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|  |  | <p>نگهداشت و افزایش تولید میدان نفتی بینک<br/>سطح الارض</p> <p>احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک</p> |           |            |         |      |  |       |                    |  |
| شماره پیمان: ۰۵۳-۰۷۳-۹۱۸۴                                                        |  | MECHANICAL DATA SHEETS FOR POTABLE WATER PUMP                                                                    |           |            |         |      |                                                                                     |       | شماره صفحه: ۱ از ۵ |  |
|                                                                                  |  | پروژه                                                                                                            | بسته کاری | صادر کننده | تسهیلات | رشته | نوع مدرک                                                                            | سرنال | نسخه               |  |
|                                                                                  |  | BK                                                                                                               | GCS       | PEDCO      | 120     | ME   | DT                                                                                  | 0025  | D04                |  |

طرح نگهداشت و افزایش تولید ۲۷ مخزن

MECHANICAL DATA SHEETS FOR POTABLE WATER PUMP  
(P-2209)  
نگهداشت و افزایش تولید میدان نفتی بینک

|      |           |                           |              |             |              |                 |
|------|-----------|---------------------------|--------------|-------------|--------------|-----------------|
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| Rev. | Date      | Purpose of Issue / Status | Prepared by: | Checked by: | Approved by: | CLIENT Approval |

Class: 1      CLIENT Doc. Number: F02-708856

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



نگهداشت و افزایش تولید میدان نفتی بینک  
سطح الارض



احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک

شماره پیمان:

MECHANICAL DATA SHEETS FOR POTABLE WATER PUMP

شماره صفحه: ۲ از ۵

۰۵۳-۰۷۳-۹۱۸۴

| نسخه | سریال | نوع مدرک | رشته | تسهیلات | صادر کننده | بسته کاری | پروژه |
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| D04  | 0025  | DT       | ME   | 120     | PEDCO      | GCS       | BK    |

REVISION RECORD SHEET

| page | D00 | D01 | D02 | D03 | D04 |
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نگهداشت و افزایش تولید میدان نفتی بینک  
سطح الارض

احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک



شماره پیمان:

۰۵۳-۰۷۳-۹۱۸۴

MECHANICAL DATA SHEETS FOR POTABLE WATER PUMP

| نسخه | سریال | نوع مدرک | رشته | تجهیزات | صادر کننده | بسته کاری | پروژه |
|------|-------|----------|------|---------|------------|-----------|-------|
| D04  | 0025  | DT       | ME   | 120     | PEDCO      | GCS       | BK    |

شماره صفحه: ۳ از ۵

D04 GENERAL NOTES

1. Min. / Max. Design temperature (°C): 5 / 85
2. For electrical motor descriptions, refer to 'Specification For LV Induction Motors' Doc. No. BK-GNRL-PEDCO-000-EL-SP-0010.
3. 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.
4. Vendor shall submit ITP (Inspection & Testing Plan) with his proposal.
5. The motors, pump coupling and pump accessories shall be supplied from the project's approved vendor list (A.V.L.). Chinese & Indian vendors are not acceptable for Mechanical seal, Electro motor and coupling subvendors.
6. Vendor is requested to confirm the material, or propose appropriate alternative.
7. 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.
8. NPSH test shall be done & witnessed if the margin of NPSHr & NPSHa is less than 1.
9. The Tie-in flanges shall conform to ASME B-16.5.
10. Supplier to indicate which minimum flow pumps can achieve.
11. Pumps shall be designed, fabricated, tested, and inspected in accordance with the requirements of ISO 5199 latest edition.
12. Pump starts with close discharge valve.
13. Electrical motor shall be rated for site condition.
14. The suction & discharge line size is 2".
15. Material class of 'I-1', 'I-2', 'S-1', 'S-2', 'S-3', 'S-4', 'S-5', 'S-6', 'C-6' 'A-7' and 'A-8', which is defined in API 610 table H.1, shall be provided with full chemical analysis and mechanical test certification to BS EN 10204:2004 "3.1". Material class of 'D-1' and 'D-2', which is defined in API 610 table H.1 and also titanium materials shall be provided with full chemical analysis and mechanical test certification to BS EN 10204:2004 "3.2".
16. Based on project instrumentation specification, these equipments are classified as Type B (Connected to DCS/ESD): Centrifugal Pump Package
17. Pump material shall be selected based on Annex H API 610 11th Edition. (Vendor to confirm)
18. If pump is self venting there is no need for vent.
19. Ultrasonic Test shall be performed for forged shaft.
20. 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.
21. Couplings shall be dry, flexible and spacer type.
22. Bearing temperature shall be measured during mechanical run test.
23. Max. allow. sound press. level shall be 85 d BA.
24. For site conditions refer to Process Basis of Design document. Doc.No. BK-GNRL-PEDCO-000-PR-DB-0001.
25. For electrical motor descriptions, refer to 'Specification For LV induction Motors' 'Doc. No.BK-GNRL-PEDCO-000-EL-SP-0010.
26. Power Factor, efficiency, frequent, voltage, frequent variation and voltage variation of motor shall be specified by vendor in data sheet.
27. Max Allowable Pressure at Shut-Off at rated impeller (barg): 3.8
28. Minimum Design Metal Tem (MDMT) = 5°C.
29. Vendor to provide the pump with mentioned flow rate or minimum available flow rate at market.
30. Allowable external forces and moments on nozzle should be conformed to Spec. No.: BK-GCS-PEDCO-120-ME-SP-0004.
31. All drain and vents (If any) to be manifolded, valved and routed to the skid edge.
32. Range of ambient temperature: Min. ambient temperature: 5 °C, Max. ambient temperature: 50 °C
33. Pumping Temp. (Min. / Max.) (°C): 5 / 50
34. Hydraulic power (Kw): 0.5
35. Min./Max. suction pressure (barg): -0.05 / 0.15
36. For Instrumentation, Project specification 'Specification For Instrument and Control of package Unit System (PU)' Doc. No.BK-GNRL-PEDCO-000-IN-SP-0004 and hazardous area classification and other instrument specification which to be attached to MR shall be followed.

|                                                                                                  |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
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| <br><b>NISOC</b> |                        | <p align="center"><b>نگهداشت و افزایش تولید میدان نفتی بینک</b></p> <p align="center"><b>سطح الارض</b></p> <p align="center"><b>احداث ردیف تراکم گاز در ایستگاه جمع آوری بینک</b></p> |                             |                                            |                 |                                             |                       |  |                  |                              |       |  |
| شماره پیمان:                                                                                     |                        | MECHANICAL DATA SHEETS FOR POTABLE WATER PUMP                                                                                                                                         |                             |                                            |                 |                                             |                       |                                                                                     |                  | شماره صفحه: ۴ از ۵           |       |  |
| ۰۵۳-۰۷۳-۹۱۸۴                                                                                     |                        | پروژه                                                                                                                                                                                 | بسته کاری                   | صادر کننده                                 | تسهیلات         | رشته                                        | نوع مدرک              | سریال                                                                               | نسخه             |                              |       |  |
|                                                                                                  |                        | BK                                                                                                                                                                                    | GCS                         | PEDCO                                      | 120             | ME                                          | DT                    | 0025                                                                                | D04              |                              |       |  |
| ISO Std. 5199 CENTRIFUGAL PUMP DATA SHEET (SI UNIT)                                              |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Corporate name                                                                                   |                        | Centrifugal pump Data sheet                                                                                                                                                           |                             |                                            |                 |                                             |                       |                                                                                     |                  | Rev.:                        |       |  |
| NISOC                                                                                            |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  | Data:                        |       |  |
| Plant:                                                                                           |                        | BINAK Gas Compressor Station                                                                                                                                                          |                             |                                            |                 | Service: Potable Water Pump                 |                       |                                                                                     |                  |                              | Name: |  |
|                                                                                                  |                        |                                                                                                                                                                                       |                             |                                            |                 | Ref. Standards: ISO 5199, IPS-M-PM-115      |                       |                                                                                     |                  |                              |       |  |
|                                                                                                  |                        |                                                                                                                                                                                       |                             |                                            |                 | Ref. Spec. No.: BK-GCS-PEDCO-120-ME-SP-0004 |                       |                                                                                     |                  |                              |       |  |
| Operation                                                                                        | No. req.               | Pump type                                                                                                                                                                             | Eq. API-610 Type            |                                            | Mfr. serial No. | Kind of driver                              |                       | Drive, type, size                                                                   |                  | Item No.                     |       |  |
| Standby                                                                                          | 1                      | Horizontal                                                                                                                                                                            | OH2(VTC)                    |                                            |                 | Motor                                       |                       | LV Induction Electric Motor                                                         |                  | P-2209                       |       |  |
| Drawings                                                                                         | Installation dimension |                                                                                                                                                                                       |                             |                                            |                 | Pump weight                                 |                       | Pump Content                                                                        |                  |                              |       |  |
|                                                                                                  | Assembly pump          |                                                                                                                                                                                       |                             |                                            |                 | Customer                                    |                       | Enquiry No.                                                                         |                  | Date                         |       |  |
|                                                                                                  | Assembly shaft seal    |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       | Order No.                                                                           |                  | Date                         |       |  |
|                                                                                                  | Piping                 |                                                                                                                                                                                       |                             |                                            |                 | Supplier                                    |                       | Proposal No.                                                                        |                  | Date                         |       |  |
| Test (4)                                                                                         | Material (17)          | Hydrostatic                                                                                                                                                                           | Inspection                  |                                            | Perform.        | NPSH (8)                                    |                       | Sound Level                                                                         | Final inspection | Approved documents           |       |  |
| Refer.                                                                                           | ISO 5199               | ISO 5199                                                                                                                                                                              | ISO 5199                    |                                            | ISO 5199        | ISO 5199                                    |                       | ISO 5199                                                                            | ISO 5199         | ISO 5199                     |       |  |
| Witn. by                                                                                         | Certified              | Witnessed                                                                                                                                                                             | Witnessed                   |                                            | Witnessed       | Witnessed                                   |                       | Witnessed                                                                           | Certified        | Certified                    |       |  |
| <div style="text-align: center;">D04</div> <b>Operating Condition (12)</b>                       |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Liquid                                                                                           | Potable Water          |                                                                                                                                                                                       | Flow                        |                                            | rated           | 5.50                                        | m³/h                  | NPSH at rated flow                                                                  |                  | Plant- NPSHA                 |       |  |
| Solids                                                                                           | Type                   |                                                                                                                                                                                       |                             |                                            | normal          | 5.00                                        | m³/h                  |                                                                                     |                  | Pump- NPSH3                  |       |  |
|                                                                                                  | %of mass               |                                                                                                                                                                                       |                             |                                            | min.            |                                             | m³/h                  | Pump speed rated                                                                    |                  | rpm                          |       |  |
| Corrosion by                                                                                     |                        |                                                                                                                                                                                       | Minimum flow required       |                                            |                 |                                             | m³/h                  | Pump efficiency rated                                                               |                  | %                            |       |  |
| Op. Temp. (Min./Max.)                                                                            | 5 / 50 °C              |                                                                                                                                                                                       | Inlet gauge pressure        |                                            | rated           |                                             | barg                  | Pump power input rated                                                              |                  | kW                           |       |  |
| pH-value at T <sub>op</sub>                                                                      |                        |                                                                                                                                                                                       | pressure                    |                                            | max.            | 0.15                                        | barg                  | Pump power                                                                          |                  | rated impeller dia.          |       |  |
| Density at T <sub>nom</sub>                                                                      | 1024 kg/m³             |                                                                                                                                                                                       | Outlet gage pressure rated  |                                            |                 | 2.95                                        | barg                  | input                                                                               |                  | max. impeller dia.           |       |  |
| Vapour press. at Max.T                                                                           | 0.1 bara               |                                                                                                                                                                                       | Differential pressure rated |                                            |                 | 3.00                                        | bar                   | Electric. Driver power output rated (25)                                            |                  | kW                           |       |  |
| Kinematic vis. at T <sub>nom</sub>                                                               | 1.6 cP                 |                                                                                                                                                                                       | Total head rated            |                                            |                 | 29.90                                       | m                     | Steam turbine power output rated                                                    |                  | kW                           |       |  |
| Specific heat at T <sub>op</sub>                                                                 | J/Kg.K                 |                                                                                                                                                                                       | Shut-off head (Note 27)     |                                            |                 |                                             | m                     | Performance curve No.                                                               |                  |                              |       |  |
| <div style="text-align: center;">D04</div> <b>Construction Features</b>                          |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Design                                                                                           | barg                   |                                                                                                                                                                                       | Max. allowable work press   |                                            |                 |                                             | barg                  | Cooling water condition                                                             |                  | N.A.                         |       |  |
| Number of Stages                                                                                 | 1                      |                                                                                                                                                                                       | Test pressure               |                                            |                 | 1.5 x MAWP                                  | barg                  | Cooling (C) Series (s)                                                              |                  | N.A.                         |       |  |
| Self priming                                                                                     | NO                     |                                                                                                                                                                                       | Inlet Flange                |                                            | Size/Position   | " / End                                     |                       | Heating (H), Parallel (p)                                                           |                  | C H S P Quantity             |       |  |
| Impeller diameter                                                                                | max                    | mm                                                                                                                                                                                    | Rating/facing (14)          |                                            |                 | -/150# / RF                                 |                       | Bearing                                                                             |                  |                              |       |  |
|                                                                                                  | rated                  | mm                                                                                                                                                                                    | Size/Position               |                                            |                 | " / Top                                     |                       | Seal Chamber                                                                        |                  |                              |       |  |
|                                                                                                  | min                    | mm                                                                                                                                                                                    | Rating/facing (14)          |                                            |                 | -/150# / RF                                 |                       | Cooler for seal flush                                                               |                  |                              |       |  |
| Pump length vertical pumps                                                                       | mm                     |                                                                                                                                                                                       | Vent connection (18)        |                                            |                 |                                             |                       | Oil cooler                                                                          |                  |                              |       |  |
| Barrel dia. vertical pumps                                                                       | mm                     |                                                                                                                                                                                       | Drain connection            |                                            |                 | -/150# / RF                                 |                       | Flush                                                                               |                  | Liquid Quantity              |       |  |
| Casing split                                                                                     |                        |                                                                                                                                                                                       | Shaft seal manufacture      |                                            |                 |                                             |                       | Lantern ring                                                                        |                  |                              |       |  |
| Casing seal type                                                                                 |                        |                                                                                                                                                                                       | Type, size (7)              |                                            |                 | Mechanical Seal                             |                       | Mechanical ring                                                                     |                  |                              |       |  |
| Impeller type                                                                                    |                        |                                                                                                                                                                                       | Flush plan (VTA)            |                                            |                 | 11                                          |                       | Gland/Seal plate                                                                    |                  |                              |       |  |
| Casing support                                                                                   |                        |                                                                                                                                                                                       | Material code               |                                            |                 |                                             |                       | Coupling (21)                                                                       |                  | Manufacture                  |       |  |
| Rotation(looking from driver)                                                                    |                        |                                                                                                                                                                                       | Soft packing ring dimension |                                            |                 |                                             |                       | Type, Size                                                                          |                  |                              |       |  |
| Axial thrust reduction by                                                                        |                        |                                                                                                                                                                                       | Rad. Bearing                |                                            | Type            |                                             |                       | Diameter max                                                                        |                  | mm                           |       |  |
|                                                                                                  |                        |                                                                                                                                                                                       | Axial. Bearing              |                                            | Size            |                                             |                       | Spacer length                                                                       |                  | mm                           |       |  |
|                                                                                                  |                        |                                                                                                                                                                                       | Line shaft bearing          |                                            |                 |                                             |                       | Baseplate                                                                           |                  |                              |       |  |
|                                                                                                  |                        |                                                                                                                                                                                       | Bearing bracket No.         |                                            |                 |                                             |                       | Anchor bolts supplied by                                                            |                  | Vendor                       |       |  |
| Total clearance                                                                                  | Impeller               | mm                                                                                                                                                                                    | Lubrication                 |                                            |                 |                                             |                       | Driver                                                                              |                  | Supplied by                  |       |  |
|                                                                                                  | Bal. Drum              | mm                                                                                                                                                                                    |                             |                                            |                 |                                             |                       | Mounted by                                                                          |                  | Vendor                       |       |  |
| Shaft bushes                                                                                     | mm                     |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Wear plate                                                                                       | mm                     |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Wall thickness rot sheath / stat. cas                                                            |                        |                                                                                                                                                                                       | Lubrication device          |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| <div style="text-align: center;">D04</div> <b>Site and Utility Data (24,26)</b>                  |                        |                                                                                                                                                                                       |                             |                                            |                 |                                             |                       |                                                                                     |                  |                              |       |  |
| Location                                                                                         | Partial sides          |                                                                                                                                                                                       | Outdoor                     |                                            | Unheated        |                                             | Site data:            |                                                                                     | Elevation        | m                            |       |  |
| Winterization REQ'D                                                                              |                        | Tropicalization REQ'D                                                                                                                                                                 |                             | Range of ambient temps: MIN/MAX            |                 |                                             |                       | Barometer                                                                           |                  | mbar                         |       |  |
| Unusual condition                                                                                |                        | Dust                                                                                                                                                                                  |                             | Fumes                                      |                 | Others                                      |                       | Relative humidity: MIN/MAX                                                          |                  | 0/100 %                      |       |  |
| Driver                                                                                           | Volt.                  | 400                                                                                                                                                                                   | Hertz                       | 50                                         | Phase           | 3                                           | Max Voltage Variation |                                                                                     | ± 10%            |                              |       |  |
| Type of protection                                                                               |                        |                                                                                                                                                                                       |                             | Max Frequency Variation                    |                 |                                             |                       |                                                                                     |                  | ± 5%                         |       |  |
| Temperature rise class / Insulation class                                                        |                        |                                                                                                                                                                                       |                             | Max Volt. and Frequency Variation together |                 |                                             |                       |                                                                                     |                  | ± 10%                        |       |  |
| Electric Area Classification                                                                     |                        | Safe area                                                                                                                                                                             |                             | Starting Method                            |                 |                                             |                       |                                                                                     |                  | D.O.L./Close Discharge valve |       |  |

