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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | |
| **DATA SHEETS FOR CAPACITOR BANK**  **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | |
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| D01 | Jul. 2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D00 | REV. 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-709024** | | | | |
| **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 |  |  |  | **51** |  |  |  |  |  |
| **2** | X | X |  |  |  | **52** |  |  |  |  |  |
| **3** | X | X |  |  |  | **53** |  |  |  |  |  |
| **4** | X | X |  |  |  | **54** |  |  |  |  |  |
| **5** | X | X |  |  |  | **55** |  |  |  |  |  |
| **6** | X | X |  |  |  | **56** |  |  |  |  |  |
| **7** | X | X |  |  |  | **57** |  |  |  |  |  |
| **8** | X | X |  |  |  | **58** |  |  |  |  |  |
| **9** |  | X |  |  |  | **59** |  |  |  |  |  |
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| **DATA SHEETS FOR MV CAPACITOR BANK OF GAS COMPRESSOR** | | | |
| --- | --- | --- | --- |
| **Item** | **Description** | **Purchaser Requirement** | **Manufacturer Data** |
| **1- General Information** | | | |
|  | Quantity | 1 Set for Each Gas Compressor (Note 1) |  |
|  | Tag Numbers | CB01~ CB03 |  |
|  | Applicable Standards | IEC 60831  IPS-M-EL-181(2)  IPS-M-EL-144(4) |  |
|  | Manufacturer's Name | By Vendor |  |
| **2- Environmental** **Conditions** | | | |
|  | Location | Binak Oilfield in Busheher Province |  |
|  | Hazardous Area Classification | Safe | D01 |
|  | Max. Outdoor Ambient Temperature | 52°C |  |
|  | Minimum Indoor Ambient Temp. | 5°C |  |
|  | Maximum Indoor Relative Humidity | 100% |  |
|  | Altitude (Above Sea Level) | 12.5 m |  |
|  | Seismic Factor | Zone 3 |  |
|  | Installation | Indoor |  |
| **3- Electrical Data** | | | |
|  | System Voltage | 11KV AC ±10% |  |
|  | System Frequency | 50 Hz ±5% |  |
|  | No. of Phases | 3 |  |
|  | Control Voltage | 230 VAC |  |
|  | Space Heater Voltage | 230 VAC |  |
|  | Bus-Bar Rated Current | 630A |  |
|  | Short Time Withstand Current | 25 kA, 1 Sec. |  |
|  | Bus-Bars Material | Heat Shrink Copper |  |
|  | Bus-Bars Joints | Silver Plated |  |
| **4- Enclosure Data** | | | |
|  | Enclosure Type | Cabinet Mounted Capacitor |  |
|  | Degree of Protection | IP 42 |  |
|  | Cable Entry | Bottom (by Cable Gland) |  |
|  | Type & Size of Power Cable | According to “BK-GCS-PEDCO-120-EL-CN-0003”  ( 3C×95 mm2  CU/XLPE/SWA/PVC ) |  |
|  | Control Cable | 2×(5C×2.5 mm2) for Current & Voltage Sample |  |
|  | Material | Painted Sheet Steel |  |
|  | Color | RAL 7032 |  |
|  | Dimensions (HxWxD) | By Vendor |  |
|  | Sheet Steel Thickness (Body/Frame) | 2mm/2.5mm |  |
|  | Weight | By Vendor |  |
| **5- Capacitors** | | | |
|  | Capacitor Manufacturer/Model No. | By Vendor |  |
|  | Rating of each Capacitor Bank | 500 Kvar |  |
|  | Capacitor Bank Rated Current | By Vendor |  |
|  | Capacitor Bank Rated Voltage | 11 KV |  |
|  | Capacitor Bank Connection Type | Star |  |
|  | Capacitor Bank Rated Capacitance (µF) | By Vendor |  |
|  | Capacitance Variation (µF/ºC) | By Vendor |  |
|  | Capacitor Unit Rated Voltage | By Vendor |  |
|  | Capacitor Unit Temp. Category | -5/D |  |
|  | Capacitor Unit Insulating medium | By Vendor |  |
|  | Capacitor Unit Electrode Material | By Vendor |  |
|  | Capacitor Unit Dielectric Material | By Vendor |  |
|  | Capacitor Unit Case Material | Aluminum |  |
|  | Capacitor Unit Discharge Resistor (Ω) | By Vendor |  |
|  | Capacitor Unit Discharge time (to 75V) | <10 Minutes |  |
| **6- Control Unit (Regulator)** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Mode of Operation | Automatic & Manual |  |
|  | Number of Steps | By Vendor |  |
|  | Selector Switch | Auto/Off/Manual  Selector Switch For Each Step |  |
| **7- Fuses** | | | |
|  | Manufacturer / type | By Vendor |  |
|  | Rated Voltage | 11 KV |  |
|  | Service Voltage | 11 KV±10% |  |
|  | Rated Frequency | 50Hz±5% |  |
| **8- Contactors** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Rated Voltage | 12 KV AC |  |
|  | Service Voltage | 11 KV AC |  |
| **9- Incoming Circuit Breaker** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Type | VCS & HRC Fuse, Fixed Type |  |
|  | Rated Current | 630A |  |
|  | Rated Short Circuit Breaking Current | 25 KA |  |
|  | Rated Insulation Voltage | 12 KV AC |  |
|  | Service Voltage | 11 KV |  |
|  | Internal Protections | 49, 50, 51 |  |
|  | Voltage Protection | 110 DC |  |
|  | Trip and Status aux. switches | Yes |  |
| **10- Voltmeter with Selector Switch** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Operating Range | 0 -12 KV |  |
|  | Accuracy Class | 1.5 |  |
| **11- Accessories** | | | |
|  | Panel Lighting & Space Heater with Thermostat | Yes |  |
|  | Door Key | Yes |  |
|  | Gland Plate | Yes |  |
|  | Terminal Lugs | Yes |  |
|  | Commissioning spare parts | Yes |  |
|  | Two year operation spare parts | Yes |  |
|  | Routine test | Witnessed and Report |  |
|  | Type test certificate | Certificate |  |

Note 1: According to “Existent MV Switchgear Expansion Single Line Diagram (BK-GCS-PEDCO-120-EL-SL-0003)”, there is one individual capacitor bank on each of 3 gas compressors.

Note 2: According to “Electrical Typical Schematic Diagrams For MV panel (BK-GCS-PEDCO-120-EL-DG-0001–D03)”: “Control circuit voltage for outgoing is 230 VAC which will be supplied for each LV cubicle. In other words for each LV cubicle one isolated dry type transformer shall be considered by vendor”. Therefore vendor shall consider one isolated dry type transformer for capacitor panel.

| **DATA SHEETS FOR LV CAPACITOR BANK OF GCS-400-NSWG** | | | |
| --- | --- | --- | --- |
| **Item** | **Description** | **Purchaser Requirement** | **Manufacturer Data** |
| **1- General Information** | | | |
|  | Quantity | 1 Set for Each LV Switchgear (Note 2) |  |
|  | Tag Numbers | CB01 & CB02 |  |
|  | Applicable Standards | IEC 60831  IPS-M-EL-181(2)  IPS-M-EL-143(3) |  |
|  | Manufacturer's Name | By Vendor |  |
| **2- Environmental** **Conditions** | | | |
|  | Location | Binak Oilfield in Busheher Province |  |
|  | Hazardous Area Classification | Safe | D01 |
|  | Max. Outdoor Ambient Temperature | 52°C |  |
|  | Minimum Indoor Ambient Temp. | 5°C |  |
|  | Maximum Indoor Relative Humidity | 100% |  |
|  | Altitude (Above Sea Level) | 12.5 m |  |
|  | Seismic Factor | Zone 3 |  |
|  | Installation | Indoor |  |
| **3- Electrical Data** | | | |
|  | System Voltage | 400V AC ±10% |  |
|  | System Frequency | 50 Hz ±5% |  |
|  | No. of Phases | 3 |  |
|  | Control Voltage | 230 VAC |  |
|  | Space Heater Voltage | 230 VAC |  |
|  | Bus-Bar Rated Current | 315A |  |
|  | Short Time Withstand Current | 31.5 kA, 1 Sec. |  |
|  | Bus-Bars Material | Heat Shrink Copper |  |
|  | Bus-Bars Joints | Silver Plated |  |
| **4- Enclosure Data** | | | |
|  | Enclosure Type | Free Standing/Fixed Type / Front Access |  |
|  | Degree of Protection | IP 42 |  |
|  | Cable Entry | Bottom (by Cable Gland) |  |
|  | Type & Size of Power Cable | According to “BK-GCS-PEDCO-120-EL-CN-0003”  ( 4C×120 mm2  CU/XLPE/SWA/PVC ) |  |
|  | Control Cable | 2×(5C×2.5 mm2) for Current & Voltage Sample |  |
|  | Material | Painted Sheet Steel |  |
|  | Color | RAL 7032 |  |
|  | Dimensions (HxWxD) | By Vendor |  |
|  | Sheet Steel Thickness (Body/Frame) | 2mm/2.5mm |  |
|  | Weight | By Vendor |  |
| **5- Capacitors** | | | |
|  | Capacitor Manufacturer/Model No. | By Vendor |  |
|  | Rating of each Capacitor Bank | 120Kvar = 1x20Kvar Fix  + 5x20Kvar |  |
|  | Capacitor Bank Rated Current | By Vendor |  |
|  | Capacitor Bank Rated Voltage | 400V |  |
|  | Capacitor Bank Connection Type | Delta |  |
|  | Capacitor Bank Rated Capacitance (µF) | By Vendor |  |
|  | Capacitance Variation (µF/ºC) | By Vendor |  |
|  | Capacitor Unit Rated Voltage | By Vendor |  |
|  | Capacitor Unit Temp. Category | -5/D |  |
|  | Capacitor Unit Insulating medium | By Vendor |  |
|  | Capacitor Unit Electrode Material | By Vendor |  |
|  | Capacitor Unit Dielectric Material | By Vendor |  |
|  | Capacitor Unit Case Material | Aluminum |  |
|  | Capacitor Unit Discharge Resistor (Ω) | By Vendor |  |
|  | Capacitor Unit Discharge time (to 75V) | <3 Minutes |  |
| **6- Control Unit (Regulator)** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Mode of Operation | Automatic & Manual |  |
|  | Number of Steps | 5 Steps |  |
|  | Selector Switch | Auto/Off/Manual  Selector Switch For Each Step |  |
| **7- Fuses** | | | |
|  | Manufacturer / type | By Vendor |  |
|  | Rated Voltage | 500V |  |
|  | Service Voltage | 400V±10% |  |
|  | Rated Frequency | 50Hz±5% |  |
| **8- Contactors** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Rated Voltage | 690V AC |  |
|  | Service Voltage | 400V AC |  |
|  | Coil Voltage | 230 VAC (Note 2) |  |
|  | Duty | AC6-b |  |
| **9- Incoming Circuit Breaker** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Type | MCCB, 4Pole, Fixed Type |  |
|  | Rated Current | 315A |  |
|  | Rated Short Circuit Breaking Current | 31.5 kA |  |
|  | Rated Insulation Voltage | 690 VAC |  |
|  | Service Voltage | 400V |  |
|  | Internal Protections | 49, 50, 51 |  |
|  | Voltage Protection | 230 VAC |  |
|  | Trip and Status aux. switches | Yes |  |
| **10- Voltmeter with Selector Switch** | | | |
|  | Manufacturer / Type | By Vendor |  |
|  | Operating Range | 0 -500V |  |
|  | Accuracy Class | 1.5 |  |
| **11- Accessories** | | | |
|  | Panel Lighting & Space Heater with Thermostat | Yes |  |
|  | Door Key | Yes |  |
|  | Gland Plate | Yes |  |
|  | Terminal Lugs | Yes |  |
|  | Commissioning spare parts | Yes |  |
|  | Two year operation spare parts | Yes |  |
|  | Routine test | Witnessed and Report |  |
|  | Type test certificate | Certificat |  |

Note 1: According to “LV Switchgear/MCC Single Line Diagram (BK-GCS-PEDCO-120-EL-SL-0002)”, there is a 120 KVAR capacitor bank on each GCS-400-NSWG-0001A & B.

Note 2: According to “Electrical Typical Schematic Diagrams For LV panel (BK-GCS-PEDCO-120-EL-DG-0002–D03)”: “Control circuit voltage for outgoing is 230 VAC which will be supplied for each LV cubicle. In other words for each LV cubicle one isolated dry type transformer shall be considered by vendor”. Therefore vendor shall consider one isolated dry type transformer for capacitor panel.