

CENTRIFUGAL COMPRESSOR

DATA SHEET



ERDGASSPEICHER JEMGUM - GASANLAGE (PHASE 1c)

ILF – Project Number: F873

WIHO – Order Number: 32/T31/45325978

Project Document Number: 91000-GENP-DJK-001-01-4-00

Document Code

 GE Oil & Gas		TITLE : CENTRIFUGAL COMPRESSOR DATA SHEET		DOCUMENT CODE: SOK7304004		REVISION 5
REVISION DESCRIPTION: REVISED AS PER AS BUILT PROCESS			DATE 24/02/2017	APPROVED	Eletronically Stored	SECURITY CODE N
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-Electronically Approved Drawing-Checked: Botti S., Approved: Leonardi L.-Internal DT-'N'

GE OIL & GAS		JOB NO. <u>1103173</u> ITEM NO. _____ PURCHASE ORDER NO. _____ INQUIRY NO. _____	
CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS		REVISION NO. <u>4</u> DATE <u>10/12/2013</u> PAGE <u>1</u> OF <u>17</u> BY _____ UTE _____	

1	APPLICABLE TO: ☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT		
2	FOR _____	WINGAS _____	UNIT _____ V91420
3	SITE _____	JENGUM _____	SERIAL NO. _____ C14686
4	SERVICE _____	GAS STORAGE _____	NO. REQUIRED _____ 1
5	MANUFACTURER _____	GE OIL & GAS Nuovo Pignone	DRIVER TYPE (1-3.1.1) _____ VSEM
6	MODEL _____	2BCL406	DRIVER ITEM NO _____ NV91426
7			
8	INFORMATION TO BE COMPLETED: ☐ BY PURCHASER ☒ BY MANUF. ☐ MUTUAL AGREEMENT (PRIOR TO PURCHASE)		

9	OPERATING CONDITIONS	I-R-1A-SERIE	I-N-1A-SERIE	RATED-IR1-SERIE
10	COMPRESSOR TYPE SECTION ☒ GAS HANDLED (ALSO SEE PAGE ☐ GAS PROPERTIES (1-2.1.1.4) ☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY) ☒ RE-CYCLE FLOW(m³/h) (1.013 BAR-A & 0°C DRY) ☒ WEIGHT FLOW (kg/h) (DRY) (WET) INLET CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☐ RELATIVE HUMIDITY % ☒ MOLECULAR WEIGHT (%) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z₁) ☒ INLET VOLUME (m³/h) (WET / DRY) DISCHARGE CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z₂) ☒ KW REQUIRED @ COUPLING Expected ☒ TRAIN KW REQUIRED ☒ KW REQUIRED AT DRIVER INCL. EXT. LOSSES (GEAR, ETC) ☒ SPEED (RPM) <3> ☐ TURNDOWN % ☒ POLYTROPIC HEAD (N-m/kg) ☒ POLYTROPIC EFFICIENCY (%) ☒ CERTIFIED POINT ☐ PERFORMANCE CURVE NUMBER			
11				
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39	PROCESS CONTROL (1-3.4.2.1)			
40	METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS			
41	FROM _____ kg/cm² GUIDE VANES FROM <u>59</u> % BLOWOFF FROM _____			
42	TO _____ kg/cm² (2-3.4.2.2) TO <u>105</u> % TO _____ TO _____			
43	SIGNAL ☐ SOURCE (1- 3.4.2.1) _____			
44	TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____			
45	RANGE <u>4-20</u> MA _____ barg _____			
46				
47	☐ ANTI-SURGE SYSTEM (1-3.4.2.2)			
48	REMARKS: Motor Rated power= 18930 Kw <3>			
49	Guaranteed power as per API =expected +4% tolerance			
50				
51				
52				

GE Oil & Gas	TITLE : CENTRIFUGAL COMPRESSOR DATA SHEET	DOCUMENT CODE: SOK7304004	REVISION 5
REVISION DESCRIPTION: REVISED AS PER AS BUILT PROCESS		PAGE MARKER N/A	
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GE OIL & GAS		JOB NO. <u>1103173</u> ITEM NO. _____	
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		INQUIRY NO. _____	
		REVISION NO. <u>4</u> DATE <u>10/12/2013</u> PAGE <u>2</u> OF <u>17</u> BY _____ UTE	

1	APPLICABLE TO:	☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT
2	FOR	WINGAS UNIT <u>V91420</u>
3	SITE	JENGUM SERIAL NO. <u>C14686</u>
4	SERVICE	GAS STORAGE NO. REQUIRED <u>1</u>
5	MANUFACTURER	GE OIL & GAS Nuovo Pignone DRIVER TYPE (1-3.1.1) <u>VSEM</u>
6	MODEL	2BCL406 DRIVER ITEM NO <u>NV91426</u>
7		
8	INFORMATION TO BE COMPLETED:	☐ BY PURCHASER ☒ BY MANUF. ☒ MUTUAL AGREEMENT (PRIOR TO PURCHASE)

OPERATING CONDITIONS COMPRESSOR TYPE SECTION ☒ GAS HANDLED (ALSO SEE PAGE ☒ GAS PROPERTIES (1-2.1.1.4) ☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY) ☒ RE-CYCLE FLOW(m³/h) (1.013 BAR-A & 0°C DRY) ☒ WEIGHT FLOW (kg/h) (DRY) (WET) INLET CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☐ RELATIVE HUMIDITY % ☒ MOLECULAR WEIGHT (%) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z₁) ☒ INLET VOLUME (m³/h) (WET / DRY) DISCHARGE CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z₂) ☒ kW REQUIRED @ COUPLING ☒ TRAIN kW REQUIRED ☒ kW REQUIRED AT DRIVER INCL. EXT LOSSES (GEAR, ETC) ☒ SPEED (RPM) ☐ TURNDOWN % ☒ POLYTROPIC HEAD (N-m/kg) ☒ POLYTROPIC EFFICIENCY (%) ☒ CERTIFIED POINT ☐ PERFORMANCE CURVE NUMBER PROCESS CONTROL (1-3.4.2.1) METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS FROM _____ kg/cm² GUIDE VANES FROM <u>59</u> % BLOWOFF FROM _____ TO _____ kg/cm² (2-3.4.2.2) TO <u>105</u> % TO _____ TO _____ SIGNAL ☐ SOURCE (1- 3.4.2.1) _____ TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____ RANGE <u>4-20</u> MA _____ barg _____ ☐ ANTI-SURGE SYSTEM (1-3.4.2.2)	<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="2">IR2-PARRA</th> <th colspan="2">IR3-SERIE</th> <th colspan="2">IR4-SERIE-REC</th> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td><u>1</u></td><td><u>2</u></td><td><u>1</u></td><td><u>2</u></td><td><u>1</u></td><td><u>2</u></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>368830</td><td>231170</td><td>413000</td><td>413000</td><td>225000</td><td>225000</td> </tr> <tr> <td></td><td></td><td></td><td></td><td>45000</td><td>45000</td> </tr> <tr> <td>269006</td><td>168604</td><td>301222</td><td>301222</td><td>164104</td><td>164104</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td>71.0</td><td>71.0</td><td>71.0</td><td>116.0</td><td>71.0</td><td>96.0</td> </tr> <tr> <td>10.0</td><td>10.0</td><td>10.0</td><td>45.0</td><td>10.0</td><td>45.0</td> </tr> <tr> <td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td> </tr> <tr> <td>16.3</td><td>16.3</td><td>16.3</td><td>16.3</td><td>16.3</td><td>16.3</td> </tr> <tr> <td>1.615</td><td>1.615</td><td>1.615</td><td>1.625</td><td>1.615</td><td>1.562</td> </tr> <tr> <td>0.851</td><td>0.851</td><td>0.851</td><td>0.872</td><td>0.851</td><td>0.885</td> </tr> <tr> <td>4644</td><td>2911</td><td>5200</td><td>3662</td><td>2833</td><td>2446</td> </tr> </table> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td>120.8</td><td>120.9</td><td>117.5</td><td>171.1</td><td>97.5</td><td>121.0</td> </tr> <tr> <td>56.6</td><td>58.3</td><td>55.1</td><td>83.8</td><td>38.2</td><td>67.7</td> </tr> <tr> <td>1.586</td><td>1.579</td><td>1.584</td><td>1.574</td><td>1.596</td><td>1.544</td> </tr> <tr> <td>0.890</td><td>0.892</td><td>0.888</td><td>0.927</td><td>0.872</td><td>0.906</td> </tr> <tr> <td colspan="2">11046</td><td colspan="2">14197</td><td colspan="2">4559</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td colspan="2">9026</td><td colspan="2">9070</td><td colspan="2">6737</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>71844</td><td>72255</td><td>67931</td><td>59732</td><td>41325</td><td>34588</td> </tr> <tr> <td>81.2</td><td>77.4</td><td>78.8</td><td>73</td><td>77.4</td><td>74.4</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	IR2-PARRA		IR3-SERIE		IR4-SERIE-REC								<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>2</u>							368830	231170	413000	413000	225000	225000					45000	45000	269006	168604	301222	301222	164104	164104	71.0	71.0	71.0	116.0	71.0	96.0	10.0	10.0	10.0	45.0	10.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	16.3	16.3	16.3	16.3	16.3	1.615	1.615	1.615	1.625	1.615	1.562	0.851	0.851	0.851	0.872	0.851	0.885	4644	2911	5200	3662	2833	2446	120.8	120.9	117.5	171.1	97.5	121.0	56.6	58.3	55.1	83.8	38.2	67.7	1.586	1.579	1.584	1.574	1.596	1.544	0.890	0.892	0.888	0.927	0.872	0.906	11046		14197		4559								9026		9070		6737								71844	72255	67931	59732	41325	34588	81.2	77.4	78.8	73	77.4	74.4												
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48	REMARKS:	Motor Rated power= 18930 Kw
49		
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51		
52		

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GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS

JOB NO. 1103173 ITEM NO. _____
PURCHASE ORDER NO. _____
INQUIRY NO. _____
REVISION NO. 4 DATE 10/12/2013
PAGE 3 OF 17 BY U.T.E.

1 APPLICABLE TO: ☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT
2 FOR WINGAS UNIT V91420
3 SITE JENGUM SERIAL NO. C14686
4 SERVICE GAS STORAGE NO. REQUIRED 1
5 MANUFACTURER GE OIL & GAS Nuovo Pignone DRIVER TYPE (1-3.1.1) VSEM
6 MODEL 2BCL406 DRIVER ITEM NO NV91426

8 INFORMATION TO BE COMPLETED: ☐ BY PURCHASER ☒ BY MANUF. ☒ MUTUAL AGREEMENT (PRIOR TO PURCHASE)

OPERATING CONDITIONS		IR5-SERIE		IR6-PARRA		PR1-PARRA	
COMPRESSOR TYPE							
SECTION		1	2	1	2	1	2
☒ GAS HANDLED (ALSO SEE PAGE							
☒ GAS PROPERTIES (1-2.1.1.4)							
☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY)		400000	400000	446669	271331	305440	194560
☒ RE-CYCLE FLOW(m³/h) (1.013 BAR-A & 0°C DRY)							
☒ WEIGHT FLOW (kg/h) (DRY) (WET)		291740	291740	325778	197896	222773	141902
INLET CONDITIONS							
☒ PRESSURE (BAR-A)		89.0	137.3	89.0	89.0	51.0	51.0
☒ TEMPERATURE (°C)		10.0	45.0	10.0	10.0	25.0	25.0
☐ RELATIVE HUMIDITY %		0.0	0.0	0.0	0.0	0.0	0.0
☒ MOLECULAR WEIGHT (%)		16.3	16.3	16.3	16.3	16.3	16.3
☒ Cp / Cv		1.723	1.686	1.723	1.723	1.462	1.462
☒ COMPRESSIBILITY (Z ₁)		0.821	0.864	0.821	0.821	0.909	0.909
☒ INLET VOLUME (m³/h) (WET / DRY)		3877	2970	4329	2630	6024	3837
DISCHARGE CONDITIONS							
☒ PRESSURE (BAR-A)		138.8	191.0	170.0	170.0	91.1	91.1
☒ TEMPERATURE (°C)		48.6	76.7	66.5	68.8	78.7	80.7
☒ Cp / Cv		1.669	1.627	1.642	1.632	1.448	1.444
☒ COMPRESSIBILITY (Z ₂)		0.871	0.923	0.902	0.906	0.930	0.931
☒ kW REQUIRED @ COUPLING		11406		16277		11350	
☒ TRAIN kW REQUIRED							
☒ kW REQUIRED AT DRIVER INCL. EXT LOSSES (GEAR, ETC)							
☒ SPEED (RPM)		8066		9722		10245	
☐ TURNDOWN %							
☒ POLYTROPIC HEAD (N-m/kg)		57624	49975	87610	88200	87809	88142
☒ POLYTROPIC EFFICIENCY (%)		79	74.7	80.6	76.2	80.4	77
☒ CERTIFIED POINT							
☐ PERFORMANCE CURVE NUMBER							

39 PROCESS CONTROL (1-3.4.2.1)
40 METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS
41 FROM _____ kg/cm² GUIDE VANES FROM 59 % BLOWOFF FROM _____
42 TO _____ kg/cm² (2-3.4.2.2) TO 105 % TO _____ TO _____
43 SIGNAL ☐ SOURCE (1- 3.4.2.1) _____
44 TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____
45 RANGE 4-20 MA _____ barg _____
46
47 ☐ ANTI-SURGE SYSTEM (1-3.4.2.2)

48 REMARKS: Motor Rated power= 18930 Kw
49
50
51
52



GE Oil & Gas

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ORIGINAL JOB
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SIZE
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SHEET
4 of 18



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PURCHASE ORDER NO.							
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PAGE		4		OF		17	
				BY		U.T.E.	

CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS

APPLICABLE TO: ☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT	
FOR _____	WINGAS _____ UNIT _____ V91420
SITE _____	JENGUM _____ SERIAL NO. _____ C14686
SERVICE _____	GAS STORAGE _____ NO. REQUIRED _____ 1
MANUFACTURER _____	GE OIL & GAS Nuovo Pignone _____ DRIVER TYPE (1-3.1.1) _____ VSEM
MODEL _____	2BCL406 _____ DRIVER ITEM NO _____ NV91426
INFORMATION TO BE COMPLETED: ☐ BY PURCHASER ☒ BY MANUF. ☒ MUTUAL AGREEMENT (PRIOR TO PURCHASE)	
OPERATING CONDITIONS	
COMPRESSOR TYPE _____	PR2-PARRA _____
SECTION _____	IN1-SERIE _____
☒ GAS HANDLED (ALSO SEE PAGE _____)	IN2-PARRA _____
☒ GAS PROPERTIES (1-2.1.1.4) _____	
☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY) _____	
☒ RE-CYCLE FLOW (m³/h) (1.013 BAR-A & 0°C DRY) _____	
☒ WEIGHT FLOW (kg/h) (DRY) (WET) _____	
INLET CONDITIONS	
☒ PRESSURE (BAR-A) _____	
☒ TEMPERATURE (°C) _____	
☐ RELATIVE HUMIDITY % _____	
☒ MOLECULAR WEIGHT (%) _____	
☒ Cp / Cv _____	
☒ COMPRESSIBILITY (Z ₁) _____	
☒ INLET VOLUME (m³/h) (WET / DRY) _____	
DISCHARGE CONDITIONS	
☒ PRESSURE (BAR-A) _____	
☒ TEMPERATURE (°C) _____	
☒ Cp / Cv _____	
☒ COMPRESSIBILITY (Z ₂) _____	
☒ kW REQUIRED @ COUPLING _____	
☒ TRAIN kW REQUIRED _____	
☒ kW REQUIRED AT DRIVER INCL. EXT LOSSES (GEAR, ETC) _____	
☒ SPEED (RPM) _____	
☐ TURNDOWN % _____	
☒ POLYTROPIC HEAD (N-m/kg) _____	
☒ POLYTROPIC EFFICIENCY (%) _____	
☒ CFRTIFIED POINT _____	
☐ PERFORMANCE CURVE NUMBER _____	
PROCESS CONTROL (1-3.4.2.1)	
METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS	
FROM _____ kg/cm²	GUIDE VANES FROM _____ %
TO _____ kg/cm²	TO _____ %
SIGNAL ☐ SOURCE (1- 3.4.2.1) _____	
TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____	
RANGE _____ 4-20 MA _____ barg _____	
☐ ANTI-SURGE SYSTEM (1-3.4.2.2) _____	
REMARKS: Motor Rated power= 18930 Kw	

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1	APPLICABLE TO: ☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT																																																																													
2	FOR WINGAS	UNIT V91420																																																																												
3	SITE JENGUM	SERIAL NO. C14686																																																																												
4	SERVICE GAS STORAGE	NO. REQUIRED 1																																																																												
5	MANUFACTURER GE OIL & GAS Nuovo Pignone	DRIVER TYPE (1-3.1.1) VSEM																																																																												
6	MODEL 2BCL406	DRIVER ITEM NO NV91426																																																																												
7																																																																														
8	INFORMATION TO BE COMPLETED: ☐ BY PURCHASER ☒	☐ BY MANUF. ☒ MUTUAL AGREEMENT (PRIOR TO PURCHASE)																																																																												
9	OPERATING CONDITIONS																																																																													
10	COMPRESSOR TYPE SECTION ☒ GAS HANDLED (ALSO SEE PAGE ☒ GAS PROPERTIES (1-2.1.1.4) ☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY) ☒ RE-CYCLE FLOW(m³/h) (1.013 BAR-A & 0°C DRY) ☒ WEIGHT FLOW (kg/h) (DRY) (WET) INLET CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☐ RELATIVE HUMIDITY % ☒ MOLECULAR WEIGHT (%) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z ₁) ☒ INLET VOLUME (m³/h) (WET / DRY) DISCHARGE CONDITIONS ☒ PRESSURE (BAR-A) ☒ TEMPERATURE (°C) ☒ Cp / Cv ☒ COMPRESSIBILITY (Z ₂) ☒ KW REQUIRED @ COUPLING ☒ TRAIN KW REQUIRED ☒ KW REQUIRED AT DRIVER INCL. EXT LOSSES (GEAR, ETC) ☒ SPEED (RPM) ☐ TURNDOWN % ☒ POLYTROPIC HEAD (N-m/kg) ☒ POLYTROPIC EFFICIENCY (%) ☒ CERTIFIED POINT ☐ PERFORMANCE CURVE NUMBER PROCESS CONTROL (1-3.4.2.1) METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☒ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS FROM _____ kg/cm² GUIDE VANES FROM 59 % BLOWOFF FROM _____ TO _____ kg/cm² (2-3.4.2.2) TO 105 % TO _____ TO _____ SIGNAL ☐ SOURCE (1- 3.4.2.1) _____ TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____ RANGE 4-20 MA _____ barg _____ ☐ ANTI-SURGE SYSTEM (1-3.4.2.2)	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="2">IN3-SERIE</th> <th colspan="2">IN4-SERIE-REC</th> <th colspan="2">IN5-SERIE</th> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>1</td><td>2</td><td>1</td><td>2</td><td>1</td><td>2</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td>413000</td><td>413000</td><td>218000</td><td>218000</td><td>400000</td><td>400000</td> </tr> <tr> <td></td><td></td><td>38000</td><td>38000</td><td></td><td></td> </tr> <tr> <td>343580</td><td>343580</td><td>181357</td><td>181357</td><td>332765</td><td>332765</td> </tr> </table>						IN3-SERIE		IN4-SERIE-REC		IN5-SERIE								1	2	1	2	1	2							413000	413000	218000	218000	400000	400000			38000	38000			343580	343580	181357	181357	332765	332765																													
IN3-SERIE		IN4-SERIE-REC		IN5-SERIE																																																																										
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343580		343580	181357	181357	332765	332765																																																																								
11		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>71.0</td><td>116.6</td><td>71.0</td><td>96.3</td><td>89.0</td><td>138.3</td> </tr> <tr> <td>10.0</td><td>45.0</td><td>10.0</td><td>45.0</td><td>10.0</td><td>45.0</td> </tr> <tr> <td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td> </tr> <tr> <td>18.6</td><td>18.6</td><td>18.6</td><td>18.6</td><td>18.6</td><td>18.6</td> </tr> <tr> <td>1.678</td><td>1.670</td><td>1.678</td><td>1.594</td><td>1.827</td><td>1.737</td> </tr> <tr> <td>0.804</td><td>0.828</td><td>0.804</td><td>0.846</td><td>0.764</td><td>0.818</td> </tr> <tr> <td>4913</td><td>3461</td><td>2593</td><td>2260</td><td>3606</td><td>2792</td> </tr> </table>						71.0	116.6	71.0	96.3	89.0	138.3	10.0	45.0	10.0	45.0	10.0	45.0	0.0	0.0	0.0	0.0	0.0	0.0	18.6	18.6	18.6	18.6	18.6	18.6	1.678	1.670	1.678	1.594	1.827	1.737	0.804	0.828	0.804	0.846	0.764	0.818	4913	3461	2593	2260	3606	2792																													
71.0		116.6	71.0	96.3	89.0	138.3																																																																								
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118.1	171.0	97.8	121.0	139.8	190.9																																																																									
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48	REMARKS: Motor Rated power= 18930 Kw																																																																													
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GE Oil & Gas

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REVISION
5

REVISION DESCRIPTION:
REVISED AS PER AS BUILT PROCESS

PAGE MARKER
N/A

SECURITY CODE
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ORIGINAL JO
1103173

SIZE
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GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS

JOB NO. 1103173 ITEM NO. _____
PURCHASE ORDER NO. _____
INQUIRY NO. _____
REVISION NO. 4 DATE 10/12/2013
PAGE 6 OF 17 BY U.T.E.

1 APPLICABLE TO: ☐ PROPOSAL ☒ PURCHASE ☐ AS BUILT
2 FOR WINGAS UNIT V91420
3 SITE JENGUM SERIAL NO. C14686
4 SERVICE GAS STORAGE NO. REQUIRED 1
5 MANUFACTURER GE OIL & GAS Nuovo Pignone DRIVER TYPE (1-3.1.1) VSEM
6 MODEL 2BCL406 DRIVER ITEM NO NV91426

8 INFORMATION TO BE COMPLETED: ☐ BY PURCHASER ☒ BY MANUF. ☒ MUTUAL AGREEMENT (PRIOR TO PURCHASE)

OPERATING CONDITIONS		IN6-PARRA		PN1-PARRA		PN2-PARRA	
COMPRESSOR TYPE							
SECTION		1	2	1	2	1	2
☒ GAS HANDLED (ALSO SEE PAGE							
☒ GAS PROPERTIES (1-2.1.1.4)							
☒ VOLUME FLOW (m³/h) (1.013 BAR-A & 0°C DRY)		433506	265493	305002	194998	215934	134066
☒ RE-CYCLE FLOW(m³/h) (1.013 BAR-A & 0°C DRY)							
☒ WEIGHT FLOW (kg/h) (DRY) (WET)		360641	220867	253735	162221	179638	111531
INLET CONDITIONS							
☒ PRESSURE (BAR-A)		89.0	89.0	51.0	51.0	51.0	51.0
☒ TEMPERATURE (°C)		10.0	10.0	25.0	25.0	25.0	25.0
☐ RELATIVE HUMIDITY %		0.0	0.0	0.0	0.0	0.0	0.0
☒ MOLECULAR WEIGHT (%)		18.6	18.6	18.6	18.6	18.6	18.6
☒ Cp / Cv		1.827	1.827	1.472	1.472	1.472	1.472
☒ COMPRESSIBILITY (Z ₁)		0.764	0.764	0.882	0.882	0.882	0.882
☒ INLET VOLUME (m³/h) (WET / DRY)		3908	2393	5835	3730	4131	2565
DISCHARGE CONDITIONS							
☒ PRESSURE (BAR-A)		170.0	170.0	91.0	91.0	91.0	91.0
☒ TEMPERATURE (°C)		61.8	63.6	75.6	77.3	75.3	77.3
☒ Cp / Cv		1.692	1.682	1.458	1.454	1.460	1.454
☒ COMPRESSIBILITY (Z ₂)		0.854	0.858	0.900	0.902	0.900	0.902
☒ kW REQUIRED @ COUPLING		14731		10989		7654	
☒ TRAIN kW REQUIRED							
☒ kW REQUIRED AT DRIVER INCL. EXT LOSSES (GEAR, ETC)							
☒ SPEED (RPM)		8784		9524		8967	
☐ TURNDOWN %							
☒ POLYTROPIC HEAD (N-m/kg)		71480	71870	74138	74432	74148	74423
☒ POLYTROPIC EFFICIENCY (%)		80.6	76.2	79.9	76.6	80.8	76.6
☒ CERTIFIED POINT							
☐ PERFORMANCE CURVE NUMBER							

39 PROCESS CONTROL (1-3.4.2.1)
40 METHOD ☐ SUCTION THROTTLING ☐ VARIABLE INLET ☐ SPEED VARIATION ☐ DISCHARGE ☐ COOLED BYPASS
41 FROM _____ kg/cm² GUIDE VANES FROM 59 % BLOWOFF FROM _____
42 TO _____ kg/cm² (2-3.4.2.2) TO 105 % TO _____ TO _____
43 SIGNAL ☐ SOURCE (1- 3.4.2.1) _____
44 TYPE ☒ ELECTRONIC ☐ PNEUMATIC OTHER _____
45 RANGE 4-20 MA _____ barg _____
46
47 ☐ ANTI-SURGE SYSTEM (1-3.4.2.2)

48 REMARKS: Motor Rated power= 18930 Kw
49 _____
50 _____
51 _____
52 _____



GE Oil & Gas

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JOB NO. 1103173		ITEM NO.	
PURCHASE ORDER NO.			
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PAGE 7	OF 17	BY U.T.E.	

**CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS**

OPERATING CONDITIONS (Continued) (1-2.1.1.1) (1-3.1.2) ((1-3.1.3)									
GAS ANALYSIS:			I-R-1A-SERIE_PF1		I-N-1A-SERIE_PF1		RATED-IR1-SERIE_PF1		REMARKS:
☒ MOL % ☐	MW	% C1S1	% C1S2	% C1S1	% C1S2	% C1S1	% C1S2		
METHANE	16.043	98.156	98.156	86.048	86.048	98.156	98.156		
ETHANE	30.07	0.728	0.728	8.86	8.86	0.728	0.728		
PROPANE	44.097	0.212	0.212	1.907	1.907	0.212	0.212		
N-BUTANE	58.124	0.035	0.035	0.216	0.216	0.035	0.035		
I-BUTANE	58.124	0.039	0.039	0.144	0.144	0.039	0.039		
N-PENTANE	72.151	0.006	0.006	0.019	0.019	0.006	0.006		
I-PENTANE	72.151	0.007	0.007	0.023	0.023	0.007	0.007		
N-HEXANE	86.178	0.001	0.001	0.007	0.007	0.001	0.001		
NITROGEN	28.013	0.786	0.786	0.827	0.827	0.786	0.786		
CARBON DIOXIDE	44.01	0.03	0.03	1.949	1.949	0.03	0.03		



JOB NO. 1103173		ITEM NO.	
PURCHASE ORDER NO.			
INQUIRY NO.			
REVISION NO. 4		DATE 10/12/2013	
PAGE 8	OF 17	BY U.T.E.	

**CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS**

1	OPERATING CONDITIONS (Continued) (1-2.1.1.1) (1-3.1.2) ((1-3.1.3))									
2	GAS ANALYSIS:		IR2-PARRA_PF1		IR3-SERIE_PF1		IR4-SERIE-REC_PF1			REMARKS:
3	● MOL % ○	MW	% C1S1	% C1S2	% C1S1	% C1S2	% C1S1	% C1S2		
4	METHANE	16.043	98.156	98.156	98.156	98.156	98.156	98.156		
5	ETHANE	30.07	0.728	0.728	0.728	0.728	0.728	0.728		
6	PROPANE	44.097	0.212	0.212	0.212	0.212	0.212	0.212		
7	N-BUTANE	58.124	0.035	0.035	0.035	0.035	0.035	0.035		
8	I-BUTANE	58.124	0.039	0.039	0.039	0.039	0.039	0.039		
9	N-PENTANE	72.151	0.006	0.006	0.006	0.006	0.006	0.006		
10	I-PENTANE	72.151	0.007	0.007	0.007	0.007	0.007	0.007		
11	N-HEXANE	86.178	0.001	0.001	0.001	0.001	0.001	0.001		
12	NITROGEN	28.013	0.786	0.786	0.786	0.786	0.786	0.786		
13	CARBON DIOXIDE	44.01	0.03	0.03	0.03	0.03	0.03	0.03		
14										
15										
16										
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18										
19										
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22										
23										
24										
25										
26										
27										
28										
29	TOTAL		100	100	100	100	100	100		
30	AVG. MOL. WT.		16.34620067	16.3462007	16.34620067	16.3462007	16.34620067	16.3462007		

31	LOCATION: (1-2.1.8)		
32	☒ INDOOR	☐ OUTDOOR	☐ GRADE
33	☒ HEATED	☐ UNDER ROOF	☐ MEZZANINE
34	☐ UNHEATED	☐ PARTIAL SIDES	☐ _____
35	☒ ELEC. AREA CLASSIFICATION (2.1.15) Zone 2 / Group: II / Temp Class: T3		
36	SITE DATA: (1-2.1.8)		REFER TO SPEC. NO. 7078U-000-JSD-0000-001
37	☒ ELEVATION	<u>SEA LEVEL</u>	m ☐ BAROMETER <u>1.01</u> bar
38	☐ RANGE OF AMBIENT TEMPS:		
39		DRY BULB	WET BULB
40	NORMAL	°C	_____
41	MAXIMUM	°C	<u>+45</u> <u>+35</u>
42	MINIMUM	°C	<u>+5</u> <u>-20</u>
43	_____	°C	_____
44	UNUSUAL CONDITIONS:		☐ DUST ☐ FUMES
45	_____	°C	_____
46	☐ OTHER (1-2.1.8) _____		
47	_____		
48	☐ COPPER AND ALLOYS PROHIBITED (1-2.2.1.14)		
49	COATING: (1-2.2.1.16)		
50	☐ ROTATING COMPONENTS _____		
51	☐ STATIONARY COMPONENTS _____		
52	REMARKS:		

NOISE SPECIFICATIONS: (1-2.1.9) ☒ APPLICABLE TO MACHINE: SEE SPECIFICATION _____ 7078U-000-JSS-1010-002	
☐ APPLICABLE TO NEIGHBORHOOD: SEE SPECIFICATION _____	
ACOUSTIC HOUSING: ☐ YES ☒ NO	
APPLICABLE SPECIFICATIONS: API 617, 7TH CHAPTER 182 ☒ VENDOR HAVING UNIT RESPONSIBILITY (1-1.5.53) (1-1.8) (1-2.1.3) _____ ☐ GOVERING SPECIFICATION (IF DIFFERENT) _____ _____	
PAINTING: ☐ MANUFACTURER'S STD. ☒ OTHER DIN EN 12944-2 CLASS C5-M & 7078U-000-JSD-2300-001	
SHIPMENT: (4.4) ☐ DOMESTIC ☐ EXPORT ☐ EXPORT BOXING REQ'D. ☐ OUTDOOR STORAGE MORE THAN 6 MONTHS (1-4.4.1) _____ MO SPARE ROTOR ASSEMBLY PACKAGED FOR (1-4.4.3.10) ☐ HORIZONTAL STORAGE ☐ VERTICAL STORAGE	



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9 of 18



JOB NO.		1103173		ITEM NO.			
PURCHASE ORDER NO.							
INQUIRY NO.							
REVISION NO.		4		DATE		10/12/2013	
PAGE		9		OF		17	
				BY		U.T.E.	

**CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS**

OPERATING CONDITIONS (Continued) (1-2.1.1.1) (1-3.1.2) ((1-3.1.3)

2	GAS ANALYSIS:		IR5-SERIE-FREEQMEAN_PF1		IR6-PARRA-FREEQ_PF1		PR1-PARRA_PF1			REMARKS:
3	● MOL % ○	MW	% C1S1	% C1S2	% C1S1	% C1S2	% C1S1	% C1S2		
4	METHANE	16.043	98.156	98.156	98.156	98.156	98.156	98.156		
5	ETHANE	30.07	0.728	0.728	0.728	0.728	0.728	0.728		
6	PROPANE	44.097	0.212	0.212	0.212	0.212	0.212	0.212		
7	N-BUTANE	58.124	0.035	0.035	0.035	0.035	0.035	0.035		
8	I-BUTANE	58.124	0.039	0.039	0.039	0.039	0.039	0.039		
9	N-PENTANE	72.151	0.006	0.006	0.006	0.006	0.006	0.006		
10	I-PENTANE	72.151	0.007	0.007	0.007	0.007	0.007	0.007		
11	N-HEXANE	86.178	0.001	0.001	0.001	0.001	0.001	0.001		
12	NITROGEN	28.013	0.786	0.786	0.786	0.786	0.786	0.786		
13	CARBON DIOXIDE	44.01	0.03	0.03	0.03	0.03	0.03	0.03		
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29	TOTAL		100	100	100	100	100	100		
30	AVG. MOL. WT.		16.34620067	16.3462007	16.34620067	16.3462007	16.34620067	16.3462007		

LOCATION: (1-2.1.8)

☒ INDOOR ☐ OUTDOOR ☐ GRADE
☒ HEATED ☐ UNDER ROOF ☐ MEZZANINE
☐ UNHEATED ☐ PARTIAL SIDES ☐

● ELEC. AREA CLASSIFICATION (2.1.15) Zone 2 / Group: II / Temp Class: T3

SITE DATA: (1-2.1.8)		REFER TO SPEC. NO. 7078U-000-JS	
ELEVATION	SEA LEVEL	m	BAROMETER 1,01 bar

○ RANGE OF AMBIENT TEMPS:

DRY BULB WET BULB

NORMAL	°C		
MAXIMUM	°C	+45	+35
MINIMUM	°C	+5	-20
	°C		

UNUSUAL CONDITIONS: ☐ DUST ☐ FUMES

☐ OTHER (1-2.1.8) _____ °C

○ COPPER AND ALLOYS PROHIBITED (1-2.2.1.14)

COATING: (1-2.2.1.16)

- ROTATING COMPONENTS
- STATIONARY COMPONENTS

REMARKS:

NOISE SPECIFICATIONS: (1-2.1.9)

● APPLICABLE TO MACHINE:
SEE SPECIFICATION 7078U-000-JSS-1010-002

○ APPLICABLE TO NEIGHBORHOOD:
SEE SPECIFICATION

ACOUSTIC HOUSING: ☐ YES ☒ NO

APPLICABLE SPECIFICATIONS:

API 617, 7TH CHAPTER 182

● **VENDOR HAVING UNIT RESPONSIBILITY (1-1.5.53) (1-1.8) (1-2.1.3)**

☐ GOVERNING SPECIFICATION (IF DIFFERENT)

PAINTING:

☐ MANUFACTURER'S STD.
☒ OTHER DIN EN 12944-2 CLASS C5-M & 7078U-000-JSD-2300-001

SHIPMENT: (4.4)

☐ DOMESTIC ☐ EXPORT ☐ EXPORT BOXING REQ'D.
☐ OUTDOOR STORAGE MORE THAN 6 MONTHS (1-4.4.1) _____ MO
 SPARE ROTOR ASSEMBLY PACKAGED FOR (1-4.4.3.10)
☐ HORIZONTAL STORAGE ☐ VERTICAL STORAGE



GE Oil & Gas

TITLE :
CENTRIFUGAL COMPRESSOR DATA SHEET

DOCUMENT CODE:
SOK7304004

REVISION
5

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ORIGINAL JC
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SIZE
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SHEET
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<b style="font-size: 1.2em; color: blue;">GE OIL & GAS					JOB NO. <u>1103173</u> ITEM NO. _____ PURCHASE ORDER NO. _____ INQUIRY NO. _____				
CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS					REVISION NO. <u>4</u> DATE <u>10/12/2013</u> PAGE <u>10</u> OF <u>17</u> BY _____ U.T.E. _____				

OPERATING CONDITIONS (Continued) (1-2.1.1.1) (1-3.1.2) ((1-3.1.3))										
	GAS ANALYSIS:		PR2-PARRA-REC_PF1		IN1-SERIE_PF1		IN2-PARRA_PF1			
	☒ MOL % ☐ _____	MW	% C1S1	% C1S2	% C1S1	% C1S2	% C1S1	% C1S2		REMARKS:
4	METHANE	16.043	98.156	98.156	86.048	86.048	86.048	86.048		
5	ETHANE	30.07	0.728	0.728	8.86	8.86	8.86	8.86		
6	PROPANE	44.097	0.212	0.212	1.907	1.907	1.907	1.907		
7	N-BUTANE	58.124	0.035	0.035	0.216	0.216	0.216	0.216		
8	I-BUTANE	58.124	0.039	0.039	0.144	0.144	0.144	0.144		
9	N-PENTANE	72.151	0.006	0.006	0.019	0.019	0.019	0.019		
10	I-PENTANE	72.151	0.007	0.007	0.023	0.023	0.023	0.023		
11	N-HEXANE	86.178	0.001	0.001	0.007	0.007	0.007	0.007		
12	NITROGEN	28.013	0.786	0.786	0.827	0.827	0.827	0.827		
13	CARBON DIOXIDE	44.01	0.03	0.03	1.949	1.949	1.949	1.949		
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29	TOTAL		100	100	100	100	100	100		
30	AVG. MOL. WT.		16.34620067	16.3462007	18.64481712	18.6448171	18.64481712	18.6448171		

LOCATION: (1-2.1.8) ☒ INDOOR ☐ OUTDOOR ☐ GRADE ☒ HEATED ☐ UNDER ROOF ☐ MEZZANINE ☐ UNHEATED ☐ PARTIAL SIDES ☐ _____ ☒ ELEC. AREA CLASSIFICATION (2.1.15) <u>Zone 2 / Group: II / Temp Class: T3</u> SITE DATA: (1-2.1.8) REFER TO SPEC. NO. 7078U-000-JSD-0000-001 ☒ ELEVATION <u>SEA LEVEL</u> m <u>BAROMETER</u> <u>1.01</u> bar ☐ RANGE OF AMBIENT TEMPS: NORMAL °C _____ MAXIMUM °C <u>+45</u> MINIMUM °C <u>+5</u> _____ °C _____ UNUSUAL CONDITIONS: ☐ DUST ☐ FUMES _____ °C _____ ☐ OTHER (1-2.1.8) _____ ☐ COPPER AND ALLOYS PROHIBITED (1-2.2.1.14) COATING: (1-2.2.1.16) ☐ ROTATING COMPONENTS _____ ☐ STATIONARY COMPONENTS _____ REMARKS: _____	NOISE SPECIFICATIONS: (1-2.1.9) ☒ APPLICABLE TO MACHINE: SEE SPECIFICATION <u>7078U-000-JSS-1010-002</u> ☐ APPLICABLE TO NEIGHBORHOOD: SEE SPECIFICATION _____ ACOUSTIC HOUSING: ☐ YES ☒ NO APPLICABLE SPECIFICATIONS: API 617, 7TH CHAPTER 182 ☒ VENDOR HAVING UNIT RESPONSIBILITY (1-1.5.53) (1-1.8) (1-2.1.3) ☐ GOVERNING SPECIFICATION (IF DIFFERENT) _____ PAINTING: ☐ MANUFACTURER'S STD. ☒ OTHER <u>DIN EN 12944-2 CLASS C5-M & 7078U-000-JSD-2300-001</u> SHIPMENT: (4.4) ☐ DOMESTIC ☐ EXPORT ☐ EXPORT BOXING REQ'D. ☐ OUTDOOR STORAGE MORE THAN 6 MONTHS (1-4.4.1) _____ MO SPARE ROTOR ASSEMBLY PACKAGED FOR (1-4.4.3.10) ☐ HORIZONTAL STORAGE ☐ VERTICAL STORAGE
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GE Oil & Gas	TITLE : CENTRIFUGAL COMPRESSOR DATA SHEET	DOCUMENT CODE: SOK7304004	REVISION 5
REVISION DESCRIPTION: REVISED AS PER AS BUILT PROCESS		PAGE MARKER N/A	
		ORIGINAL JOB 1103173	SIZE 4
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				BY		U.T.E.	

**CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS**

31

LOCATION: (1-2.1.8)

32

☒ INDOOR

☐ OUTDOOR

☐ GRADE

33

☒ HEATED

☐ UNDER ROOF

☐ MEZZANINE

34

☐ UNHEATED

☐ PARTIAL SIDES

☐

35

☒ ELEC. AREA CLASSIFICATION (2.1.15)

Zone 2 / Group: II / Temp Class: T3

36

SITE DATA: (1-2.1.8)

REFER TO SPEC. NO. 7078U-000-JSD-0000-001

37

☒ ELEVATION

SEA LEVEL

m

☐ BAROMETER

1.01

bar

38

☐ RANGE OF AMBIENT TEMPS:

39

DRY BULB

WET BULB

40

NORMAL

°C

41

MAXIMUM

°C

+45

+35

42

MINIMUM

°C

+5

-20

43

°C

44

UNUSUAL CONDITIONS:

☐ DUST

☐ FUMES

45

°C

46

☐ OTHER (1-2.1.8)

47

48

☐ COPPER AND ALLOYS PROHIBITED (1-2.2.1.14)

49

COATING: (1-2.2.1.16)

50

☐ ROTATING COMPONENTS

51

☐ STATIONARY COMPONENTS

52

REMARKS:

NOISE SPECIFICATIONS: (1-2.1.9)

☒ APPLICABLE TO MACHINE:

SEE SPECIFICATION

7078U-000-JSS-1010-002

☐ APPLICABLE TO NEIGHBORHOOD:

SEE SPECIFICATION

ACOUSTIC HOUSING:

☐ YES

☒ NO

APPLICABLE SPECIFICATIONS:

API 617, 7TH CHAPTER 182

☒ VENDOR HAVING UNIT RESPONSIBILITY (1-1.5.53) (1-1.8) (1-2.1.3)

☐ GOVERNING SPECIFICATION (IF DIFFERENT)

PAINING:

☐ MANUFACTURER'S STD.

☒ OTHER

DIN EN 12944-2 CLASS C5-M & 7078U-000-JSD-2300-001

SHIPMENT: (4.4)

☐ DOMESTIC

☐ EXPORT

☐ EXPORT BOXING REQ'D.

☐ OUTDOOR STORAGE MORE THAN 6 MONTHS (1-4.4.1)

MO

SPARE ROTOR ASSEMBLY PACKAGED FOR (1-4.4.3.10)

☐ HORIZONTAL STORAGE

☐ VERTICAL STORAGE

 GE Oil & Gas	TITLE :	DOCUMENT CODE:		REVISION
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				BY		U.T.E.	

CENTRIFUGAL COMPRESSOR
DATA SHEET (API 617-7TH Chapter 2)
SI UNITS

OPERATING CONDITIONS (Continued) (1-2.1.1.1) (1-3.1.2) ((1-3.1.3)

31LOCATION: (1-2.1.8)

32☒ INDOOR☐ OUTDOOR☐ GRADE

33☒ HEATED☐ UNDER ROOF☐ MEZZANINE

34☐ UNHEATED☐ PARTIAL SIDES☐

35☒ ELEC. AREA CLASSIFICATION (2.1.15) Zone 2 / Group: II / Temp Class: T3

36SITE DATA: (1-2.1.8) REFER TO SPEC. NO. 7078U-000-JSD-0000-001

37☒ ELEVATION SEA LEVEL m BAROMETER 1.01 bar

38☐ RANGE OF AMBIENT TEMPS:

39

40

41

42

43

44UNUSUAL CONDITIONS: ☐ DUST☐ FUMES

45

46☐ OTHER (1-2.1.8)

47

48☐ COPPER AND ALLOYS PROHIBITED (1-2.2.1.14)

49COATING: (1-2.2.1.16)

50☐ ROTATING COMPONENTS

51☐ STATIONARY COMPONENTS

52REMARKS:

NOISE SPECIFICATIONS: (1-2.1.9)

☒ APPLICABLE TO MACHINE:
SEE SPECIFICATION 7078U-000-JSS-1010-002

☐ APPLICABLE TO NEIGHBORHOOD:
SEE SPECIFICATION

ACOUSTIC HOUSING: ☐ YES☒ NO

APPLICABLE SPECIFICATIONS:

API 617, 7TH CHAPTER 182

☒ VENDOR HAVING UNIT RESPONSIBILITY (1-1.5.53) (1-1.8) (1-2.1.3)

☐ GOVERNING SPECIFICATION (IF DIFFERENT)

PAINTING:

☐ MANUFACTURER'S STD.

☒ OTHER DIN EN 12944-2 CLASS C5-M & 7078U-000-JSD-2300-001

SHIPMENT: (4.4)

☐ DOMESTIC☐ EXPORT☐ EXPORT BOXING REQ'D.

☐ OUTDOOR STORAGE MORE THAN 6 MONTHS (1-4.4.1) MO

SPARE ROTOR ASSEMBLY PACKAGED FOR (1-4.4.3.10)

☐ HORIZONTAL STORAGE☐ VERTICAL STORAGE



GE Oil & Gas

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GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS

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PAGE 13 OF 17 BY U.T.E.

CONSTRUCTION FEATURES

☒ SPEEDS:

MAX. CONT. 10928 RPM TRIP 11474 RPM
MAX. TIP SPEEDS: 235 m/s @ 100% SPEED
261 <4> m/s @ MAX. CONT. SPEED

☒ LATERAL CRITICAL SPEEDS (DAMPED)

		RPM	TRANSLATION	MODE
FIRST CRITICAL	5139	RPM	CONICAL	MODE
SECOND CRITICAL	18792	RPM		
THIRD CRITICAL		RPM		MODE
FOURTH CRITICAL		RPM		MODE

☐ LATERAL ANALYSIS ADDITIONAL REQUIREMENTS (1-2.6.2.14)

☐ TRAIN LATERAL ANALYSIS REQUIRED (1-2.6.2.6)

☐ TRAIN TORSIONAL ANALYSIS REQUIRED (1-2.6.7.1)

☒ TORSIONAL CRITICAL SPEEDS: <4>

		RPM
FIRST CRITICAL	1333	RPM
SECOND CRITICAL	4306	RPM
THIRD CRITICAL	17568	RPM
FOURTH CRITICAL	24072	RPM

☐ LIST OF TRAIN UNDESIREABLE SPEEDS (1-2.6.1.4)

☐ STABILITY ANALYSIS (1-2.6.5)

☒ VIBRATION:

ALLOWABLE TEST LEVEL as per API617+agreed. Exception mm
(PEAK TO PEAK)

NAMEPLATE (2-2.11.2)

☐ US CUSTOMARY ☒ METRIC

☒ ROTATION, VIEWED FROM DRIVEN END ☒ CW ☐ CCW

☒ MATERIALS INSPECTION REQUIREMENTS (1-4.2.2.1)

Refer to
Quality Control Plan

SOS0406955

☒ CASING:

MODEL 2BCL406/A
CASING SPLIT VERTICAL
MATERIAL A350 LF2
THICKNESS (mm) CORR. ALLOW. (mm) 3.0
MAX. ALLOWABLE PRESS 210 (barg)
TEST PRESS (barg) HELIUM HYDRO 315
MAX. ALLOWABLE TEMPERATURE (°C) 170
MAX OPER. TEMP. °C MIN. OPER. TEMP. -20 °C
MAX CASING CAPACITY (m3/h)
☐ SYSTEM RELIEF VALVE SET PT. (2-2.3.1.1) (barg)
☐ O.C. OF INACCESSIBLE WELDS (1-2.3.1.11.2)

☒ DIAPHRAGMS:

MATERIAL Note 1
AXIALLY SPLIT ☒ YES ☐ NO (2-2.4.8)

NOTE 1: 1st Suction A352LCB; 2nd Suction A350LF2; 1st-2nd Disch.
A350LF2; 1st-4th Diaphr. A350LF2; Interphase A182F22

☐ INTERMEDIATE MAIN PROCESS CONNECTIONS (2-2.4.5)

DISCHARGE PRESSURE (barg): MAX MIN
INLET PRESSURE (barg): MAX MIN

☐ GUIDE VANES:

MATERIAL
NUMBER OF AXIAL BLADE ROWS
NUMBER OF ADJUSTABLE ROWS
NO. VANES GUIDE VANE

☒ IMPELLERS:

NO. 3+3 DIAMETERS (mm) 450/450/450/457/457
NO. VANES EA. IMPELLER
TYPE (OPEN, ENCLOSED, ETC) ENCLOSED
TYPE FABRICATION EDM
MATERIAL VIRGO38 (1st-4th) / A182 F22 (2nd-3rd-5th-6th)
MIN YIELD STRENGTH 620 Mpa (Virgo38) / 833 Mpa (A182F22)
HARDNESS: (RC) (BRINNEL) MAX MIN
SMALLEST TIP INTERNAL WIDTH (mm)
MAX. MACH NO. @ IMPELLER EYE
MAX IMPELLER HEAD @ 100% SPD (m)

☒ SHAFT:

☒ ONE PIECE ☐ BUILT UP
MATERIAL forged alloy steel 40NiCrMo7 Eq. To AISI 4340
DIA @ IMPELLERS (mm) 193/168 DIA @ COUPLING (mm) 110
SHAFT END: ☒ TAPERED ☐ CYLINDRICAL
☐ SPLINED ☐ INTEGRAL FLANGE
MIN YIELD STRENGTH (N/mm2)
SHAFT HARDNESS (BNH)(Rc)
MAX TORQUE CAPABILITY (N-m) during Engineering phase

☒ BALANCE PISTON:

MATERIAL A182 F22 AREA EXT 309.3 INT 247.7 (cm2)
FIXATION METHOD INTERFERENCE FIT AND KEYED
NORMAL CLEARANCE (mm)
FLOW WITH NORMAL CLEARANCE (kg/s)
FLOW WITH 2X NORMAL CLEARANCE (kg/s)

☐ PRESS. CONN. BAL LINE DOWNSTREAM (2-2.5.4.3)

☒ SHAFT SLEEVES:

AT INTERSTG. CLOSE MATL X12Cr13 Eq. To ASTM A240 Gr 410
CLEARANCE POINTS
AT SHAFT SEALS MATL X12Cr13 Eq. To ASTM A240 Gr 410

☐ ACCESSIBLE (2-2.8.3)

☐ ROTOR

☐ DISASSEMBLY AND REASSEMBLY (2-2.6.8.2.1.1)

☐ AT SPEED BALANCING (1-2.6.8.3)

☐ SEQUENTIAL LOW SPEED BAL. PREC. AT SPEED BAL (1-2.6.8.6)

☐ RESIDUAL BALANCE CHECK (1-2.6.8.7)

☒ LABYRINTHS:

INTERSTAGE
TYPE solid teeth grooved MATERIAL Avional 14 *
BALANCE PISTON
TYPE Abradable/solid teeth MATERIAL METCO 601+Avional14
* AVIONAL 14 EQUIV. TO ASTM B247 ALLOY 2014



GE Oil & Gas

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GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS

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CONSTRUCTION FEATURES (CONTINUED)

SHAFT SEALS:

- ☒ SEAL TYPE (1-2.8.1.3) Tandem DGS
☒ SETTLING OUT PRESSURE (1-2.8.1.1) (barg) 150
☒ MIN SEALING PRESSURE (barg) ATM
☐ SUPPLEMENTAL DEVICE REQUIRED FOR CONTACT
SEALS (1-2.8.3.4) TYPE
☐ TYPE BUFFER GAS (1-2.8.1.5)
☐ PRESSURE (1-2.8.1.6) (barg)
☐ FLOWRATE (barg)
☐ FILTRATION
☒ BUFFER GAS SYSTEM REQUIRED (2-2.8.1.5)
☐ MANIFOLD (1-3.5.1.4)
☐ METHOD OF CONTROL (1.2.8.1.5)

- ☒ BUFFER GAS CONTROL SYSTEM SCHEMATIC BY VENDOR
☐ PRESSURIZING GAS FOR SUBATMOSPHERIC SEALS (1-2.8.2.4)
☐ EDUCTOR ☐ INJECTION (1-2.8.2.3)
☒ SEAL MANUFACTURER EAGLEBURGMANN ITALIA SRL <3>
☐ LEAKAGE TO PROCESS (l/day/SEAL)
BUFFER GAS REQUIRED FOR:
☐ AIR RUN-IN ☐ OTHER
☐ FLOW (PER SEAL)
NORM: kg/s @ bar ΔP
MAX. kg/s @ bar ΔP
☒ BEARING HOUSING CONSTRUCTION:
TYPE (SEPARATE, INTEGRAL) SEPARATE SPLIT Horiz.
MATERIAL 39NiCrMo3 Eq. To AISI 9840

AXIAL COMPRESSOR

STAGE	1	2	3	4	5	6	7	8	9
-------	---	---	---	---	---	---	---	---	---

ROTOR

☐ BLADE MATERIAL									
☐ BLADE ROOT TYPE									
☐ CORD WIDTH (cm)									
☐ OUTER DIAMETER (cm)									
☐ BLADE HEIGHT (cm)									
☐ BLADE QUANTITY									

STATOR

☐ BLADE MATERIAL									
☐ TYPE (MOVABLE, FIXED ADJUSTABLE)									
☐ CORD WIDTH (cm)									
☐ BLADE QUANTITY									

STAGE	10	11	12	13	14	15	16	17	18
-------	----	----	----	----	----	----	----	----	----

ROTOR

☐ BLADE MATERIAL									
☐ BLADE ROOT TYPE									
☐ CORD WIDTH (cm)									
☐ OUTER DIAMETER (cm)									
☐ BLADE HEIGHT (cm)									
☐ BLADE QUANTITY									

STATOR

☐ BLADE MATERIAL									
☐ TYPE (MOVABLE, FIXED ADJUSTABLE)									
☐ CORD WIDTH (cm)									
☐									

REMARKS:



GE Oil & Gas

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GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH chapter 2) SI UNITS

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CONSTRUCTION FEATURES (CONTINUED)

BEARINGS AND BEARING HOUSINGS

☐ MAGNETIC BARINGS (2-2.7.1.1.2)

RADIAL	INLET	EXHAUST	THRUST	ACTIVE	INACTIVE
☒ TYPE	TILTING PAD	TILTING PAD	☒ TYPE	Double Acting Self Equalizing	
☒ MANUFACTURER	Nuovo Pignone, KINGSBURY or Waukesha		☒ MANUFACTURER <3>	KINGSBURY	
☒ LENGTH (mm)	53	53	☒ UNIT LOADING (MAX kg/cm)	13.1	2.7
☒ SHAFT DIA. (mm)	120	120	☒ UNIT LOAD (ULT.) (kg/cm ²) <3>	33.4	33.4
☒ UNIT LOAD (ACT/ALLOW) (kg/cm ²)	5 / 20	4 / 20	☒ AREA (cm ²) <3>	263.1	263.1
☒ BASE MATERIAL	C10 (UNI)	C10 (UNI)	☒ NO. PADS	8	8
☒ BABBIT THICKNESS (mm)	0,04 typ	0,04 typ	☒ PIVOT: CENTER / OFFSET, %	ctr.	ctr.
☒ NO. PADS	5	5	☒ PAD BASE MATL	Manuf. Std.	Manuf. Std.
☒ LOAD: B'TWN/ON PAD	on	on	☐ COPPER BACKED (2-2.7.3.7)		
☒ PIVOT: CTR/OFFSET, %	60	60	LUBRICATION: ☒ FLOODED ☒ DIRECTED (2-2.7.3.6)		
PAD MATERIAL ☐ (2-2.7.2.2) ☐ (2-2.7.2.3)			THRUST COLLAR: ☐ INTEGRAL ☒ REPLACEABLE		
☒ BEARING SPAN 1617 mm			MATERIAL C40 TF UNI 7874		
			☐ SIZING CRITERIUM (2-2.7.3.3)		

BEARING TEMPERATURE DEVICES (2-3.4.7)

- ☒ SEE SEE P&ID No. 91433-WJR-0001.01-3.07
☐ THERMOCOUPLE TYPE
☒ RESISTANCE TEMP DETECTORS
 ☒ RESISTANCE MAT'L PT ☒ 100 OHMS
 ☐ ALARM TEMPERATURE (°C)
 ☐ SHUTDOWN TEMPERATURE (°C)
 ☐ PROVISIONS FOR LOCAL DISCONNECT (1-2.7.4.6)
☒ LOCATION-JOURNAL BRG
 NO. EA PAD EVERY OTH PAD 2 PER BRG
 OTHER DUPLEX TEMPERATURE ELEMENTS
☒ LOCATION-THRUST BRG
 NO. EA PAD EVERY OTH PAD 3 PER BRG
 OTHER DUPLEX TEMPERATURE ELEMENTS
 NO. (INACT) EA PAD EVERY OTH PAD 3 PER BRG
 OTHER DUPLEX TEMPERATURE ELEMENTS
☐ LOCAL DISCONNECTION (1-2.7.4.6)
☒ MONITOR SUPPLIED BY (2-3.4.7.4) NUOVO PIGNONE
 ☒ LOCATION Unit Control Panel ENCLOSURE SAFE AREA
 ☒ MFR. SIEMENS ☒ MODEL PCS7
<4> ☒ SCALE RGE 0÷200 ALARM ☒ SET @ 120 °C
☐ SHUTDOWN ☐ SET @ NA °C ☐ TIME DELAY SEC

KEY PAHSOR REQUIRED

- ☐ COMPRESSOR ☒ GEAR H.S. ☒ GEAR L.S.

CASING CONNECTIONS (1-2.3.2.2)

CONNECTION	☒ ANSI/ASME B16.1;B16.5 B16.42;B16.47 SERIES A,B; ISO 7005-1,-2: OTHER	☒ FACING ☒ BORE	☐ ORIENTATION	☐ FLANGED OR STUDDED (1-2.3.2.2.1)	☐ MATING FLG & GASKET BY VENDOR (1-2.3.3.3.7)	☒ GAS VELOCITY m/s
INLET *	12" #1500	RJ	UP	STUDDED	YES	28
INTERMEDIATE 1 *	10" #1500	RJ	UP	STUDDED	YES	26
INTERMEDIATE 2 *	10" #1500	RJ	UP	STUDDED	YES	23
DISCHARGE *	8" #1500	RJ	UP	STUDDED	YES	25

☐ BOROSCOPIC INSPECTION PORTS (2-2.3.2.2)

*NOZZLE FORCE AND MOMENTS = 5X NEMA



GE Oil & Gas

TITLE :
CENTRIFUGAL COMPRESSOR DATA SHEET

DOCUMENT CODE:
SOK7304004

REVISION
5

REVISION DESCRIPTION:
REVISED AS PER AS BUILT PROCESS

PAGE MARKER

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SECURITY CODE

N

ORIGINAL JOB

1103173

SIZE

4

LANGUAGE

A



GE OIL & GAS

CENTRIFUGAL COMPRESSOR DATA SHEET (API 617-7TH Chapter 2) SI UNITS

JOB NO. 1103173 ITEM NO. _____
PURCHASE ORDER NO. _____
INQUIRY NO. _____
REVISION NO. 4 DATE 10/12/2013
PAGE 16 OF 17 BY U.T.E.

OTHER CONNECTIONS

<4>

SERVICE:

NO. SIZE TYPE

LUBE-OIL INLET

1 4" #150 RF

LUBE OIL OUTLET

1 3" #150 RF

SEAL-OIL INLET

NA NA NA

SEAL-OIL OUTLET

NA NA NA

SEAL GAS INLET

1 2" #300 RF

SEAL GAS OUTLET

1 4" #150 RF

CASING DRAINS

1 1" #1500 RJ

STAGE DRAINS

NA NA NA

PRESSURE

TEMPERATURE

SOLVENT INJECTION

PURGE FOR:

BRG. HOUSING

BTWN BRG & SEAL

BTWN SEAL & GAS

NO. SIZE TYPE

NA NA NA

NA NA NA

NA NA NA

NA NA NA

NA NA NA

NA NA NA

NA NA NA

NA NA NA

☐ INDIVIDUAL STAGE DRAINS REQUIRED (1-2.3.2.1.7)☐ VALVED & BLINDED☒ VALVED & BLINDED & MANIFOLD See agreed P&ID 91433-WJR-0001.01-3.07

LUBRICATION AND SEALING SYSTEMS (1-2.10) (1-3.5.1.2)

☐ SEE ATTACHED API 614 DATA SHEET☒ SEPARATE ☐ COMBINED (2-2.10.1)☐ INTEGRAL OIL RESERVOIR (1-3.3.2.11)☐ OIL TYPE (2-2.10.2) ISO VG46

ACCESSORIES

COUPLING AND GUARDS (3.2)

NOTE: SEE ROTATING ELEMENTS - SHAFT ENDS

☐ SEE ATTACHED API-671 DATA SHEET☒ KEYLESS HYDRAULIC☐ KEYED☐ FLANGED☐ OTHER

COUPLING FURNISHED BY

NUOVO PIGNONE

MANUFACTURER

KOP-FLEX

TYPE

FLEXIBLE

MODEL

#304 MP

COUPLING GUARD FURNISHED BY:

NUOVO PIGNONE

TYPE:

☒ FULLY ENCLOSED☐ SEMI-OPEN☐ OTHER

(FREE STANDING - PERFORATED METAL)

COUPLING DETAILS

<4>

☒ MAX O.D. 269,7 mm☒ HUB WEIGHT 13,6 kg☒ SPACER LENGTH 597 mm☒ SPACER WEIGHT 49 kg☐ PLUG AND RING GAUGES (1-3.2.5)

LUBRICATION REQUIREMENTS:

☒ NON-LUBE☐ CONT. OIL LUBE☐ OTHER

QUANTITY PER HUB

l/min

MOUNTING PLATES (1-3.3)

☒ BASEPLATES: FURNISHED BY (1-3.3.2.1) NUOVO PIGNONE☒ COMPRESSOR ONLY☐ DRIVER☒ GEAR☒ OTHER

MOTOR ON CONCRETE

☐ NON SKID DECKING☐ SLOPED DECK (1-3.3.2.4.1)☐ LEVELING PADS OR TARGETS (1-3.3.2.6)☐ COLUMN MOUNTING (1-3.3.2.5)☐ SUB-SOLE PLATES REQ'D (1-3.3.2.10)☒ STAINLESS STEEL SHIM THICKNESS 1,9 <4> mm☐ MACHINED MOUNTING PADS REQUIRED (1-3.3.2.9)☐ SOLEPLATES: FURNISHED BY (1-3.3.3.1)☐ THICKNESS

mm

☐ SUBSOLE PLATES REQ'D (3.3.3.2)☐ STAINLESS STEEL SHIM THICKNESS

mm

☐ COMPRESSOR☐ COUNTER BORE ANCHOR BOLT HOLES (1-3.3.3.1.2)

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SHEET
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