|  |
| --- |
| **طرح نگهداشت و افزایش تولید 27 مخزن** |
| **MTO FOR ELECTRICAL BULK ITEMS****نگهداشت و افزایش تولید میدان نفتی بینک** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| D00 | Feb. 2024 | IFI | H.Shakiba | M.Fakharian | S.Faramarzpour |  |
| **Rev.** | **Date** | **Purpose of Issue/Status** | **Prepared by:** | **Checked by:** | **Approved by:** | **Client Approval** |
| **Class:3** | **Client Doc. Number: F8Z-709078** |
| **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**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |  | **PAGE** | **D00** | **D01** | **D02** | **D03** | **D04** |
| **1** | X |  |  |  |  | **51** |  |  |  |  |  |
| **2** | X |  |  |  |  | **52** |  |  |  |  |  |
| **3** | X |  |  |  |  | **53** |  |  |  |  |  |
| **4** | X |  |  |  |  | **54** |  |  |  |  |  |
| **5** | X |  |  |  |  | **55** |  |  |  |  |  |
| **6** | X |  |  |  |  | **56** |  |  |  |  |  |
| **7** | X |  |  |  |  | **57** |  |  |  |  |  |
| **8** | X |  |  |  |  | **58** |  |  |  |  |  |
| **9** | X |  |  |  |  | **59** |  |  |  |  |  |
| **10** |  |  |  |  |  | **60** |  |  |  |  |  |
| **11** |  |  |  |  |  | **61** |  |  |  |  |  |
| **12** |  |  |  |  |  | **62** |  |  |  |  |  |
| **13** |  |  |  |  |  | **63** |  |  |  |  |  |
| **14** |  |  |  |  |  | **64** |  |  |  |  |  |
| **15** |  |  |  |  |  | **65** |  |  |  |  |  |
| **16** |  |  |  |  |  | **66** |  |  |  |  |  |
| **17** |  |  |  |  |  | **67** |  |  |  |  |  |
| **18** |  |  |  |  |  | **68** |  |  |  |  |  |
| **19** |  |  |  |  |  | **69** |  |  |  |  |  |
| **20** |  |  |  |  |  | **70** |  |  |  |  |  |
| **21** |  |  |  |  |  | **71** |  |  |  |  |  |
| **22** |  |  |  |  |  | **72** |  |  |  |  |  |
| **23** |  |  |  |  |  | **73** |  |  |  |  |  |
| **24** |  |  |  |  |  | **74** |  |  |  |  |  |
| **25** |  |  |  |  |  | **75** |  |  |  |  |  |
| **26** |  |  |  |  |  | **76** |  |  |  |  |  |
| **27** |  |  |  |  |  | **77** |  |  |  |  |  |
| **28** |  |  |  |  |  | **78** |  |  |  |  |  |
| **29** |  |  |  |  |  | **79** |  |  |  |  |  |
| **30** |  |  |  |  |  | **80** |  |  |  |  |  |
| **31** |  |  |  |  |  | **81** |  |  |  |  |  |
| **32** |  |  |  |  |  | **82** |  |  |  |  |  |
| **33** |  |  |  |  |  | **83** |  |  |  |  |  |
| **34** |  |  |  |  |  | **84** |  |  |  |  |  |
| **35** |  |  |  |  |  | **85** |  |  |  |  |  |
| **36** |  |  |  |  |  | **86** |  |  |  |  |  |
| **37** |  |  |  |  |  | **87** |  |  |  |  |  |
| **38** |  |  |  |  |  | **88** |  |  |  |  |  |
| **39** |  |  |  |  |  | **89** |  |  |  |  |  |
| **40** |  |  |  |  |  | **90** |  |  |  |  |  |
| **41** |  |  |  |  |  | **91** |  |  |  |  |  |
| **42** |  |  |  |  |  | **92** |  |  |  |  |  |
| **43** |  |  |  |  |  | **93** |  |  |  |  |  |
| **44** |  |  |  |  |  | **94** |  |  |  |  |  |
| **45** |  |  |  |  |  | **95** |  |  |  |  |  |
| **46** |  |  |  |  |  | **96** |  |  |  |  |  |
| **47** |  |  |  |  |  | **97** |  |  |  |  |  |
| **48** |  |  |  |  |  | **98** |  |  |  |  |  |
| **49** |  |  |  |  |  | **99** |  |  |  |  |  |
| **50** |  |  |  |  |  | **100** |  |  |  |  |  |

| **11 KV Termination Kit** |
| --- |
| 1. **Switchgear Side**
 |
| * Service Voltage: 6/10 (12) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Indoor Type
* With Other Complete Accessories for the Following
 |
| **Item** | **Cable Type** | **Cable Size** | **Unit (Set)** |
|  | Cu/SC/XLPE/SC/SCT/ICWS/Bd/SWA/PVC1. GCS-TR-001
2. GCS-TR-002
3. GCS-TR-003
4. Cap Bank A (Both sides)
5. Cap Bank B (Both sides)
6. Cap Bank C (Both sides)
7. Existing MV Capacitor Bank 1 (One Side)
8. Existing MV Capacitor Bank 2 (One Side)
9. Existing MV Capacitor Bank 3 (One Side)
 | 3C×95 mm2 | 12 |
|  | Cu/SC/XLPE/SC/SCT/Lsh/Bd/SWA/PVC1. C-2101A
2. C-2101B
3. C-2101C
 | 3C×95 mm2 | 3 |
| 1. **Transformer Side**
 |
| * Service Voltage: 6/10 (12) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Outdoor Type
* With Other Complete Accessories for the Following
 |
|  | Cu/SC/XLPE/SC/SCT/ICWS/Bd/SWA/PVC1. GCS-TR-001
2. GCS-TR-002
3. GCS-TR-003
 | 3C×95 mm2 | 3 |
| 1. **Motor Side**
 |
| * Service Voltage: 6/10 (12) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Outdoor Type
* With Other Complete Accessories for the Following
 |
|  | Cu/SC/XLPE/SC/SCT/Lsh/Bd/SWA/PVC1. C-2101A
2. C-2101B
3. C-2101C
 | 3C×95 mm2 | 3 |

| **3.3 KV Termination Kit** |
| --- |
| 1. **Switchgear Side**
 |
| * Service Voltage: 1.8/3 (3.6) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Indoor Type
* With Other Complete Accessories for the Following
 |
| **Item** | **Cable Type** | **Cable Size** | **Unit (Set)** |
|  | CU/SC/XLPE/SC/SCT/ICWS/Bd/SWA/PVC1. GCS-TR-003
2. P-2301A
 | 3C×95 mm2 | 2 |
| 1. **Transformer Side**
 |
| * Service Voltage: 1.8/3 (3.6) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Outdoor Type
* With Other Complete Accessories for the Following
 |
|  | CU/SC/XLPE/SC/SCT/ICWS/Bd/SWA/PVC1. GCS-TR-03
 | 3C×95 mm2 | 1 |
|  | Cu/SC/XLPE /SC/SCT/CWS/Bd/AWA/PVC1. GCS-3.3-NGR-01 (Both sides)
 | 1C×95 mm2 | 2 |
| 1. **Motor Side**
 |
| * Service Voltage: 1.8/3 (3.6) KV
* Heat Shrinkable or Equivalent Type Stress Relieving Tube
* Compression Lugs
* Insulating Boosts (Straight Type)
* Outdoor Type
* With Other Complete Accessories for the Following
 |
|  | Cu/SC/XLPE /SC/SCT/CWS/Bd/SWA/PVC1. P-2301A
 | 3C×95 mm2 | 1 |

* Items 2.1 & 3.1 are the same but for separation of cables, they are in different rows.

| **LV Termination Accessories** |
| --- |
| 1. **Terminal Lug (One Hole Type)**
 |
| * Terminal Lug for LV Cables
* High Conductivity Copper
* Tin Plated One Hole Type
* Straight Palm ACC to DIN 46235
* C/W with Electro Galvanizing ISO Thread (mm)
* Hex. Head Bolt, Nut, Flat & Spring Washer
 |
| **Item** | **Size** | **Quantity (NO)** | **Spare (NO)** | **Total (NO)** |
|  | 2.5 mm2, Stud Size 8 | 90 | 20 | 110 |
|  | 4 mm2, Stud Size 8 | 510 | 40 | 550 |
|  | 6 mm2, Stud Size 8 | 86 | 14 | 110 |
|  | 10 mm2, Stud Size 12 | 196 | 24 | 220 |
|  | 16 mm2, Stud Size 12 | 130 | 30 | 160 |
|  | 25 mm2, Stud Size 12 | 55 | 15 | 70 |
|  | 35 mm2, Stud Size 12 | 51 | 14 | 65 |
|  | 50 mm2, Stud Size 12 | 99 | 21 | 120 |
|  | 70 mm2, Stud Size 12 | 25 | 10 | 35 |
|  | 95 mm2, Stud Size 12 | 109 | 21 | 120 |
|  | 120 mm2, Stud Size 16 | 50 | 15 | 65 |
|  | 150 mm2, Stud Size 16 | 16 | 4 | 20 |
|  | 185 mm2, Stud Size 16 | 40 | 10 | 50 |
|  | 300 mm2, Stud Size 16 | 70 | 20 | 95 |
| 1. **Tube**
 |
| * Shrinkable Tube, Heavy Wall Tubing
* Flame Retardant, 600 V
* Color: Black
 |
| **Item** | **Inner Diameter (mm)** | Quantity **(m)** | **Spare (m)** | **Total (m)** |
|  | 3 | 70 | 10 | 80 |
|  | 4 | 70 | 10 | 80 |
|  | 6 | 50 | 10 | 60 |
|  | 8 | 50 | 10 | 60 |
|  | 10 | 50 | 10 | 60 |
|  | 12 | 60 | 10 | 70 |
|  | 16 | 50 | 10 | 60 |
|  | 21 | 40 | 10 | 50 |
|  | 25 | 40 | 10 | 50 |
|  | 30 | 20 | 5 | 25 |
|  | 40 | 20 | 5 | 25 |
|  | 50 | 20 | 5 | 25 |
|  | 60 | 20 | 5 | 25 |
|  | 70 | 20 | 5 | 25 |
| 1. **Terminal Lug (Pin Type)**
 |
| * Tin Plated One Hole Type
* Each bag Consists of 500 Insulated Ferrule
 |
| **Item** | **Conductor Size (mm2)** | **Quantity (bag)** | **Spare (bag)** | **Total (bag)** |
|  | 1.5 | 1 | 1 | 2 |
|  | 2.5 | 2 | 1 | 3 |
|  | 4 | 2 | 1 | 3 |
|  | 6 | 2 | 1 | 3 |
| 1. **Wire Nut Connectors**
 |
| * Wire - Nut Connectors for LV Cables
* Each bag Consists of 500 Screw Type for Twisted Wire
 |
| **Item** | **Conductor Size (mm2)** | **Quantity (bag)** | **Spare (bag)** | **Total (bag)** |
|  | 1.5 | 1 | 1 | 2 |
|  | 2.5 | 1 | 1 | 2 |
|  | 4 | 1 | 1 | 2 |

| **Cable Gland** |
| --- |
| 1. **Industrial Type**
 |
| * ISO Metric Threads
* Nickel Plated Brass
* Clamping of Armored & Lead Sheath by Special Ring
* Sealing Washer for Inner & Outer Sheath
* Including PVC Shroud, Brass Locknut & Brass Earth Tag
* IP66
 |
|  | **Cable Type: With Armor** |
| Item | Size | Quantity (NO) | Spare (NO) | Total (NO) |
|  | M20 | 140 | 20 | 160 |
|  | M25 | 134 | 16 | 150 |
|  | M32 | 80 | 10 | 90 |
|  | M40 | 96 | 14 | 110 |
|  | M50 | 24 | 6 | 30 |
|  | M63 | 9 | 3 | 12 |
|  | M75 | 4 | 1 | 5 |
|  | M90 | 18 | 4 | 22 |
|  | **Cable Type: With Armor & Lead Sheath** |
|  | M20 | 3 | 2 | 5 |
|  | M25 | 51 | 9 | 60 |
|  | M32 | 60 | 15 | 75 |
|  | M40 | 2 | 1 | 3 |
|  | M50 | 12 | 3 | 15 |
|  | M63 | 5 | 2 | 7 |
|  | M90 | 3 | 2 | 5 |
| 1. **Explosion Proof Type**
 |
| * ISO Metric Threads
* Exd, IIB, T3
* Nickel Plated Brass
* Clamping of Armored & Lead Sheath by Special Ring
* Sealing Washer for Inner & Outer Sheath
* Including PVC Shroud, Brass Locknut & Brass Earth Tag
* IP66
 |
|  | **Cable Type: With Armor & Lead Sheath** |
| **Item** | **Size** | Quantity **(m)** | **Spare (m)** | **Total (m)** |
|  | M20 | 3 | 2 | 5 |
|  | M25 | 51 | 9 | 60 |
|  | M32 | 60 | 15 | 75 |
|  | M40 | 2 | 1 | 3 |
|  | M50 | 12 | 3 | 15 |
|  | M63 | 5 | 2 | 7 |
|  | M90 | 3 | 2 | 5 |

| **Conduit & Fittings** |
| --- |
| * Hot Dip Galvanized (Inside & Outside)
* Heavy Rigid Steel Material
* ISO Metric Threads
* Hidden Seamless Type
* Based on IPS-M-EL-161(2)
 |
| 1. **Steel Conduit**
 |
| **Item** | **Size** | **Quantity (PCS)** | **Spare (PCS)** | **Total (PCS)** |
|  | M25, 6m Long, Thickness=2mm | 100 | 20 | 120 |
|  | M32, 6m Long, Thickness=2mm | 100 | 20 | 120 |
|  | M40, 6m Long, Thickness=2mm | 85 | 15 | 100 |
|  | M50, 6m Long, Thickness=2mm | 75 | 15 | 90 |
|  | M75, 6m Long, Thickness=2.5mm | 60 | 10 | 70 |
|  | M100, 6m Long, Thickness=2.5mm | 30 | 10 | 40 |
| 1. **HGDS Conduit Coupling (for use in item 1)**
 |
|  | M25 | 100 | 20 | 120 |
|  | M32 | 100 | 20 | 120 |
|  | M40 | 85 | 15 | 100 |
|  | M50 | 75 | 15 | 90 |
|  | M75 | 60 | 10 | 70 |
|  | M100 | 30 | 10 | 40 |
| 1. **HGDS Conduit Head Busing (for use in item 1)**
 |
|  | M25 | 120 | 30 | 150 |
|  | M32  | 120 | 30 | 150 |
|  | M40 | 110 | 20 | 130 |
|  | M50 | 90 | 20 | 110 |
|  | M75 | 75 | 15 | 90 |
|  | M100 | 40 | 10 |  |
| 1. **Clamp With Bolt & Nut**
 |
|  | As Required |

Conduit

Clamp

Head Busing

Coupling

1. This document shall be Based on below references:

Document Title: “Specification for Bulk Materials”

Document No.: “BK-GNRAL-PEDCO-000-EL-SP-0008”