As Per the Schematic Drawings Contents In This Test Format Can Be Modified

1. **GENERAL DATA AND INFORMATION**

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

1. **MECHANICAL CHECK AND VISUAL INSPECTION** As per TCS–P-105 Rev – 01, Item no 4.1

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Description | Checked | |
| 1 | Check tightness of all connections | ❑Yes | ❑N/A |
| 2 | Inspect for physical damage / defects | ❑Yes | ❑N/A |
| 3 | Panel condition, cleanliness, organization, labeling, readiness for service, panel doors, handles...etc | ❑Yes | ❑N/A |
| 4 | CT shorting checked | ❑Yes | ❑N/A |
| 5 | Indications checked | ❑Yes | ❑N/A |
| 6 | Contact resistance of tripping and alarm checked | ❑Yes | ❑N/A |
| 7 | Check the ferrules as per specification | ❑Yes | ❑N/A |
| 8 | Confirm that each panel has been properly secured to the floor in its final service location. | ❑Yes | ❑N/A |
| 9 | Panel Earthing checked | ❑Yes | ❑N/A |
| 10 | Confirm that panels are constructed and wired as per SEC relevant specification. | ❑Yes | ❑N/A |
| 11 | Check case cover and gasket for proper seal against dust. | ❑Yes | ❑N/A |
| 12 | Check all installed equipment nameplate information for compliance to approved drawings and equipment /material lists. | ❑Yes | ❑N/A |
| 13 | 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 |
| 14 | Check that panel equipment is mounted securely and protected against mal operation due to vibration, shock, etc | ❑Yes | ❑N/A |
| 15 | Use of ring type terminals for wire termination for current circuit wires. | ❑Yes | ❑N/A |

1. **GENERAL PANEL FUNCTIONAL CHECKS** As per TCS–P-105 Rev -01, Item no 5.1

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Description | Remarks | |
| 1 | Check Output Of Ac Outlet | ❑Yes | ❑N/A |
| 2 | Check Illumination Lamp | ❑Yes | ❑N/A |
| 3 | Check Door Switch | ❑Yes | ❑N/A |
| 4 | Check Heater / Thermostat | ❑Yes | ❑N/A |

1. **FUNCTIONAL CHECK: (SECTION--------)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function | Events (from  Control panel) | Events(from FMK---- panel) | Expected | Remarks |
| U/f protection in selection |  |  | In/out switching relay  k------- will Pick up |  |
| U/f protection out selection |  |  | K----- Reset and U/F  prot. Out lamp H------will Glow |  |
| U/f protection in selection |  |  | In/out switching relay  k------- Will pick up |  |
| U/f protection out selection |  |  | K---- Reset and u/f prot. Out lamp H------ will Glow |  |
| Lamp test |  |  | U/F prot. Out LS----- & LS------ lamp H-----& H  ------ will glow |  |
| Dc supply supervision |  |  | -------- will drop |  |
| Dc supply supervision (status indication) |  |  | -------- will drop |  |
| 13.8kv bus section  ---------- CB close |  |  | --------- will pick up |  |
| U/F tripping relay for stage-1 |  |  | Tripping relays -------&  --------- will pick up |  |
| U/F tripping relay for stage-2 |  |  | Tripping relays --------& --------- will pick up |  |
| U/F tripping relay for stage-3 |  |  | Tripping relay --------- will pick up |  |
| U/F tripping relay for stage-4 |  |  | Tripping relay --------- will pick up |  |

1. **VOLTAGE SELECTION CHECK**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Voltage input  (L------,L--------, L---------) | | | Voltage selection | | Under-frequency relay  (measured at Terminal) | | | Remarks |
| H--11  TR I /c -1  (x-----:---) Sec- A | H---12  TR I/c -2  (x---:---)  Sec- B | H-3 4  TR I /c -3  (x----:---)  Sec-- c | H-- 120 Bus Tie  A /B  (---) | H- 320 Bus Tie  B / C  (----) | --------(sec-A) | -------(sec-B) | --------(sec-C) |
| 110v injected | - | - | Close | Close |  |  |  |  |
| - | 115v injected | - | Close | Close |  |  |  |  |
| - | - | 120v injected | Close | Close |  |  |  |  |
| 110v injected | 115v injected | - | Close | Close |  |  |  |  |
| 110v injected | 115v injected | - | Open | Close |  |  |  |  |
| 110v injected | - | 120v injected | Close | Close |  |  |  |  |
| 110 injected | - | 120v injected | close | open |  |  |  |  |
| - | 115v injected | 120v injected | Close | Close |  |  |  |  |
|  | 115v injected | 120v injected | Close | Open |  |  |  |  |
| 110v injected | 115v injected | 120v injected | Close | Close |  |  |  |  |
| 110v injected | 115v injected | 120v injected | Open | Open |  |  |  |  |

1. **TRIP ISOLATION CHECK** : ------------ Under Frequency Relay

13.8KV ----------- section--------------

* 1. **13.8KV Switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| CB  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| CB  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| CB  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H --------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| Cb  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| CB  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| Cb  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV switchgear H --------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| Cb  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | Cb will trip |  |
| Close | Close | Open | Stage-2 | Cb will not trip |  |
| Close | Close | Close | Stage-1 & 2 | Cb will trip |  |

* 1. **13.8KV switchgear H -------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| Cb  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | CB will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| Cb  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | Cb will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8KV Switchgear H ---------**
  2. **13.8KV switchgear H ---------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (-----------) | Stage-1 link  (----------) | Stage-2 link  (-----------) | Stage operated | Operation expected | Remarks |
| CB  S-------  in  Close | Open | Close | Close | Stage-1 & 2 | Cb will not trip |  |
| Close | Open | Close | Stage-1 | CB will not trip |  |
| Close | Open | Close | Stage-2 | CB will trip |  |
| Close | Close | Open | Stage-1 | CB will trip |  |
| Close | Close | Open | Stage-2 | CB will not trip |  |
| Close | Close | Close | Stage-1 & 2 | CB will trip |  |

* 1. **13.8kv switchgear Bus section ( h--------) operation by 13.8kv UF Relay ----------- section -----------**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (----------) | Stage-3 link  (-----------) | Stage-4 link  (---------) | Stage operated | Operation  Expected | Remarks |
| CB s---- in close | Open | Close | Close | Stage-3 & 4 | CB will not trip |  |
| Close | Open | Close | Stage-3 | CB will not trip |  |
| Close | Open | Close | Stage-4 | CB will trip |  |
| Close | Close | Open | Stage-3 | CB will trip |  |
| Close | Close | Open | Stage-4 | CB will not trip |  |
| Close | Close | Close | Stage-3 & 4 | CB will trip |  |

* 1. **13.8kv switchgear Bus section ( H-----) operation by 13.8kv UF relay ------**

Section -----------

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Circuit breaker status | Common link  (----------) | Stage-3 link  (-----------) | Stage-4 link  (---------) | Stage operated | Operation  Expected | Remarks |
| CB s-----in close | Open | Close | Close | Stage-3 & 4 | CB will not trip |  |
| Close | Open | Close | Stage-3 | CB will not trip |  |
| Close | Open | Close | Stage-4 | CB will trip |  |
| Close | Close | Open | Stage-3 | CB will trip |  |
| Close | Close | Open | Stage-4 | CB will not trip |  |
| Close | Close | Close | Stage-3 & 4 | CB will trip |  |

1. **ANNUNCIATION ALARM CHECK**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Alarm | Event | K------ panel(Ann) | Fmk------panel(TB) | Indication | Remarks |
| U/f protection operated-13.8kv B/B sec---------- |  |  | \* |  |  |
| U/f protection faulty-13.8kv B/B sec------- |  |  | \* |  |  |
|  |  | \* |  |  |
|  |  | \* |  |  |
|  |  | \* |  |  |
|  |  | \* |  |  |

Note: \*checked by multimeter

1. **REMOTE INDICATION CHECK**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Function | Events (from control panel) | Events (FMK----- panel) | Indication  (FMK---------- panel) | Remarks |
| U/f protection 13.8kv B/B sec ---------- in | Press PB ------ | \* |  |  |
| U/f protection 13.8kv B/B sec--------- out | Press PB ------- | \* |  |  |

Note: \* Checked by Multi-meter