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| **طرح نگهداشت و افزایش تولید 27 مخزن** | | | | | | | |
| **DATA SHEETS FOR POWER & CONTROL CABLES**    **نگهداشت و افزایش تولید میدان نفتی بینک** | | | | | | | |
|  |  |  |  |  |  |  |
| D03 | Apr. 2023 | AFC | H.Shakiba | M.Fakharian | A.M.Mohseni |  |
| D02 | Jul. 2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D01 | May. 2022 | IFA | H.Shakiba | M.Fakharian | M.Mehrshad |  |
| D00 | Feb. 2022 | 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-709027** | | | | |
| **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 |  |  | **53** |  |  |  |  |  |
| **4** | X | X |  |  |  | **54** |  |  |  |  |  |
| **5** | X | X |  |  |  | **55** |  |  |  |  |  |
| **6** | X | X | X |  |  | **56** |  |  |  |  |  |
| **7** | X | X |  |  |  | **57** |  |  |  |  |  |
| **8** | X | X |  |  |  | **58** |  |  |  |  |  |
| **9** | X | X | X |  |  | **59** |  |  |  |  |  |
| **10** | X | X |  |  |  | **60** |  |  |  |  |  |
| **11** | X | X |  |  |  | **61** |  |  |  |  |  |
| **12** |  |  |  |  |  | **62** |  |  |  |  |  |
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| **Technical Data Sheet for MV Power Cables** | | | |
| --- | --- | --- | --- |
| **ITEM** | **DESCRIPTION** | **REQUIREMENT** | **SUPPLIER'S DATA** |
| **1** | **SITE CONDITION** | | |
| 1.1 | Location | Binak Oilfield in Bushehr Province |  |
| 1.2 | Max. Outdoor Ambient Temperature | 52°C |  |
| 1.3 | Min. Outdoor Ambient Temperature | 5°C |  |
| 1.4 | Direct Sunlight Temperature | 85°C |  |
| 1.5 | Maximum Relative Outdoor Humidity | 100% |  |
| 1.6 | Altitude | 12.5 m Above Sea Level |  |
| 1.7 | Installation Method | Direct Buried Cable |  |
| **2** | **GENERAL** | | |
| 2.1 | Cable Type | MV Power Cable |  |
| 2.2 | Brief Description (Number of Core) | By Vendor |  |
| 2.3 | Abbreviated Description (Note 1) | CU/SC/XLPE/BD/LSH/BD/SWA/PVC |  |
| 2.4 | Manufacturer | By Vendor |  |
| 2.5 | Manufacturer Type | By Vendor |  |
| 2.6 | Country | By Vendor |  |
| 2.7 | Standard | IEC 60502, IPS-M-EL-272 (2) |  |
| 2.8 | Supply Rated Voltage U0/U [KV] | 1.8/3 - 6/10 KV |  |
| 2.9 | Cable Rated Voltage U0/U(Um) [KV] | 1.8/3 (3.6) - 6/10 (12) KV |  |
| 2.10 | System Frequency | 50 Hz |  |
| 2.11 | Quantity | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.12 | Length[m] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.13 | Number of Drums | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| **3** | **CONSTRUCTION** | | |
| 3.1 | Conductor Material | Plain Annealed Stranded Copper |  |
| 3.2 | Conductor Cross Section [mm2] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.3 | Conductor Construction | Solid |  |
| Circular Stranded S<=25mm |  |
| Shaped Stranded S>=35mm |  |
| Compressed Circular Stranded |  |
| 3.4 | Maximum Conductor Temperature | 90°C (for XLPE Insulation) |  |
| 70°C (for PVC Insulation) |  |
| 3.5 | Maximum Conductor Temperature - Short Circuit | 250°C (for XLPE Insulation) |  |
| 160°C (for PVC Insulation) |  |
| 3.6 | Conductor Class | Class 2 |  |
| 3.7 | Number of Cores | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.8 | Core Insulation Material | XLPE |  |
| 3.9 | Core Insulation Thickness [mm] | By Vendor |  |
| 3.10 | Core Insulation Colors/Marking | Red, Yellow & Blue |  |
| 3.11 | Screen Material | Copper |  |
| 3.12 | Screen Cross Section | 16 or 25 |  |
| 3.13 | Filler Type | PVC |  |
| 3.14 | Bedding (Inner Sheath) Material | Extruded PVC |  |
| 3.15 | Bedding Thickness | By Vendor |  |
| 3.16 | Lead Sheath Thickness | By Vendor (Considered for Process Area) |  |
| 3.17 | Under armor diameter of cable | VTA |  |
| 3.18 | Armor Type & Material | Galvanized Steel Wire for Multicore, Aluminum Wire for Single Cores |  |
| 3.19 | Armor Wire Diameter [mm] | By Vendor |  |
| 3.20 | Armor Coverage | Min.90% |  |
| 3.21 | Jacket (Outer Sheath) Material | Extruded PVC |  |
| 3.22 | Jacket Thickness[mm] | By Vendor |  |
| 3.23 | Jacket Color | Red |  |
| 3.24 | Diameter Under Armor [mm] | By Vendor |  |
| 3.25 | Overall Diameter [mm] | By Vendor |  |
| 3.26 | Minimum Bending Radius | By Vendor |  |
| 3.27 | Diameter Over Lead Sheath [mm] | By Vendor |  |
| 3.28 | Cable Marking | By Vendor |  |
| 3.29 | Repeating Length [m] | 1m |  |
| 3.30 | Marking Items | By Vendor |  |
| No. of Cores |  |
| Rated Voltage |  |
| Size of Conductor |  |
| Type of Insulation |  |
| Applicable Standard |  |
| Year of Manufacture |  |
| **4** | **ELECTRICAL CHARACTERISTICS** | | |
| 4.1 | DC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.2 | AC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.3 | AC Resistance of Conductor at 70°C [Ω/Km] | By Vendor |  |
| 4.4 | DC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.5 | AC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.6 | Phase Reactance [Ω/Km] | By Vendor |  |
| 4.7 | Ampacity at 20°C /2.5 Km /W Soil[A] | By Vendor |  |
| 4.8 | Ampacity at 30°C Free Air [A] | By Vendor |  |
| **5** | **MECHANICAL CHARACTERISTICS** | | |
| 5.1 | Maximum Insulation Temperature: | By Vendor |  |
| 5.2 | At Continuous Rating [°C ] | By Vendor |  |
| 5.3 | At Short Circuit [°C ] | By Vendor |  |
| 5.4 | Cable Weight [Kg/Km] | By Vendor |  |
| **6** | **DRUM CHARACTERISTICS** |  |  |
| 6.1 | Dimension[mm] | By Vendor |  |
| 6.2 | Drum Type No. | By Vendor |  |
| 6.3 | Cable Length Per Drum[m] | By Vendor |  |
| 6.4 | Drum Weight [Kg] | By Vendor |  |
| 6.5 | Material | By Vendor |  |
| **7** | **TEST ITEMS** | | |
| 7.1 | Routine Tests: (as minimum)   * Conductor Resistance Measurement * High Voltage Power Frequency Test * Insulation Resistance Measurement * Partial Discharge Test | Yes  By Vendor |  |

Note 1: Specification of each cable will be indicated in “BK-GCS-PEDCO-120-EL-LI-0002”.

| **Technical Data Sheet for LV Power Cables** | | | |
| --- | --- | --- | --- |
| **ITEM** | **DESCRIPTION** | **REQUIREMENT** | **SUPPLIER'S DATA** |
| **1** | **SITE CONDITION** | | |
| 1.1 | Location | Binak Oilfield in Bushehr Province |  |
| 1.2 | Max. Outdoor Ambient Temperature | 52°C |  |
| 1.3 | Min. Outdoor Ambient Temperature | 5°C |  |
| 1.4 | Direct Sunlight Temperature | 85°C |  |
| 1.5 | Maximum Relative Outdoor Humidity | 100% |  |
| 1.6 | Altitude | 12.5 m Above Sea Level |  |
| 1.7 | Installation Method | Direct Buried Cable |  |
| **2** | **GENERAL** | | |
| 2.1 | Cable Type | LV Power Cable |  |
| 2.2 | Brief Description (Number of Core) | By Vendor |  |
| 2.3 | Abbreviated Description (Note 2) | CU/XLPE (or PVC) /BD/LSH/BD/SWA/PVC |  |
| 2.4 | Manufacturer | By Vendor |  |
| 2.5 | Manufacturer Type | By Vendor |  |
| 2.6 | Country | By Vendor |  |
| 2.7 | Standard | IEC 60502, IPS-M-EL-271(2) |  |
| 2.8 | Supply Rated Voltage U0/U [V] | 0.6/1 KV |  |
| 2.9 | Cable Rated Voltage U0/U(Um) [KV] | 0.6/1 (1.2) KV |  |
| 2.10 | System Frequency | 50 Hz |  |
| 2.11 | Quantity | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.12 | Length[m] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.13 | Number of Drums | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| **3** | **CONSTRUCTION** | | |
| 3.1 | Conductor Material | Plain Annealed Stranded Copper |  |
| 3.2 | Conductor Cross Section [mm2] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.3 | Conductor Construction | Solid |  |
| Circular Stranded S<=25mm |  |
| Shaped Stranded S>=35mm |  |
| Compressed Circular Stranded |  |
| 3.4 | Maximum Conductor Temperature | 90°C (for XLPE Insulation) |  |
| 70°C (for PVC Insulation) |  |
| 3.5 | Maximum Conductor Temperature - Short Circuit | 250°C (for XLPE Insulation) |  |
| 160°C (for PVC Insulation) |  |
| 3.6 | Conductor Class | Class 2 |  |
| 3.7 | Number of Cores | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.8 | Core Insulation Material | XLPE (or PVC if Specified in Cable List) |  |
| 3.9 | Core Insulation Thickness [mm] | By Vendor |  |
| 3.10 | Core Insulation Colors/Marking | By Vendor |  |
| 3.11 | Phase Conductors | Red, Yellow and Blue |  |
| 3.12 | For AC Neutral or Other Connections | Black |  |
| 3.13 | For Two Core Cable (DC) | Positive: Red , Negative: Black |  |
| 3.14 | Lead Sheath Thickness | By Vendor (Considered for Process Area) |  |
| 3.15 | Diameter Over Lead Sheath [mm] | By Vendor |  |
| 3.16 | Armor Type & Material | Galvanized Steel Wire for Multicore, Aluminum Wire for Single Cores |  |
| 3.17 | Armor Wire Diameter [mm] | By Vendor |  |
| 3.18 | Bedding Type | Extruded PVC |  |
| 3.19 | Filler Type | PVC |  |
| 3.20 | Jacket (Outer Sheath) Material | Extruded PVC |  |
| 3.21 | Jacket Thickness[mm] | By Vendor |  |
| 3.22 | Jacket Color | Black |  |
| 3.23 | Diameter Under Armor [mm] | By Vendor |  |
| 3.24 | Overall Diameter [mm] | By Vendor |  |
| 3.25 | Minimum Bending Radius | By Vendor |  |
| 3.26 | Cable Marking | By Vendor |  |
| 3.27 | Repeating Length [m] | 1m |  |
| 3.28 | Marking Items | By Vendor |  |
| No. of Cores |  |
| Rated Voltage |  |
| Size of Conductor |  |
| Type of Insulation |  |
| Applicable Standard |  |
| Year of Manufacture |  |
| **4** | **ELECTRICAL CHARACTERISTICS** | | |
| 4.1 | DC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.2 | AC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.3 | AC Resistance of Conductor at 70°C [Ω/Km] | By Vendor |  |
| 4.4 | DC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.5 | AC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.6 | Phase Reactance [Ω/Km] | By Vendor |  |
| 4.7 | Ampacity at 20°C /2.5 Km /W Soil[A] | By Vendor |  |
| 4.8 | Ampacity at 30°C Free Air [A] | By Vendor |  |
| **5** | **MECHANICAL CHARACTERISTICS** | | |
| 5.1 | Maximum Insulation Temperature: | By Vendor |  |
| 5.2 | At Continuous Rating [°C ] | By Vendor |  |
| 5.3 | At Short Circuit [°C ] | By Vendor |  |
| 5.4 | Cable Weight [Kg/Km] | By Vendor |  |
| **6** | **DRUM CHARACTERISTICS** |  |  |
| 6.1 | Dimension[mm] | By Vendor |  |
| 6.2 | Drum Type No. | By Vendor |  |
| 6.3 | Cable Length Per Drum[m] | By Vendor |  |
| 6.4 | Drum Weight [Kg] | By Vendor |  |
| 6.5 | Material | By Vendor |  |
| **7** | **TEST ITEMS** | | |
| 7.1 | Routine Tests: (as minimum)   * Conductor Resistance Measurement * High Voltage Power Frequency Test * Insulation Resistance Measurement | By Vendor |  |

Note 2: Specification of each cable will be indicated in “BK-GCS-PEDCO-120-EL-LI-0002”.

| **Technical Data Sheet for LV Control Cables** | | | |
| --- | --- | --- | --- |
| **ITEM** | **DESCRIPTION** | **REQUIREMENT** | **SUPPLIER'S DATA** |
| **1** | **SITE CONDITION** | | |
| 1.1 | Location | Binak Oilfield in Bushehr Province |  |
| 1.2 | Max. Outdoor Ambient Temperature | 52°C |  |
| 1.3 | Min. Outdoor Ambient Temperature | 5°C |  |
| 1.4 | Direct Sunlight Temperature | 85°C |  |
| 1.5 | Maximum Relative Outdoor Humidity | 100% |  |
| 1.6 | Altitude | 12.5 m Above Sea Level |  |
| 1.7 | Installation Method | Direct Buried Cable |  |
| **2** | **GENERAL** | | |
| 2.1 | Cable Type | LV Control Cable |  |
| 2.2 | Brief Description (Number of Core) | By Vendor |  |
| 2.3 | Abbreviated Description (Note 3) | CU/XLPE (or PVC) /BD/SWA/PVC |  |
| 2.4 | Manufacturer | By Vendor |  |
| 2.5 | Manufacturer Type | By Vendor |  |
| 2.6 | Country | By Vendor |  |
| 2.7 | Standard | IEC 60502, IPS-M-EL-271(2) |  |
| 2.8 | Supply Rated Voltage U0/U [V] | 0.6/1 KV |  |
| 2.9 | Cable Rated Voltage U0/U(Um) [KV] | 0.6/1 (1.2) KV |  |
| 2.10 | System Frequency | 50 Hz |  |
| 2.11 | Quantity | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.12 | Length[m] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 2.13 | Number of Drums | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| **3** | **CONSTRUCTION** | | |
| 3.1 | Conductor Material | Plain Annealed Solid or Stranded Copper |  |
| 3.2 | Conductor Cross Section [mm2] | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.3 | Conductor Construction | Solid |  |
| Circular Stranded S<=25mm |  |
| Shaped Stranded S>=35mm |  |
| Compressed Circular Stranded |  |
| 3.4 | Maximum Conductor Temperature | 90°C (for XLPE Insulation) |  |
| 70°C (for PVC Insulation) |  |
| 3.5 | Maximum Conductor Temperature - Short Circuit | 250°C (for XLPE Insulation) |  |
| 160°C (for PVC Insulation) |  |
| 3.6 | Conductor Class | Class 2 |  |
| 3.7 | Number of Cores | According to Document  “BK-GCS-PEDCO-120-EL-LI-0002” |  |
| 3.8 | Core Insulation Material | XLPE (or PVC if Specified in Cable List) |  |
| 3.9 | Core Insulation Thickness [mm] | By Vendor |  |
| 3.10 | Core Insulation Colors/Marking | By Vendor |  |
| 3.11 | Phase Conductors | Numbering the Cores From No. One for the Wire in Center |  |
| 3.12 | Lead Sheath Thickness | By Vendor (Considered for Process Area) |  |
| 3.13 | Diameter Over Lead Sheath [mm] | By Vendor |  |
| 3.14 | Armor Type & Material | Galvanized Steel Wire for Multicore, Aluminum Wire for Single Cores |  |
| 3.15 | Armor Wire Diameter [mm] | By Vendor |  |
| 3.16 | Bedding Type | Extruded PVC |  |
| 3.17 | Filler Type | PVC |  |
| 3.18 | Jacket (Outer Sheath) Material | Extruded PVC |  |
| 3.19 | Jacket Thickness[mm] | By Vendor |  |
| 3.20 | Jacket Color | Black |  |
| 3.21 | Diameter Under Armor [mm] | By Vendor |  |
| 3.22 | Overall Diameter [mm] | By Vendor |  |
| 3.23 | Minimum Bending Radius | By Vendor |  |
| 3.24 | Cable Marking | By Vendor |  |
| 3.25 | Repeating Length [m] | 1m |  |
| 3.26 | Marking Items | By Vendor |  |
| No. of Cores |  |
| Rated Voltage |  |
| Size of Conductor |  |
| Type of Insulation |  |
| Applicable Standard |  |
| Year of Manufacture |  |
| **4** | **ELECTRICAL CHARACTERISTICS** | | |
| 4.1 | DC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.2 | AC Resistance of Conductor at 20°C [Ω/Km] | By Vendor |  |
| 4.3 | AC Resistance of Conductor at 70°C [Ω/Km] | By Vendor |  |
| 4.4 | DC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.5 | AC Resistance of Conductor at 30°C [Ω/Km] | By Vendor |  |
| 4.6 | Phase Reactance [Ω/Km] | By Vendor |  |
| 4.7 | Ampacity at 20°C /2.5 Km /W Soil[A] | By Vendor |  |
| 4.8 | Ampacity at 30°C Free Air [A] | By Vendor |  |
| **5** | **MECHANICAL CHARACTERISTICS** | | |
| 5.1 | Maximum Insulation Temperature: | By Vendor |  |
| 5.2 | At Continuous Rating [°C ] | By Vendor |  |
| 5.3 | At Short Circuit [°C ] | By Vendor |  |
| 5.4 | Cable Weight [Kg/Km] | By Vendor |  |
| **6** | **DRUM CHARACTERISTICS** |  |  |
| 6.1 | Dimension[mm] | By Vendor |  |
| 6.2 | Drum Type No. | By Vendor |  |
| 6.3 | Cable Length Per Drum[m] | By Vendor |  |
| 6.4 | Drum Weight [Kg] | By Vendor |  |
| 6.5 | Material | By Vendor |  |
| **7** | **TEST ITEMS** | | |
| 7.1 | Routine Tests: (as minimum)   * Conductor Resistance Measurement * High Voltage Power Frequency Test * Insulation Resistance Measurement | By Vendor |  |

Note 3: Specification of each cable will be indicated in “BK-GCS-PEDCO-120-EL-LI-0002”.