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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | |
| **DATA SHEETS FOR UPS**    **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | |
|  |  |  |  |  |  |  |
| D03 | May.2023 | AFC | H.Shakiba | M.Fakharian | A.M.Mohseni |  |
| D02 | Jul.2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D01 | Apr.2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D00 | Dec.2021 | IFC | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| **Rev.** | **Date** | **Purpose of Issue/Status** | **Prepared by:** | **Checked by:** | **Approved by:** | **Client Approval** |
| **Class: 1** | | **Client Doc. Number: F0Z-709018** | | | | |
| **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 | X |  | **51** |  |  |  |  |  |
| **2** | X | X | X | X |  | **52** |  |  |  |  |  |
| **3** | X | X | X | X |  | **53** |  |  |  |  |  |
| **4** | X | X |  | X |  | **54** |  |  |  |  |  |
| **5** | X | X | X | X |  | **55** |  |  |  |  |  |
| **6** | X | X |  | X |  | **56** |  |  |  |  |  |
| **7** | X | X |  |  |  | **57** |  |  |  |  |  |
| **8** | X | X |  |  |  | **58** |  |  |  |  |  |
| **9** |  | X |  |  |  | **59** |  |  |  |  |  |
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| **TECHNICAL DATA FOR AC-UPS IN GCS** | | |
| Vendor’s Name: | Location | Binak Oilfield in Bushehr Province |
| Tag No.(s): GCS-110-UPS-001, GCS-110-UPS-002 | Min. Design Temperature | -5°C |
| App. Document(s): | Max. Design Temperature | +52°C |
| Reference Documents:   1. " Electrical System Design Criteria ",   Doc. No.: " BK-GNRAL-PEDCO-000-EL-DC-0001 "   1. "Specification for UPS System",   Doc. No.: " BK-GNRAL-PEDCO-000-EL-SP-0003 "   1. " Calculation Note For UPS System   Doc. No.: " BK-GCS-PEDCO-120-EL-CN-0004 "   1. " UPS Single Line Diagram ",   Doc. No.: " BK-GCS-PEDCO-120-EL-SL-0005 " | Max. Sun Temperature | +85°C |
| Max. Relative Humidity | 85% |
| Mean Sea Level | 12.5 m Above Sea Level |
| Seismic Acceleration | 0.3g |
| Hazardous Area classification | Safe Area |
| Atmosphere | Tropical & Dusty Hot Atmosphere |

| **Item** | **Description** | **Required** | **Vendor Data** |
| --- | --- | --- | --- |
| **GENERAL** | | | |
|  | Applicable Code & Standard | IEC 62040,IPS-M-EL-176(2),IPS-E-EL-100(1) |  |
|  | Electromagnetic Compatibility | As per IEC 62040-2 |  |
|  | Service | 110 VAC UPS Control Room requirements |  |
|  | Installation | Indoor | D04 |
|  | Rated Input (Note 2) | 380/400/440VAC±10%, 3 phases, 3 wires , f=50Hz ±5% |  |
|  | Rated Output | 110 VAC ± 1% |  |
|  | Rated Power | 40 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** | | | |
|  | Load Consumption | 40KVA | D04 |
|  | Load Description | Instrument, PLC, DCS, Work Stations, Printers |  |
|  | 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 | 16 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) |  |
|  | Capacity of battery bank (Ah) | 1220 AH  (Shall be finalized by Vendor) | D04 |
|  | Backup Time | 2hr |  |
|  | 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 | 40 kVA (Will be Finalized by Vendor) | D04 |
|  | 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 | D04 |
|  | Input / Output Voltage | Input: 400 V  Output: 110 V ac, 50 Hz |  |
|  | Bypass Transformer KVA Rating | 40 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-GCS-PEDCO-120-EL-SL-0005” |  |
|  | Incoming Type (IEC 60947) | MCCB, (Shall be finalized by vendor) |  |
| **ACCESSORIES & PROTECTION** | | | |
|  | Incoming Cable | According to “BK-GCS-PEDCO-120-EL-CN-0003” |  |
|  | 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
* EPO: Emergency power off