As Per the Schematic drawings the contents in this Test format can be modified

 Note:

 The following should be done before starting the activity

 1. Approved commissioning copy schematic drawing shall be pre-checked.

 2. All secondary injection and all components tests shall be completed and witnessed.

 All test results must be available and signed.

 3. Auxiliaries, timers, contactors, pulse units, annunciators, MCB’s … etc.

4. All final settings shall be applied and signed

# **GENERAL DATA AND INFORMATION**

#

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

1. **MECHANICAL CHECK AND VISUAL INSPECTION** As per TCS–P-105, Rev – 1 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  |
|  | Contact resistance of tripping and alarm checked | ❑Yes  | ❑N/A  |
|  | Check the ferrules as per specification | ❑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  |
|  | Panel earthing checked | ❑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  |

1. **GENERAL FUNCTIONAL CHECK:** As per TCS–P-105 Item no 5.1

|  |  |  |
| --- | --- | --- |
| Item | Description | Remarks |
|  | Check Output Of 127v Ac Outlet | ❑Yes  | ❑N/A  |
|  | Check Output Of 220v Ac Outlet | ❑Yes  | ❑N/A  |
|  | Check Function Of Illumination Lamp | ❑Yes  | ❑N/A  |
|  | Check Function Of Door Switch | ❑Yes  | ❑N/A  |
|  | Check Function Of Heater  | ❑Yes  | ❑N/A  |

1. **D.C. LOOP**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Item | Measuring points in MCB | X ---- : ---- , -- | X ---- : ---- , --- | X ---- : ---- , --- | X ---- : ---- , --- |
| 1 |  |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Protection operated | Relay panel -------- | Control panel ------ | Fault Recorder | CB operation | FMK --- | Remarks | Function as expected |
| Trip Relay | CBF start | Ind./Flag Relay | CH | Alarm | CH | Event | Trip | CloseBlock | T.B |
| 50- 51/50N -51N protection | 86BU | 50/62BF | 51/51NProtectionOp. | CH---- | Over current & Earth Fault Protection Operated | FR ---- | BS --51/51N prot. Optd | ------ Tc1 &Tc2 | -------- | X ----:--, | Switch (in / out ) "out" position | [ ] Yes |
| CH ---- |
| 50- 51/50N -51N protection | 86BU | 50/62BF | 50/50N protection op. | CH---- | Inst. Overcurrent & earth fault protection operated |  |  | ----- Tc1 &Tc2 | -------- | X ---:--,- | Switch (in / out ) "in" position | [ ] yes |
|  |
| 50/62BF Bkr failure prot. | 86CBF |  | 50/62BF | CH---- | CBF protection operated | FR --- | ----- CBF prot.Opd | ------Tc1 &Tc2 | -------- | X ----:-- |  | [ ] Yes |
| 86B----A & ---- B | CH ---- |
| BB- ----- A Bus bar protection trip | 86B- -A | 50/62BF |  |  |  |  |  | -----Tc1 &Tc2 | -------- |  |  | [ ] Yes |
|  |
| BB- ----- B Bus bar protection trip | 86B ---2B | 50/62BF |  |  |  |  |  | Tc1 &Tc2 | -------- |  |  | [ ] Yes |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Event | Relay panel ----- | Control panel --------- | FMK---- | Remarks | Function as expected |
| Indication/flag relay | CH | Alarm | T.B |
| Breaking path of supervision circuit R1 | 74R1 | CH --- | Over current& earthFault protection faulty | X ---:--,-- |   | [ ] Yes |
| R1 DC supply fail |
| Breaking path of supervision circuit TRS | 74TRS | CH --- | Control supply fail | X ---:--,-- |   | [ ] Yes |
| TRS DC supply fail |
| Breaking path of supervision circuit CBF | 74BF | CH ----- | CBF protection faulty | X ---:--,-- |   | [ ] Yes |
| CBF dc supply fail |
| Breaking path of sup ckt IND supply  | 74IC | CH ----- | Control supply fail | X ---:--,-- |   | [ ] Yes |
| Breaking path ofsupervision circuit TC1 | 74 Tc1 | CH ----- | Trip circuit-1 faulty | X ---:--,-- |   | [ ] Yes |
| Trip ckt-1 faulty |
| Breaking path of supervision circuit TC2 | 74 Tc2 | CH ------ | Trip circuit-2 faulty | X ---:--,-- |   | [ ] Yes |
| Trip ckt-2 faulty |
| 51/51N faulty |  MCB off | CH ------ | Over current earth fault protection faulty | X ---:--,-- |   | [ ] Yes |
| Synchro check relay faulty |   | Ch ------ | Synchro check relay faulty | X ---:--,-- |   | [ ] yes |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Event | Relay panel ------ | Control panel ------- | Remarks | Function as expected |
| Indication / flag relay | CH | Alarm |
| R1 DC supply MCB off | R1 DC supply fail | CH -- | Over current& earth fault protection faulty |   | [ ] Yes |
| 74R1 |   |   |
| DCDB- switch off ----- off | R1 DC supply fail | CH --- | Over current& earth fault protection faulty | \*DCDB MCB trip alarm also come in common panel | [ ] Yes |
| 74R1 |   |   |
| TRS DC supply MCB off | TRS DC supply fail | CH ---  | Status indication supply fail |   | [ ] Yes |
| 74TRS |
| DCDB- switch off ----- Off | TRS DC supply fail | CH --- | Status indication supply fail | \*DCDB MCB trip alarm also come in common panel | [ ] Yes |
| 74TRS |
| CBF DC supply pushbutton | CBF DC supply fail | CH --- | CBF protection faulty |   | [ ] Yes |
| CBF DC supply MCB off in BB CHZ panel  | CBF DC supply fail | CH --- | CBF protection faulty |   | [ ] Yes |

1. **OPERATIONAL CHECK:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| LCC D ----- | From control panel(k --- ) | From FMK-------------- | Device operated | Command | Remarks |
| Flickering operation | Indications | Operationas expected |
| Local/ Remote | CR/ECC |
| Remote | CR |  | Disconnector ---- A | Close |  |  |  |
| Remote | ECC |  | Disconnector ----- A | Close |  |  |  |
| Remote | CR |  | Disconnector ----- A | Open |  |  |  |
| Remote | ECC |  | Disconnector ----- A | Open |  |  |  |
| Remote | CR |  | Disconnector ----- B | Close |  |  |  |
| Remote | ECC |  | Disconnector ---- B | Close |  |  |  |
| Remote | CR |  | Disconnector ----- B | Open |  |  |  |
| Remote | ECC |  | Disconnector ----- B | Open |  |  |  |
| Remote | CR |  | Circuit breaker ---------(Test & service position) | Close |  |  |  |
| Remote | ECC |  | Circuit breaker -----(service position) | Close |  |  |  |
| Remote | CR |  | Circuit breaker ---------- (test & service position) | Open |  |  |  |
| Remote | ECC |  | Circuit breaker ------(service position) | Open |  |  |  |
| Remote | CR | - | Earth switch ---- A | Close |  |  |  |
| Remote | CR | - | Earth switch ----- A | Open |  |  |  |
| Remote | CR | - | Earth switch ---- B | Close |  |  |  |
| Remote | CR | - | Earth switch ----- B | Open |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  LCC D -----  | Device operated | Command | Remarks |
| Semaphore indications | Operation as expected |
| Operate from LCC | Earth switch 221A | Close |  |  |
| Operate from LCC | Earth switch 221A | Open |  |  |
| Operate from LCC | Earth switch 221B | Close |  |  |
| Operate from LCC | Earth switch 221B | Open |  |  |

1. **CIRCUIT BREAKER CLOSE BLOCK CHECK**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Control panel(k --- ) | Circuit breaker position | Synchronism check | Circuit breaker close blocking protection | Operation of circuit breaker | Remarks |
| CR/ECC | By manual switch | By syn relay------- | CBF prtn--------- | BB prtn------ | BB prtn------ | Bk/up prtn -------- | Vt--- MCB -- | Vt-- MCB  |  |  |
| To | Expected |
| CR | Test | - | - | - | - | - | - | - | - | Close | Close |  |
| CR | Test | - | - | - | - | - | - | - | - | Open | Open |  |
| CR | Service | On | Close | N/O | N/O | N/O | N/O | On | On | Close | Close |  |
| CR | Service | Off | Close | N/O | N/O | N/O | N/O | On | On | Close | Not close |  |
| CR | Service | On | Open | N/O | N/O | N/O | N/O | On | On | Close | Not close |  |
| CR | Service | On | Close | O | N/O | N/O | N/O | On | On | Close | Not close |  |
| CR | Service | On | Close | N/O | O | N/O | N/O | On | On | Close | Not close |  |
| CR | Service | On | Close | N/O | N/O | O | N/O | On | On | Close | Not close |  |
| CR | Service | On | Close | N/O | N/O | N/O | O | On | On | Close | Not close |  |
| CR | Service | On | Close | N/O | N/O | N/O | N/O | Off | On | Close | Not close |  |
| CR | Service | On | Close | N/O | N/O | N/O | N/O | On | Off | Close | Not close |  |
| ECC | Test | - | - | - | - | - | - | - | - | Close | Not close |  |
| ECC | Test | - | - | - | - | - | - | - | - | Open | Not open |  |
| Ecc | Service | Off | Close | N/O | N/O | N/O | N/O | On | On | Close | Close |  |
| ECC | Service | Off | Open | N/O | N/O | N/O | N/O | On | On | Close | Not close |  |
| ECC | Service | Off | Close | O | N/O | N/O | N/O | On | On | Close | Not close |  |
| ECC | Service | Off | Close | N/O | O | N/O | N/O | On | On | Close | Not close |  |
| ECC | Service | Off | Close | N/O | N/O | O | N/O | On | On | Close | Not close |  |
| ECC | Service | Off | Close | N/O | N/O | N/O | O | On | On | Close | Not close |  |
| ECC | Service | Off | Close | N/O | N/O | N/O | N/o | Off | On | Close | Not close |  |
| ECC | Service | Off | Close | N/O | N/O | N/O | N/o | On | Off | Close | Not close |  |

 Note: N/O - not operated O – operated

1. **CIRCUIT BREAKER TRIP CIRCUIT(TC-1) CHECK:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Circuit breaker position | Bb protection ------ | Bb protection-------- | Back-up protection------------ | Operation | Remarks |
| Expected | Operated |
| Test/service |  |  |  | Trip |  |  |
| Test/service |  |  |  | Trip |  |  |
| Test/service |  |  |  | Trip |  |  |

1. **CIRCUIT BREAKER TRIP CIRCUIT (TC-2) CHECK:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Circuit breaker position | Bb protection ------ | Bb protection -------- | Back-up protection------------- | Operation | Remarks |
| Expected | Operated |
| Test/service |  |  |  | Trip |  |  |
| Test/service |  |  |  | Trip |  |  |
| Test/service |  |  |  | Trip |  |  |

 Note: N/O - not operated O – operated

1. **ANNUNCIATION ALARM CHECK**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Alarm | Event | K ---- control panel(ann) | Fmk------ panel(TB) | Indication | Remarks |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
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|  |  |  |  |  |  |

 Note: \*Checked by Multi-meter