES: SEE MOTOR DATA SHEET FOR ADDITIONAL MOTOR INSTRUMENTATION REQUIREMENTS

As per Approved PID

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

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	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 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 , 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		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 .	

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

NOTES

1	21	Safety Valve Set Pressure (Inlet / Discharge) refer to PID	Rev
2			
3	22	Site Condition:	
4		Min .Ambient temperature(°C): 5 °C	
5		Max .Ambient temperature(°C): 50 °C	
6		Maximum Relative Humidity: 100 %	
7		Minimum Relative Humidity: 0	
8		Elevation from sea level ~ 12.5 m	
9			
10	23	LCP for each compressor IP66,Ex certificate will be subbply by vendor as per project specification .	
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