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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | | |
| **DATA SHEETS FOR UPS - EXTENSION OF BINAK B/C MANIFOLD**  **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | | |
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|  |  |  |  |  |  |  |
| D02 | May. 2023 | AFD | H.Shakiba | M.Fakharian | A.M.Mohseni |  |
| D01 | Mar. 2023 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D00 | Sep. 2022 | IFC | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| **Rev.** | **Date** | **Purpose of Issue/Status** | **Prepared by:** | **Checked by:** | **Approved by:** | **CLIENT Approval** |
| **Class:2** | | **CLIENT Doc. Number: F0Z-709393** | | | | |
| **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** | | | | | |

**REVISION RECORD SHEET**

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| **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |  | **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |
| **1** | X | X | X |  |  | **51** |  |  |  |  |  |
| **2** | X | X | X |  |  | **52** |  |  |  |  |  |
| **3** | X | X | X |  |  | **53** |  |  |  |  |  |
| **4** | X | X | X |  |  | **54** |  |  |  |  |  |
| **5** | X | X | X |  |  | **55** |  |  |  |  |  |
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| **TECHNICAL DATA FOR AC-UPS IN MANIFOLD** | | | |
| --- | --- | --- | --- |
| **Item** | **Description** | **Required** | **Vendor Data** |
| **GENERAL** | | | |
|  | Name of Project / Plant | Binak Oilfield in Bushehr Province |  |
|  | Applicable Code & Standard | IEC 62040,IPS-M-EL-176(2),IPS-E-EL-100(1) |  |
|  | Reference Documents | 1. UPS Single Line Diagram - Extension of Binak B/C Manifold   “BK-W007S-PEDCO-110-EL-SL-0002”   1. Calculation Note for UPS System - Extension of Binak B/C Manifold   “BK-W007S-PEDCO-110-EL-CN-0002” |  |
|  | Electromagnetic Compatibility | As per IEC 62040-2 |  |
|  | Service | 110 VAC UPS Control Room |  |
|  | Tag Number | Manifold-110-UPS-001  Manifold-110-UPS-002 |  |
|  | Ambient Temperature (Min/Max) | Min ~ Max: +5 ~ +52°C |  |
|  | Mean Sea Level | 12.5 m above Sea Level |  |
|  | Installation | Indoor |  |
|  | Rated Input (Note 2) | 380/400/440VAC±10%, 3 phases, 3 wires , f=50Hz ±5% | D02 |
|  | Rated Output | 110 VAC ± 1% |  |
|  | Rated Power | 7.55 kVA |  |
|  | Country of Origin | By Vendor |  |
|  | Cold Start Facility | Required |  |
|  | No. of UPS | Double (Note 1) |  |
| **MECHANICAL CHARACTERISTIC** | | | |
|  | Noise Level (in accordance with ISO7779) The Sound Pressure Level Measured at 1m Distance From the UPS | 60dBA |  |
|  | Permissive Max. Temp. Rise | By Vendor |  |
|  | Enclosure Construction | Sheet Steel with min. Thickness 2mm |  |
|  | Degree of Protection ( IEC 60529) | IP42 |  |
|  | Type of Cooling | Natural |  |
|  | Dimension | By Vendor |  |
|  | Weight | By Vendor |  |
|  | Panel mounting | Floor Mounted |  |
|  | Access | Front Access |  |
|  | MTBF (at 20°C (68°F)) | ≥140,000Hr |  |
|  | MTTR | ≤ 2Hr |  |
|  | Finish Color | RAL 7032 |  |
| **LOAD CHARACTERISTICS**  D02 | | | |
|  | Load Consumption | 6.42 KW |  |
|  | Load Description | Instrument, PLC, DCS, Work Stations, Printers, ESD |  |
|  | Rated Current | By Vendor |  |
|  | Power Factor Range | 0.8-1 lag |  |
|  | Grounding System | IT |  |
| **AC INPUT** | | | |
|  | Voltage & Variation | 400 V ±10%, 3 phase 4 wire (Note 2) |  |
|  | Frequency & Variation | 50Hz ± 5% |  |
|  | Grounding System | IT |  |
|  | Short Circuit Current on System | 50 kA, 1Sec |  |
|  | Short Circuit Capability | By Vendor |  |
|  | Rated Input Current | By Vendor |  |
|  | THDi for Input Current | < 5% |  |
|  | Input Power Factor (La g) | > 0.85 |  |
| **CHARGER** | | | |
|  | Rated Current (A) | By Vendor |  |
|  | Rated Input Voltage | 400 V + 15%, - 20%, 3 phase 4 wire |  |
|  | Rated Output Voltage | 110 V AC Shall be finalized by Vendor |  |
|  | No. Of Charger | 2 Set (100%) |  |
|  | Type of Rectifier | Constant Voltage Current Limiting Static Type Thyristor-Controlled Rectifier (12pulses) |  |
|  | Voltage Ripple (rms) | ± 1% of Nominal Voltage |  |
|  | Voltage Regulation | ± 1% |  |
|  | Voltage Drop (Charger Load) | By Vendor |  |
|  | Voltage Drop (Battery Charger) | By Vendor |  |
|  | Allowable Voltage Range | By Vendor |  |
|  | Normal Float Charge Voltage | By Vendor |  |
|  | Max Boost Charge Voltage | By Vendor |  |
|  | Efficiency | ≥ 90% |  |
|  | Maximum Heat Dissipation | By Vendor |  |
| **BATTERY** | | | |
|  | Type of Batteries (IEC60623) | Nickel-Cadmium (SBM type) | D02 |
|  | Capacity of battery bank (Ah) | 231 Ah (Shall be finalized by Vendor) |  |
|  | Backup Time | 2 Hours |  |
|  | Country of Origin/Company | Europe/SAFT or ALCAD |  |
|  | Date of Manufacture | By Vendor |  |
|  | Battery Internal Resistance | By Vendor |  |
|  | No's Of Battery Cells For Each Bank | 92 (Shall be finalized by Vendor) |  |
|  | Battery House | Rack |  |
|  | Type of Battery Rack/Cabinet | Wooden or Plastic /Epoxy Coated Steel  Anti-Seismic |  |
|  | No's. Of Battery Bank (100%) | 2 Set |  |
|  | Re-charging time to 90% Rated Capacity | 8 Hours |  |
|  | Battery Nominal Voltage Per Cell | 1.2V |  |
|  | Battery Final Voltage Per Cell | 1.136 V/cell |  |
| **INVERTER** | | | |
|  | Power Rating | 7.55 kVA (Will be Finalized by Vendor) | D02 |
|  | Output Voltage | 110VAC |  |
|  | Output Voltage Regulation | ± 1% in Steady State |  |
|  | Output Voltage Unbalance (At 100% Unbalanced Load) | < 1% |  |
|  | Output Frequency & Variation | 50Hz ± 1% |  |
|  | Output Frequency Regulation | ± 1% in Steady State |  |
|  | Maximum VOut Harmonic Distortions (THD %) | Max. 5% (for Linear & Nonlinear Loads) |  |
|  | Rated Output Current (Amp) | By Vendor |  |
|  | No. of Inverter (100%) | 2 Set |  |
|  | Type Of Inverter | True Online Double Conversion Technology  pure Sine Wave IGBT Technology |  |
|  | Transformer Base Technology | Required |  |
|  | Fast Fuse Protection For IGBT Bridge | Required |  |
|  | Max .Allowable Current | By Vendor |  |
|  | Efficiency (Min) | > 90% |  |
|  | Maximum Heat Dissipation | By Vendor |  |
|  | Type of Frequency Synchronizer | By Vendor |  |
|  | High Crest Factor | Min 3:1 |  |
| **BYPASS ISOLATING TRANSFORMER** | | | |
|  | Type of Transformer | Double Wound Dry Type Air Cooled |  |
|  | Input / Output Voltage | Input: 400 V  Output: 110 VAC, 50 Hz |  |
|  | Bypass Transformer KVA Rating | 7.55 kVA |  |
|  | Short Circuit Impedance | Less than 4% |  |
|  | Stabilizer (Servo Control With Galvanic  Isolation) | Required |  |
|  | Stabilizer Short Circuit Capacity | At Least 1000% for 100ms |  |
|  | Stabilizer Static Output Voltage Tolerance | Less than + 2% with V Mains +15% |  |
|  | Stabilizer Short Circuit Impedance | Less Than 6% |  |
|  | Stabilizer Phase Shift From Input to Output | Zero |  |
| **INVERTER/MAINS STATIC SWITCH** | | | |
|  | Inverter Static Switch Type | Thyristor (S.R.V) |  |
|  | Inverter Static Switch Rated Current (Continuous) | ≥105% of Rated Output Current of UPS |  |
|  | Inverter Over Load Capability on Static Switch | >200 % For 100ms  >150 % For 1Min  >125 % For 10Min |  |
|  | Transfer the Inverter Output Voltage | Below 90% of the Nominal Output Voltage Exceeds 110% of the Nominal Output Voltage |  |
|  | Re-transfer of the Load From the Static Bypass to the Inverter | The inverter output voltage is within ± 5% of the nominal output voltage for more than 3 seconds. |  |
|  | Inverter/Mains Switching Transfer Time | 1/5 Period Of a Cycle |  |
|  | Mains Static Switch Type | Thyristor (S.C.R) |  |
|  | Mains Static Switch Rated Current (Continuous) | 200% of Rated Output Current of UPS |  |
|  | Mains Over Load Capability on Static Switch | >200 % For 100ms  >150 % For 1Min  >125 % For 10Min |  |
|  | Requirements for EMC ( IEC 62040-2) | Required |  |
|  | An earth bar, with a suitable number of earthing bolts or screws | Required |  |
| **MANUAL BYPASS SWITCH** | | | |
|  | Rated Current | 110% Rated Output Current of UPS System |  |
|  | Maintenance Bypass (Make Before Beak) | Required |  |
|  | Over Load Capability | > 1000% For 100ms |  |
|  | Allowable Over Current (1 Sec) | By Vendor |  |
| **AC DISTRIBUTION BOARD** | | | |
|  | Protection Degree | IP42 |  |
|  | Feeder Quantity | According to “BK-W007S-PEDCO-110-EL-SL-0002” |  |
|  | Incoming Type (IEC 60947) | MCCB, (Shall be finalized by vendor) |  |
| **ACCESSORIES & PROTECTION** | | | |
|  | Incoming Cable | According to “BK-W007S-PEDCO-110-EL-LI-0002” |  |
|  | Cable Type | CU/XLPE/SWA/PVC |  |
|  | Earth Bar | Required |  |
|  | Cable Entry and Accessories | Required |  |
|  | Current Limiting Device Setting | Required |  |
| **ALARMS** | | | |
|  | AC input supply failure | Required |  |
|  | Rectifier failure | Required |  |
|  | DC voltage low/high | Required |  |
|  | DC earth fault | Required |  |
|  | Battery discharging | Required |  |
|  | Battery disconnected | Required |  |
|  | Inverter failure | Required |  |
|  | Inverter over loaded | Required |  |
|  | Inverter over temperature | Required |  |
|  | AC output voltage low/high | Required |  |
|  | Output frequency low/high | Required |  |
|  | Ventilation failure &high temp | Required |  |
| **METERING DEVICE** | | | |
|  | DC/AC Ammeter | Required |  |
|  | DC/AC Voltmeter | Required |  |
|  | Bypass/inverter/Load Frequency Meter | Required |  |
|  | Remote Signals | Required |  |
|  | Serial Communication Capability | RS 485 |  |
|  | Fixing Bolt & nuts | Required |  |
|  | Lifting lug | Required |  |
|  | On load break switch-fuse For Batteries | Required  (For UPS DC Bus and Exd Type for Battery room) |  |
| **TESTS (FAT & SAT SHALL BE PERFORMED BY THE VENDOR)** | | | |
|  | Visual Inspection & Dimensional Check | Required |  |
|  | Performance and Function Test | Required |  |
|  | Sequence, Operation and Logic Test | Required |  |
|  | Dielectric Strength Test | Required |  |
|  | Output Voltage Wave Form and THD% Check | Required |  |
|  | Charger Voltage Adjustment Test | Required |  |
|  | Transfer Time Test | Required |  |
|  | Output Regulation / Adjustments Test | Required |  |
|  | Alarms Check | Required |  |
|  | Autonomy Test | Required |  |
|  | Overload /Short Circuit Test | Required |  |
|  | Short Circuit test | Required |  |
| Notes:   * Other Tests shall be performed in Accordance with IEC60146 & IEC62040-3 * The Accuracy of all meters shall be better than 1.5% | | | |
| **ACCESSORIES & SPECIAL TOOLS** | | | |
|  | MIMIC Diagram With LED To Show Operation Condition | Required |  |
|  | Hardware and Software for Communication  Programming or Setting the CPU or MPU  Boards, | Required |  |
|  | Automatic battery test and failure alarm | Required |  |
|  | Hot and Cold standby unlimited systems | Required |  |
|  | IGBT technology | Required |  |
|  | Low noise and heat rejection | Required |  |
|  | Commissioning and two years spare parts | Required |  |

**Notes*:***

1. AC UPS should be of dual parallel active load share type, including 2x 100% charger, 2x 100% Inverter, 1x 100% bypass transformer-stabilizer (servo control with galvanic isolation), two Exd IIC T3 switch-fuse for batteries, 2x 100% battery bank (92 Cell), commissioning and two years spare parts.
2. UPS shall be compatible with 380/400/440V AC options of input voltage.
3. The UPS shall be provided with a standard RS485 connection facility. Where specified by the Principal, it shall be also possible to connect the UPS, via either a RS485 or fiber optic link to a DCS or SCADA system for selected analogue and digital data to be made available to a higher-level controller. The communication shall function utilizing standard MODBUS protocol (master/slave).

* SNMP: Interface for remote monitoring and control via PC
* PBM: Progress Battery Management (PBM) with temperature compensation
* APM: Advanced Power Management (APM) - automated auto start of systems connected as a single system (APM) with an increase in load. Any combination of parallel, hot or cold standby

D02

* EPO: Emergency power off

1. In basic document, the rated power is 15 kw, therefore charger shall be considered 15 kw by vendor.
2. Since 1.5 Kw of 110 VAC UPS will supply 24 VDC existing marshalling system, therefore according to “UPS Single Line Diagram - Extension of Binak B/C Manifold (BK-W007S-PEDCO-110-EL-SL-0002)” a convertor 110 VAC to 24 VDC shall be considered by vendor. This convertor will be installed in existing control panel by vendor.