



نگهداشت و افزایش تولید میدان نفتی بینک  
سطح الارض



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره پیمان:

MECHANICAL DATA SHEETS FOR SLUG PUMPS

۰۵۳-۰۷۳-۹۱۸۴

پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D04

شماره صفحه: ۱ از ۱۰

## طرح نگهداشت و افزایش تولید ۲۷ مخزن

### MECHANICAL DATA SHEETS FOR SLUG PUMPS

#### نگهداشت و افزایش تولید میدان نفتی بینک

D04	JUL.2024	AFC	V.Amjadi	M. Fakharian	M.Sadeghian	
D03	MAY.2023	AFC	H. Adineh	M. Fakharian	M. Mehrshad	
D02	DEC. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D01	JAN. 2022	IFA	H. Adineh	M. Fakharian	M. Mehrshad	
D00	DEC. 2021	IFC	H. Adineh	M. Fakharian	M. Mehrshad	
Rev.	Date	Purpose of Issue / Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Class: 1 CLIENT Doc. Number: F0Z-708850

status:

IDC: Inter-Discipline Check

IFC: Issued For Comment

IFA: Issued For Approval

AFD: Approved For Design

AFC: Approved For Construction

AFP: Approved For Purchase

AFQ: Approved For Quotation

IFI: Issued For Information

AB-R: As-Built for CLIENT Review

AB-A: As-Built -Approved



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REVISION RECORD SHEET

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3	x	x	x		
4	x				
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6	x	x	x		x
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BK	GCS	PEDCO	120	ME	DT	0019	D04

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General Notes

- Mass Density [kg/m<sup>3</sup>] at Max. / Norm / Min. Temp: 1023 / 716 / 649 and Viscosity [cP] At Max. / Normal / Min. Temp: 1.37 / 0.58 / 0.449
- Design Conditions:
 

<u>Min./Max. Design Temperature(°C)</u>	<u>Max. Design Pressure(barg)</u>
5 / 85	23.3
- For technical requirements of electrical lv motors refer to " Data sheets for lv induction motors; DOC NO.:BK-GCS-PEDCO-120-EL-DT-0008", Vendor shall fill in the blanks and return the completed data sheet along with Motor data sheet, "DOC NO.:BK-GCS-PEDCO-120-EL-DT-0008" with his proposal.
- Vendor shall submit ITP (Inspection & Testing Plan) with his proposal.
- The motors, pump mechanical seal, pump coupling and pump accessories shall be supplied from the project's approved vendor list (A.V.L.).
- Vendor is requested to confirm the material, or propose appropriate alternative.
- For Instrumentation, Project specification 'Specification For Instrument and Control of package Unit System (PU)' Doc. No. BK-GNRAL-PEDCO-000-IN-SP-0004 and other instrument specification which to be attached to MR shall be followed.
- Mechanical seal data sheet shall fill in by vendor as per API 682. Pump Manufacturer shall supply all instrumentation for mechanical seals as per API 682 4th Edition and project requirements.
- NPSH test shall be done & witnessed if the margin of NPSHr & NPSHa is less than 1.
- The Tie-in flanges shall conform to ASME B-16.5
- Valves in the piping system shall be Welded Flanged type.
- Supplier to indicate which minimum flow pumps can achieve.
- Pumps shall be designed, fabricated, tested, and inspected in accordance with the requirements of API 610 11th & IPS-G-PM-105(3).
- Nozzle loads shall be 2 times the loads shown in API 610 11th Edition.
- Pump starts Automatically with open delivery valve.
- Electrical motor shall be rated for the end of curve.
- The Suction line size is 4" and discharge line size is 3".
- The Material shall be followed in accordance with NACE MR0175/ISO15156 and Technical Specification for Material Requirements in sour service. Doc.No: BK-GNRAL-PEDCO-000-PI-SP-0008.
- H<sub>2</sub>S content is 6707.6 ppmw.
- Pump Manufacturer shall supply all instrumentation for mechanical seals as per API 682 4th Edition and project requirements.
- Based on project instrumentation specification, these equipments are classified as Type B (Connected to DCS/ESD): Centrifugal Pump Package.
- Welding repair procedures shall be submitted for approval.
- Refer to hazardous area classification layout Doc. No.: BK-GCS-PEDCO-120-SA-PY-0002 , all instrumentation and electrical devices shall be suitable for: ZONE 2 & Gas group IIA, Temperature class T3.
- Ultrasonic Test shall be performed for forged shaft.
- For pumps with vacuum suction pressure the minimum NPSH margin shall be 2 m. for other pumps the minimum NPSH margin shall be 1 m.
- Spare parts shall be supplied by vendor according to 'MR's appendix for Centrifugal Pumps ' Doc. No. BK-GCS-PEDCO-120-ME-MR-0009.
- Couplings shall be dry, flexible and spacer type and coupling guards shall be of Non-Spark type.
- Bearing temperature shall be measured during mechanical run test.
- For electrical motor descriptions, refer to 'Specification For LV & MV Induction Motors' Doc. No.BK-GNRAL-PEDCO-000-EL-SP-0010 & 0017 .
- Minimum Design Metal Tem (MDMT)= 5 °C
- Turn down and design (rated) flow rates are 30% and 110 % of normal flow rate respectively.
- API Plan 31+53B shall be considered.
- PMI Testing For Alloy Steel Shall be Done.
- Power Factor, efficiency, frequent, voltage, frequent variation and voltage variation of motor shall be specified by vendor in data sheet.
- All drain and vents (If any) to be manifolded, valved and routed to the skid edge. a drain line to be considered in barrel and to be pipe up to mounted skid.
- Range of ambient temperature: Min. ambient temperature: 5 °C , Max. ambient temperature: 50 °C
- Pump is not installed directly on the ground and at least 20~30 cm height for pedestal is considered.
- Max Allowable Pressure at Shut-Off (barg): 23.3
- Barrel and pump shall have the same MAWP and to be hydrotest in same value with pump.





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MECHANICAL DATA SHEETS FOR SLUG PUMPS

نسخه	سریال	نوع مدرک	رشته	تهیهات	صادر کننده	پسته کاری	پروژه
D04	0019	DT	ME	120	PEDCO	GCS	BK

شماره صفحه: ۱۰ از ۱۰

API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 2 of 7)

APPLICABLE TO: <b>PROPOSAL</b>	APPLICABLE NTL/INTNL STANDARD: <b>API 610-11th Ed.&amp; IPS-G-PM-105(3)</b>
FOR: <b>NISOC</b>	UNIT: _____
SITE: <b>BINAK Gas Compressor Station</b>	SERVICE: <b>SLUG PUMP</b>
NO. REQ: <b>2 (1+1)</b> PUMP SIZE: _____	TYPE: <b>VS6 (V.T.A)</b> No. STAGES: _____
MANUFACTURER: _____	MODEL: <b>V.T.A.</b> SERIAL NO.: <b>V.T.A.</b>

LIQUID CHARACTERISTICS

LIQUID TYPE OR NAME: <b>water+hydrocarbon</b>	Note: Max & min values refer only to the property listed	SERVICE: <b>INTERMITTENT</b>
VAPOR PRESSURE: <b>6.50</b> bara		• IF INTERMITTENT NO. OF STARTS: _____
DENSITY: (NOTE 1) _____ kg/m <sup>3</sup>		PUMPS OPERATE IN: _____
SPECIFIC HEAT: _____ kj/kgC		CORROSION DUE TO: (6.12.1.9) <b>CO<sub>2</sub>, H<sub>2</sub>S</b>
VISCOSITY: (NOTE 1) _____ cP		EROSION DUE TO: (6.12.1.9) _____
		H <sub>2</sub> S CONCENTRATION (ppm): (6.12.1.12) <b>6707.6</b>

OPERATING CONDITIONS (6.1.2)

	Units	Maximum	Rated	Normal	Min
C.I. Impeller					
PUMPING TEMPERATURE: _____ °C		<b>23.22</b>		<b>10.00</b>	<b>8.82</b>
FLOW: _____ m <sup>3</sup> /hr			<b>11</b>	<b>10.00</b>	<b>3.50</b>
DISCHARGE PRESSURE: (6.3.2) _____ barg			<b>19.5</b>		
SUCTION PRESSURE: _____ barg		<b>5.75</b>			<b>5.50</b>
DIFFERENTIAL PRESSURE: _____ bar			<b>14.0</b>		
DIFFERENTIAL HEAD: _____ m			<b>199.5</b>		
NPSH <sub>a</sub> : _____ m			<b>0.9</b>		
HYDRAULIC POWER: _____ KW			<b>4.30</b>		

CHLORIDE CONCENTRATION (ppm): _____
PARTICULATE SIZE (DIA IN MICRONS) _____
PARTICULATE CONCENTRATION (PPM) _____

SITE AND UTILITY DATA

LOCATION: **OUTDOOR UNHEATED**

MOUNTED AT: \_\_\_\_\_  TROPICALISATION REQ'D

ELECTRIC AREA CLASSIFICATION: (6.1.22) ZONE **2**

GROUP **II A** TEMP CLASS **T3**

SITE DATA:

ELEVATION (MSL): **1.2** m  D04 BAROMETER: \_\_\_\_\_ mBar

RANGE OF DESIGN TEMPS: MIN / MAX \_\_\_\_\_ °C

RELATIVE HUMIDITY: MIN / MAX **0** / **100** % (@ 25.6 °C)

UNUSUAL CONDITIONS: \_\_\_\_\_

UTILITY CONDITIONS:

ELECTRICITY:	DRIVERS	HEATING	CONTROL	SHUTDOWN
VOLTAGE	<b>400</b>			
PHASE	<b>3</b>			
HERTZ	<b>50</b>			

COOLING WATER:

	RETURN	DESIGN
TEMP		
PRESS.		
SOURCE		

COOLING WATER CHLORIDE CONCENTRATION: \_\_\_\_\_

INSTRUMENT AIR: \_\_\_\_\_ MIN \_\_\_\_\_ kg

STEAM:

	DRIVERS	
TEMP		
PRESS.		

PERFORMANCE

PROPOSAL CURVE NO. _____	RPM _____
As Tested Curve No. _____	
IMPELLER DIA.: RATED _____ MAX. _____ MIN. _____	mm
RATED POWER _____ Kw	EFFICIENCY _____ (%)
RATED CURVE BEP FLOW (at rated impeller dia) _____	m <sup>3</sup> /hr
MIN FLOW: _____ kJ/Nm <sup>3</sup>	m <sup>3</sup> /hr
PREFERRED OPERATING REGION (6.1.11) _____	m <sup>3</sup> /hr
ALLOWABLE OPERATING REGION _____	m <sup>3</sup> /hr
MAX HEAD @ RATED IMPELLER _____	m
MAX POWER @ RATED IMPELLER _____	kW
NPSH <sub>3</sub> AT RATED FLOW: _____	m
CL PUMP TO U/S BASEPLATE _____	m
NPSH MARGIN AT RATED FLOW: _____	m
SPECIFIC SPEED (6.1.9) _____	
SUCTION SPECIFIC SPEED LIMIT _____	
SUCTION SPECIFIC SPEED _____	
MAX. ALLOW. SOUND PRESS. LEVEL REQ'D (6.1.14) _____	<b>85</b> (dBA) @ 1 m
EST MAX SOUND PRESS. LEVEL _____	(dBA)
MAX. SOUND POWER LEVEL REQ'D (6.1.14) _____	
EST MAX SOUND POWER LEVEL _____	

DRIVER (7.1.5) (NOTES 3,16,29,34)

Driver Type	<b>MOTOR</b>
GEAR	<b>NO</b>
VARIABLE SPEED REQUIRED	<b>NO</b>
SOURCE OF VARIABLE SPEED	_____
OTHER	_____
MANUFACTURER	_____
NAMEPLATE POWER AND POWER FACTOR @Site Condition	_____ KW
Nominal RPM	_____
RATED LOAD RPM	_____
FRAME OR MODEL	_____
ORIENTATION	<b>VERTICAL</b>
LUBE	_____
BEARING TYPE:	_____
RADIAL	/
THRUST	/
STARTING METHOD	<b>D.O.L. (OPEN DISCHARGE VALVE)</b>
INSULATION/TEMP. RISE	<b>F/B</b>
Max Voltage Variation	<b>±10%</b>
Max Frequency Variation	<b>±5%</b>
Max Voltage and Frequency Variation together	<b>±10%</b>



تجهاد است و افزایش تولید میدان نفتی بینک  
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API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 3 of 7)

CONSTRUCTION

API PUMP TYPE: **VS6 (VTC)** [Based on API 610 definitions]

SEE ALSO PAGE 6

NOZZLE CONNECTIONS: (6.5.5) **NOTES 10,14,17**

	Size	Facing	Rating	Position
SUCTION		RF	300	SIDE
DISCHARGE		RF	300	SIDE

PRESSURE CASING AUX. CONNECTIONS: (6.4.3.2) **NOTES 10, 11**

	No.	Size	Type	Facing	Rating	Posn.
BAL./LEAK OFF						
DRAIN				RF		
VENT				RF		
PRESSURE GAGE						
TEMP GAGE						
WARM-UP LINE						

Drain Valve Supplied By	<b>SUPPLIER</b>
DRAINS MANIFOLDED	
VENT Valve Supplied By	<b>SUPPLIER</b>
VENTS MANIFOLDED	
THREAD. CONS FOR PIPELINE SERVICE & < 50°C (6.4.3.2)	<b>NO</b>
SPECIAL FITTINGS FOR TRANSITIONING (6.4.3.3)	<b>NO</b>
CYLINDRICAL THREADS REQUIRED (6.4.3.8)	<b>NO</b>
GUSSET SUPPORT REQUIRED	<b>YES</b> If Needed
MACHINED AND STUDDED CONNECTIONS (6.4.3.12)	<b>NO</b>
VS 6 DRAIN	<b>External</b>
DRAIN TO SKID EDGE	

MATERIAL (6.12.1.1)

APPENDIX H CLASS	<b>S-8</b>	<b>NOTES 18,19</b>
MIN DESIGN METAL TEMP (6.12.4.1)	<b>5</b>	°C
REDUCED-HARDNESS MATERIALS REQ'D (6.12.1.12.1)	<b>YES</b>	
Applicable Hardness Standard (6.12.1.12.3)		
BARREL :		
CASE :		
DIFFUSERS		
IMPELLER :		
IMPELLER WEAR RING :		
CASE WEAR RING :		
SHAFT:		
Bowl (if VS-type)		
Inspection Class (Note 4)	<b>Level 2</b>	

BEARINGS AND LUBRICATION (6.10.1.1)

BEARING (TYPE / NUMBER): (6.11.4)	
RADIAL	/
THRUST	/
REVIEW AND APPROVE THRUST BEARING SIZE : (9.2.5.2.4)	
LUBRICATION : (6.10.2.2) (6.11.3) (9.2.6)	<b>FLOOD</b>
PRESSURE LUBE SYSTEM TO ISO 10438- (9.2.6.5)	
ISO 10438 DATA SHEETS ATTACHED	
Pressurized Lube Oil System mtd on pump baseplate	
Location of Pressurized Lube Oil System mounted on baseplate :	
INTERCONNECTING PIPING PROVIDED BY	<b>SUPPLIER</b>
OIL VISC. ISO GRADE	VG
CONSTANT LEVEL OILER :	<b>REQUIRED</b>

CASING MOUNTING:

CASING TYPE: (6.3.10)	<b>VERTICAL</b>
OH3 BACKPULLOUT LIFTING DEVICE REQD. (9.1.2.6)	<b>DIFFUSER</b>
CASE PRESSURE RATING:	
MAWP : (6.3.5)	<b>By Supplier</b> barg @ <b>38</b> °C
HYDROTEST :	<b>1.5 X MAWP</b> barg @ <b>38</b> °C



HYDROTEST OH PUMP AS ASSEMBLY

SUCT'N PRESS. REGIONS DESIGNED FOR MAWP	<b>YES</b>
ROTATION: (VIEWED FROM COUPLING END)	
• IMPELLERS INDIVIDUALLY SECURED :	<b>YES</b>
• BOLT OH 3/4/5 PUMP TO PAD / FOUNDATION :	
• PROVIDE SOLEPLATE FOR OH 3/4/5 PUMPS	
ROTOR:	
SHAFT FLEXIBILITY INDEX (SFI) (9.1.1.3)	
First Critical Speed Wet (Multi stage pumps only)	
COMPONENT BALANCE TO ISO 1940 G1.0	
SHRINK FIT -LIMITED MOVEMENT IMPELLERS (9.2.2.3)	
COUPLING:(7.2.3) (7.2.13.f) <b>NOTE 27</b>	
MANUFACTURER	
MODEL	
RATING (POWER/100 RPM)	
SPACER LENGTH	mm
SERVICE FACTOR	<b>Min 1.5</b>
RIGID	
COUPLING WITH HYDRAULIC FIT (7.2.10)	
COUPLING BALANCED TO ISO 1940-1 G6.3 (7.2.3)	<b>YES</b>
COUPLING WITH PROPRIETARY CLAMPING DEVICE (7.2.11)	
COUPLING IN COMPLIANCE WITH (7.2.4)	<b>API 610 compliant</b>
COUPLING GUARD STANDARD PER (7.2.13.a)	<b>ISO 14120</b>
Window on Coupling Guard	

BASEPLATE

API BASEPLATE NUMBER :	
BASEPLATE CONSTRUCTION (7.3.14)	
BASEPLATE DRAINAGE (7.3.1)	
MOUNTING :	
NON-GROUT CONSTRUCTION : (7.3.13)	
VERTICAL LEVELING SCREWS :	<b>REQUIRED</b>
LONGITUDINAL DRIVER POSITIONING SCREWS :	<b>REQUIRED</b>
SUPPLIED WITH :	<input type="radio"/> GROUT AND VENT HOLES <b>YES</b> <input type="radio"/> DRAIN CONNECTION <b>YES</b>
MOUNTING PADS SIZED FOR BASEPLATE LEVELING (7.3.5)	<b>YES</b>
MOUNTING PADS TO BE MACHINED (7.3.6)	<b>YES</b>
PROVIDE SPACER PLATE UNDER ALL EQUIPMENT FEET	<b>YES</b>
OTHER	

REMARKS :


 <p><b>NISOC</b></p>	<p><b>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض</b></p> <p><b>احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک</b></p>																	
شماره پیمان: _____ ۰۵۳-۰۷۳-۹۱۸۴	<b>MECHANICAL DATA SHEETS FOR SLUG PUMPS</b>	شماره صفحه: ۱۰ از ۷																
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>پروژه</th> <th>بسته کاری</th> <th>صادر کننده</th> <th>تسهيلات</th> <th>رشته</th> <th>نوع مدرک</th> <th>سریال</th> <th>نسخه</th> </tr> <tr> <td>BK</td> <td>GCS</td> <td>PEDCO</td> <td>120</td> <td>ME</td> <td>DT</td> <td>0019</td> <td>D04</td> </tr> </table>	پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدرک	سریال	نسخه	BK	GCS	PEDCO	120	ME	DT	0019	D04		
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BK	GCS	PEDCO	120	ME	DT	0019	D04											
<b>API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 4 of 7)</b>																		
<p style="text-align: center;"><b>INSTRUMENTATION</b></p> <p>SEE ATTACHED API-670 DATA SHEET _____</p> <p><b>ACCELEROMETER (7.4.2.1)</b></p> <p>Number of Accelerometers _____</p> <p>Mounting Location of Accelerometers _____</p> <p><b>PROVISION FOR MTG ONLY (6.10.2.10)</b></p> <p>Number of Accelerometers _____</p> <p>Mounting Location of Accelerometers _____</p> <p><b>FLAT SURFACE REQUIRED (6.10.2.11)</b> <span style="float: right;"><b>YES</b></span></p> <p>Number of Accelerometers _____</p> <p>Mounting Location of Accelerometers _____</p> <p><b>VIBRATION PROBES (7.4.2.2)</b></p> <p><b>PROVISIONS FOR VIB. PROBES</b></p> <p>NUMBER PER RADIAL BEARING _____</p> <p>NUMBER PER AXIAL BEARING _____</p> <p>MONITORS AND CABLES SUPPLIED BY (7.4.2.4) _____</p> <p><b>TEMPERATURE (7.4.2.3)</b></p> <p><b>PROVISIONS FOR TEMP PROBES</b></p> <p><b>RADIAL BEARING TEMP.</b></p> <p>NUMBER PER RADIAL BEARING _____</p> <p><b>THRUST BEARING TEMP.</b></p> <p>NUMBER PER THRUST BEARING ACTIVE SIDE _____</p> <p>NUMBER PER THRUST BEARING INACTIVE SIDE _____</p> <p><b>TEMP. GAUGES (WITH THERMOWELLS) (9.1.3.6)</b></p> <p>PRESSURE GAUGE TYPE _____</p> <p><b>Remarks</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p style="text-align: center;"><b>SEAL SUPPORT SYSTEM MOUNTING</b></p> <p>SEAL SUPPORT SYSTEM MOUNTED ON PUMP BASEPLATE _____</p> <p style="text-align: right;">(7.5.1.4) <b>YES</b></p> <p>IDENTIFY LOCATION ON BASEPLATE _____</p> <p>INTERCONNECTING PIPING BY <b>SUPPLIER</b></p> <hr/> <p style="text-align: center;"><b>MECHANICAL SEAL (6.8.1) NOTE 5.8 (VTS)</b></p> <p>SEE ATTACHED ISO 21049/API 682 DATA SHEET <span style="float: right;"><b>NOTE 8</b></span></p> <p>ADDITIONAL CENTRAL FLUSH PORT (6.8.9) _____</p> <p>HEATING JACKET REQ'D. (6.8.11) _____</p> <p>FLUSH PLAN <b>31+53B</b></p> <hr/> <p style="text-align: center;"><b>HEATING AND COOLING (6.1.17) (VTS)</b></p> <p>COOLING REQ'D _____</p> <p>COOLING WATER PIPING PLAN _____</p> <p>COOLING WATER PIPING _____</p> <p>COOLING WATER PIPING MATERIALS _____</p> <p>COOLING WATER REQUIREMENTS: _____</p> <p>TOTAL COOLING WATER _____</p> <p>HEATING MEDIUM _____</p> <p>OTHER _____</p> <p>HEATING PIPING _____</p> <hr/> <p style="text-align: center;"><b>PIPING &amp; APPURTENANCES</b> <span style="float: right;">D04</span></p> <p>MANIFOLD PIPING FOR PURCHASER CONNECTION (7.5.1.6)</p> <p>VENT <b>YES</b></p> <p>DRAIN <b>YES</b></p> <p>VALVES <b>YES (NOTE 11)</b></p> <p>COOLING WATER _____</p> <p>TAG ALL ORIFICES (7.5.2.4) <b>YES</b></p> <p>SOCKET WELD CONN ON SEAL GLAND (7.5.2.8) _____</p>																	



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سطح الارض



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره پیمان:

۰۵۳-۰۷۳-۹۱۸۴

MECHANICAL DATA SHEETS FOR SLUG PUMPS

پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D04

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API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 5 of 7)

SURFACE PREPARATION AND PAINT

MANUFACTURER'S STANDARD	_____
OTHER (SEE BELOW)	_____
SPECIFICATION NO.	<b>BK-GNRL-PEDCO-000-PI-SP-0006 , "Specification for Painting"</b>
<b>PUMP:</b>	
PUMP SURFACE PREPARATION	_____
PRIMER	<b>AS PER PROJECT PAINTING SPEC.</b>
FINISH COAT	<b>AS PER PROJECT PAINTING SPEC.</b>
<b>BASEPLATE:</b>	
BASEPLATE SURFACE PREPARATION	_____
PRIMER:	<b>AS PER PROJECT PAINTING SPEC.</b>
FINISH COAT	<b>AS PER PROJECT PAINTING SPEC.</b>
DETAILS OF LIFTING DEVICES	_____
<b>SHIPMENT: (8.4.1)</b>	<b>EXPORT</b>
EXPORT BOXING REQUIRED	<b>YES</b>
OUTDOOR STORAGE MORE THAN 6 MONTHS	<b>YES</b>
<b>SPARE ROTOR ASSEMBLY PACKAGED FOR:</b>	
ROTOR STORAGE ORIENTATION (9.2.8.2)	_____
SHIPPING & STORAGE CONTAINER FOR VERT STORAGE (9.2.8.3)	_____
N <sub>2</sub> PURGE (9.2.8.4)	_____
<b>SPARE PARTS</b>	<b>NOTE 26</b>
START-UP	<b>YES</b>
NORMAL MAINTENANCE	<b>YES</b>

ITEM No	PUMP	DRIVER	GEAR	BASE	TOTAL

OTHER PURCHASER REQUIREMENTS

COORDINATION MEETING REQUIRED (10.1.3)	<b>YES</b>
MAXIMUM DISCHARGE PRESSURE TO INCLUDE	<b>YES</b>
OPERATION TO TRIP SPEED	<b>YES</b>
MAX DIA. IMPELLERS AND/OR NO OF STAGES	<b>YES</b>
CONNECTION DESIGN APPROVAL (9.2.1.4)	_____
TORSIONAL ANALYSIS / REPORT (6.9.2.10)	_____
PROGRESS REPORTS	<b>YES</b>
OUTLINE OF PROC FOR OPTIONAL TESTS (10.2.5)	_____
ADDITIONAL DATA REQUIRING 20 YEARS RETENTION (8.2.1.1)	_____
LATERAL ANALYSIS REQUIRED (9.1.3.4) (9.2.4.1.3)	_____
MODAL ANALYSIS REQUIRED (9.3.9.2)	_____
DYNAMIC BALANCE ROTOR (6.9.4.4)	_____
INSTALLATION LIST IN PROPOSAL (10.2.3.1)	<b>YES</b>
VFD STEADY STATE DAMPED RESPONSE ANALYSIS (6.9.2.3)	_____
TRANSIENT TORSIONAL RESPONSE	_____
BEARING LIFE CALCULATIONS REQUIRED (6.10.1.6)	<b>YES</b>
IGNITION HAZARD ASSMT TO EN 13463-1 (7.2.13.e)	_____
CASING RETIREMENT THICKNESS DRAWING (10.3.2.3)	_____
FLANGES RQD IN PLACE OF SKT WELD UNIONS (7.5.2.8)	<b>YES</b>
INCLUDE PLOTTED VIBRATION SPECTRA (6.9.3.3)	_____
CONNECTION BOLTING (7.5.1.7)	<b>SS</b>
CADMIUM PLATED BOLTS PROHIBITED	_____
VENDOR TO KEEP REPAIR AND HT RCDS (8.2.1.1.e)	<b>YES</b>
VENDOR SUBMIT TEST PROCEDURES (8.3.1.1)	<b>YES</b>
SUBMIT INSPECTION CHECK LIST (8.1.5) <b>NOTE 4</b>	<b>YES</b>

TEST

SHOP INSPECTION (8.1.1)	<b>YES</b>
PERFORMANCE CURVE & DATA APPROVAL PRIOR TO SHIPMENT.	<b>YES</b>
TEST WITH SUBSTITUTE SEAL (8.3.3.2.b)	<b>NO</b>
MATERIAL CERTIFICATION REQUIRED	<b>YES</b>
SHAFT (6.12.1.8) IMPELLER	<b>YES</b>
OTHER	<b>YES</b>
CASING	<b>YES</b>
Casing and impeller Wear ring	<b>NOTE 18</b>
CASTING REPAIR WELD PROCEDURE APPR REQD	<b>YES</b>
INSPECTION REQUIRED FOR CONNECTION WELDS (6.12.3.4.d)	_____
LIQUID PENETRANT	<b>YES</b>
MAG PARTICLE	<b>YES</b>
ULTRASONIC	_____
RADIOGRAPHY	_____
INSPECTION REQUIRED FOR CASTINGS	<b>NOTE 26</b>
LIQUID PENETRANT	<b>YES</b>
MAG PARTICLE	<b>YES</b>
ULTRASONIC ( <b>NOTE 24</b> )	_____
RADIOGRAPHY	_____
HARDNESS TEST REQUIRED (8.2.2.7)	_____
ADDNL SUBSURFACE EXAMINATION (6.12.1.5) (8.2.1.3)	_____
FOR	_____
METHOD	_____
PMI TESTING REQUIRED (8.2.2.8) ( <b>NOTE 33</b> )	<b>YES</b>
COMPONENTS TO BE TESTED	_____
RESIDUAL UNBALANCE TEST (J.4.1.2)	_____
NOTIFICATION OF SUCCESSFUL SHOP	_____
PERFORMANCE TEST (8.1.1.c) (8.3.3.5) ( <b>WIT</b> )	<b>YES</b>
BASEPLATE TEST (7.3.21)	_____
HYDROSTATIC	<b>WIT</b>
HYDROSTATIC TEST OF BOWLS & COLUMN (9.3.13.2)	<b>WIT</b>
PERFORMANCE TEST	<b>WIT</b>
TEST IN COMPLIANCE WITH (8.3.3.2)	<b>8.3.3.2</b>
TEST DATA POINTS TO (8.3.3.3)	<b>8.3.3.3</b>
TEST TOLERANCES TO (8.3.3.4)	_____
NPSH (8.3.4.3.1) (8.3.4.3.4) ( <b>NOTE 9</b> )	<b>WIT</b>
NPSH-1ST STG ONLY (8.3.4.3.2)	_____
NPSH TESTING TO HI 1.6 OR ISO 9906 (8.3.4.3.3)	_____
TEST NPSHA LIMITED TO 110% SITE NPSHA (8.3.3.6)	_____
RETEST ON SEAL LEAKAGE (8.3.3.2.d)	_____
RETEST REQUIRED AFTER FINAL HEAD ADJ (8.3.3.7.b)	_____
COMPLETE UNIT TEST (8.3.4.4.1)	<b>WIT</b>
SOUND LEVEL TEST (8.3.4.5)	<b>WIT</b>
CLEANLINESS PRIOR TO FINAL ASSEMBLY (8.2.2.6)	<b>NON-WIT</b>
LOCATION OF CLEANLINESS INSPECTION	_____
NOZZLE LOAD TEST	_____
CHECK FOR CO-PLANAR MOUNTING PAD SURFACES	_____
MECHANICAL RUN TEST UNTIL OIL TEMP STABLE	<b>WIT</b>
4 HR. MECH RUN AFTER OIL TEMP STABLE (8.3.4.2.1)	<b>WIT</b>
4 HR. MECH RUN TEST (8.3.4.2.2)	_____
BRG HSG RESONANCE TEST (8.3.4.7)	_____
STRUCTURAL RESONANCE TEST (9.3.9.2)	_____
REMOVE / INSPECT HYDRODYNAMIC BEARINGS AFTER TEST (9.2.7.5)	_____
AUXILIARY EQUIPMENT TEST (8.3.4.6)	_____
EQUIPMENT TO BE INCLUDED IN AUXILIARY TESTS	_____
LOCATION OF AUXILIARY EQUIPMENT TEST	_____
IMPACT TEST	_____
REMOVE CASING AFTER TEST	_____





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شماره پیمان:

۰۵۳-۰۷۳-۹۱۸۴

MECHANICAL DATA SHEETS FOR SLUG PUMPS

پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه
BK	GCS	PEDCO	120	ME	DT	0019	D04

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API Std. 610 CENTRIFUGAL PUMP DATA SHEET (SI UNIT) - P-2101 A/B (Sheet 6 of 7)

VERTICAL TYPE (FIG 1.1) VS6

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

VERTICAL PUMPS

<b>PUMP THRUST:</b>	(+) UP	(-) DOWN
STATIC THRUST	_____ N	_____ N
AT MIN FLOW	_____ N	_____ N
AT RATED FLOW	_____ N	_____ N
AT MAX FLOW	_____ N	_____ N
MAX THRUST	_____ N	_____ N
SOLEPLATE REQUIRED	_____	_____
SOLEPLATE Length x Width	_____ m	X _____ m
SOLEPLATE THICKNESS	_____	_____ mm
MOUNTING FLANGE REQUIRED	_____	_____
<b>COLUMN PIPE:</b>		
DIAMETER	_____	_____ mm
LENGTH	_____	_____ m
NUMBER	_____	_____
SPACING	_____	_____ m
<b>GUIDE BUSHINGS:</b>		
NUMBER	_____	_____
LINE SHAFT BEARING SPACING	_____	_____ mm
GUIDE BUSHING LUBE:	_____	_____

VERTICAL PUMPS (CONT'D)

<b>LINE SHAFT:</b>	_____
LINE SHAFT DIAMETER	_____ mm
TUBE DIAMETER	_____ mm
<b>LINE SHAFT COUPLING:</b>	
LINESHAFT CONNECTION	_____
• SUCTION STRAINER TYPE	_____
• LEVEL CONTROL	_____
IMPELLER COLLETS ACCEPTABLE	_____
HARDENED SLEEVES UNDER BEARINGS (9.3.10.5)	_____
RESONANCE TEST	_____
STRUCTURAL ANALYSIS (9.3.5)	_____
DRIVER ALIGNMENT SCREWS	_____
<b>SUCTION CAN</b>	
SUCTION CAN	THICKNESS _____ mm
	LENGTH _____ m
	DIAMETER _____ mm
SEPARTATE MOUNTING PLATE (9.3.8.3.1)	<u>YES</u>
PROVIDE SEPARATE SOLEPLATE (9.3.8.3.3)	<u>YES</u>
DRAIN PIPED TO SURFACE (9.3.13.5)	_____
BOWL HEAD CALCULATION REQUIRED	_____

MATERIALS (additional)

SUCTION CAN / BARREL:	_____	LINESHAFT SLEEVES :	_____
DISCHARGE HEAD :	• _____	BEARING RETAINER :	_____
BOWL SHAFT :	_____	SHAFT ENCLOSING TUBE :	_____
LINESHAFT :	_____	DISCHARGE COLUMN :	_____
LINESHAFT HARDFACING :	_____	<b>PRESSURE RATING:</b>	<b>MAWP</b> <b>HYDRO</b>
BELLMOUTH :	_____	HEAD	_____
BOWL BEARING :	_____	COLUMN PIPE	_____
LINESHAFT BEARING :	_____	BOWL	_____

SUMP ARRANGEMENT

SUMP DIMENSIONS :

GRADE ELEVATION	1	_____	m
LOW LIQUID LEVEL	2	_____	m
C.L. OF DISCHARGE	3	_____	m
SUMP DEPTH	$l_1$	_____	m
PUMP LENGTH	$l_2$	_____	m
GRADE TO DISCH.	$l_3$	_____	m
GRADE TO LOW LIQUID LVL	$l_4$	_____	m
GRADE TO 1ST STG IMPL'R.	$l_5$	_____	m
SUBMERGENCE REQ'D	$l_6$	_____	m
SUMP DIAMETER	$\Phi d$	_____	m

