# This is an example for the Transformer Bay, as per the schematic drawing the contents in this test format can be modified for another Transformer Bay

#

# **GENERAL DATA AND INFORMATION:**

|  |  |
| --- | --- |
| Panel designation |  |
| Manufacture |  |

1. **MECHANICAL CHECK AND VISUAL INSPECTION:**

As per TCS –P–105 Item no 4.1

|  |  |  |
| --- | --- | --- |
| Item | Description | Checked |
|  | Check tightness of all connections | ❑Yes | ❑N/A |
|  | Inspect for physical damage / defects | ❑Yes | ❑N/A |
|  | Panel condition, cleanliness, organization, labeling, readiness for service, panel doors, handles...etc | ❑Yes | ❑N/A |
|  | CT shorting checked | ❑Yes | ❑N/A |
|  | Indications checked | ❑Yes | ❑N/A |
|  | Check the ferrules as per specification | ❑Yes | ❑N/A |
|  | Panel Earthing checked | ❑Yes | ❑N/A |
|  | Confirm that each panel has been properly secured to the floor in its final service location. | ❑Yes | ❑N/A |
|  | Confirm that panels are constructed and wired as per SEC relevant specification. | ❑Yes | ❑N/A |
|  | Check case cover and gasket for proper seal against dust. | ❑Yes | ❑N/A |
|  | Check all installed equipment nameplate information for compliance to approved drawings and equipment /material lists. | ❑Yes | ❑N/A |
|  | For all internal and external panel wiring, confirm that all screw terminations are tight and that crimp connectors are firmly secured to the wire and to the termination point. Ensure that no part of the wire is bent at the termination point. Check Ferrules. | ❑Yes | ❑N/A |
|  | Check that panel equipment is mounted securely and protected against mal operation due to vibration, shock, etc | ❑Yes | ❑N/A |
|  | Use of ring type terminals for wire termination for current circuit wires. | ❑Yes | ❑N/A |
|  | Disconnectors Manual operation by handle and related interlocking conditions to be checked | ❑Yes | ❑N/A |
|  | Mechanical interlocking between DS & ES to be checked | ❑Yes | ❑N/A |

1. **ELECTRICAL TESTS**

|  |  |  |
| --- | --- | --- |
| Item | Description | Checked |
| 1 | Insulation Resistance Test report of all wires to be submitted by the contractor prior witnessing and made available | ❑Yes  | ❑N/A  |
| 2 | Dc power/ control supply checked. | ❑Yes  | ❑N/A  |
| 3 | AC Power/ Control supply checked. | ❑Yes  | ❑N/A  |
| 4. | Circuit Breaker, Disconnector and Earth Switch Open/Close status checked | ❑Yes  | ❑N/A  |
| 5 | All CB’S, DSW’s and ESW’s should be tested before starting function check | ❑Yes  | ❑N/A  |

1. **CIRCUIT BREAKER CLOSING / TRIPPING BLOCKING CONDITIONS:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sl no. | Description | Setting values | CB blocked status | Remarks |
| Closing | Tripping |
| 1 | SF6 Gas pressure 1st Stage |  |  |  |  |
| 2 | SF6 Gas pressure 2nd Stage |  |  |  |  |
| 3 | CB spring charged condition |  |  |  |  |
| 4 | Anti-Pumping condition  |  |  |  |  |

1. **SINGLE LINE DIAGRAM FOR THE TEST BAY:**

---04

---06

Upper Bus Bar

Lower Bus bar

---01Y

---01Z

---05

13.8 kV BUSBAR

 01X

 VT - 1 PH

---01

3 –PH VT

S ---- 01

S -- 05

GRID – T-------,

132 / 13.8 KV

13.8 KV, 800 A

10 Ohms

 NER

 ---- 93

1. **CHECKING OF OPERATION AND INDICATIONS:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Equip.Ref | Command | Operation | Indication | Condition | Remarks |
| LCC | CR | ECC(FMK) | LCC | CR | ECC(FMK) |
| --- 04 | Close / open |  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Test |  |
| --- 06 |  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Test |  |
|  ---- 05 | Close |  |  |  |  |  |  | Test |  |
|  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |
| ----01Y | Close /open |  |  |  |  |  |  | Independent condition |  |
| ----01X |  |  |  |  |  |  |  |
| ----01Z |  |  |  |  |  |  |  |
| S - -01 | Close /open |  |  |  |  |  |  | Independent condition |  |
| S - -05 | Close / open |  |  |  |  |  |  | Service |  |
|  |  |  |  |  |  | Service |  |

1. **FUNCTIONAL AND INTERLOCKING TEST FOR CIRCUIT BREAKER ----05:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | Test | DS ----04& ----06 | FO |  |
| CB- S-----05 | Test |
| Close\* | Service-1 | DS- -----06 | FC |  |
| CB-S----05 | O |
| Service-2 | CB-S---05 | O |  |
| DS- ------04 | FC |
| Open | Test & service | LCC,CR,ECC & Protection Relays | Operated |  |

All checked under normal sf6 gas pressure operating conditions

 \* Protection relays should be reset

 Note: FO: fully open FC: fully close O: open

1. **FUNCTIONAL AND INTERLOCKING TEST FOR BUS DISCONNECTOR ----04:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | Test | ES---01Y | FO |  |
| ES –--01Z & 141---(bus bar earth switch) | FC |  |
| Close/open | Service | CB----05  | O |  |
| DS----06,ES-----01X,---01Y,---01Z, 141B & S-----01  | FO |  |
| Close/open | Bus transfer-1 | DS------06,236 & 234 | FC |  |
| CB- - 30 | C |
| ES-----01X,-----01Y,---01Z , 141B & S-----01 | FO |  |
| Close/open | Bus transfer-2 | DS-----06,226A,226B,124A,124B, -- 36 & -- 34 | FC |  |
| CB- --- 20 & --- 30 | C |
| ES-----01X,------01Y, -- 01Z, 141 -- & S-------01  | FO |  |

 Note:

 FO: fully open FC: fully close O: open C: close

1. **FUNCTIONAL AND INTERLOCKING TEST FOR BUS DISCONNECTOR ----06:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | Test | ES---01Z | FO |  |
| ES----01Y & 261-- | FC |  |
| Close/open | Service | DS-----04, ES----- 01X,----01Y,--01Z ,261--- & S-----01 | FO |  |
| CB---05 | O |  |
| Close/open | Bus transfer-1 | DS-----04,--36 & --- 34 | FC |  |
| CB- --30 | C |
| ES----01X,-----01Y,---01Z,261 --- & S---01 | FO |  |
| Close/open | Bus transfer-2 | DS----04,226A,226B,124A,124B,--36 & --34 | FC |  |
| CB-230 & --- 30 | C |
| ES----01X,-----01Y,----01Z ,261 --& S---01 | FO |  |

 Note:

 FO: fully open FC: fully close O: open C: close

1. **FUNCTIONAL AND INTERLOCKING TEST FOR EARTH SWITCH ----01Y:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | ------------ | DS –---04 & ------06 | FO |  |
| S--------05 | Test |

 Note: FO: fully open

1. **FUNCTIONAL AND INTERLOCKING TEST FOR EARTH SWITCH ----01X:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | ------------ | DS –----04 & -----06 | FO |  |
| S---------05 | Test |

 Note: FO: fully open

1. **FUNCTIONAL AND INTERLOCKING TEST FOR EARTH SWITCH ----01Z:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | ------------ | DS –----04 & ------06 | FO |  |
| S----------05 | Test |

 Note: FO: fully open

1. **FUNCTIONAL AND INTERLOCKING TEST FOR EARTH SWITCH S---- 01:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | ------------ | DS –----04 & ------06 | FO |  |
| S -- 05 | Test |

 Note: FO: fully open

1. **FUNCTIONAL AND INTERLOCKING TEST FOR CIRCUIT BREAKER S --05 :**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Operation | Condition | Equipments | Status | Remarks |
| Close/open | Service 1 | DS –--- 04  | FO |  |
| DS ---- 06 | FC |
| CB --- 05 | C |
| Service 2 | DS ----- 06 | FO |
| DS –--- 04 | FC |
| CB --- 05 | C |

 Note: FO: fully open FC: fully close C: close

1. **CHECKING OF OPERATIONS FROM FMK PANEL:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Equipment | Operation | FMK - TB No.  | FR  | Remarks |
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Note: FO: fully open FC: fully close

1. **CHECKING OF INDICATIONS:**

 As per the schematic drawings

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Events | Command | LCC | CR | ECC(FMK) |
| TB No. | Status | TB No. | Status | TB No.  | Status |
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1. **CHECKING OF LCC, ANNUN. INDICATION &ALARM : (ANNUNCIATOR-1)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Channel no. | Events | LCC | CR | Status |
| TB No | Status | TB No | Status |
|  |  |  |  |  |  | [ ] |
|  |  |  |  | [ ] |
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1. **CHECKING OF LCC, ANNUN. INDICATION & ALARMS: (ANNUNCIATOR-2)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Channel no. | Events | LCC | CR | Status |
| TB No | Status | TB No | Status |
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 Note: All interlock points were checked according to interlocking conditions table which is approved by system Operation department