**Objective:**

To establish the Standard Operating System for the Electrical operations

**Policy:**

Smooth & Effective Operations of the Equipments

**Responsibility:**

E&M Staff

**Procedures:**

1. Ensure that the Rubber Mats are placed in front of the Main LT Panel/HT panel.
2. Check and ensure all the Panels / DBs and doors are properly earthed.
3. Check proper ventilation / Exhaust in the Main LT Panel Room.
4. Check and ensure the protective relays (Over Current, Earth Fault, Earth Leakage, over / Under Voltage etc) are functional, reset if required.
5. Check and ensure the area near the panel is kept free from hindrances.
6. Check and ensure all the personnel protective equipments and tools are kept handy.
7. Check and ensure all the cable entries / panel doors are sealed / closed properly to avoid entry of reptiles and foreign material
8. Check and ensure no tools are left behind in the panel before switching on the supply
9. Check and ensure there are no water seepage / leakage on or near the electrical equipments.
10. Check the incoming supply (all 3 phases) voltage should be 415 volts, ± 5Volts at main LT panel
11. Check the Indications and meters are in working condition.
12. Switch ON the load feeders one by one as per the requirement.
13. Monitor and ensure that the Power Factor is maintained between 0.95 and 0.99.
14. Monitor different parameters of voltage, PF, running Load etc, ensure these are within the limits and record the same in the LOG Book.
15. Ensure that the lighting lux levels are maintained as per the design. All the lights should be kept in working condition.
16. Lighting levels (average) in the Operation Floors should be kept between 200 to 350 lumens.
17. Lighting levels will be verified on half yearly basis and improved if required.
18. Ensure the voltage between Neutral and Earth is less than 2.0 Volts.
19. Ensure the earth resistance of the earth pits is less than 2.0 ohm.

**Vacuum Circuit Breaker Operation (Close to Open)**

1. Confirm the load on the transformer is isolated
2. Confirm the power to transformer from the HT yard has been isolated.
3. Turn the beaker control Switch of the breaker to TRIP position from NEUTRAL position.
4. After tripping, the breaker control switch comes back automatically to NEUTRAL position.
5. Confirm the Isolation of the breaker by checking the isolation Indicator in OFF Position.
6. In case the breaker is not operated electrically with breaker control switch, use the push button to disengage / open the breaker.
7. Once the contacts are opened the breaker is to be pulled outside for maintenance by using racking handle, if required.
8. To insert the breaker after maintenance the breaker should be put back into the SF 6 chassis.
9. Push the breaker into the terminal slot so that the locking is engaged.

**Vacuum Circuit Breaker Operation (Open to Close)**

1. Turn the breaker control switch in the Breaker, which is in NEUTRAL Position to CLOSE position. This switch comes back automatically to NEUTRAL position after closing.
2. If the spring is not charged, charge it manually and close the breaker by pressing ON button.
3. Note down/record the number of operations from the counter.

**Emergency Operating Procedure**

1. In case of emergency, switch off the Power supply by operating the breaker control switch from Neutral to Trip Position and Confirm the Isolation of the breaker by checking the isolation Indicator in OFF Position
2. If the breaker does not trip for any reason push the EMERCENCY STOP button and ensure that the supply is cut off. If the breaker is not tripped even after the emergency stop button is pressed use OFF button in the breaker to switch OFF.

**Operation for Air Circuit Breaker**

**Automatic Operation**

1. Check the incoming supply in all the 3 phases
2. Keep Auto / Manual switch in “AUTO” position located on LT Panel for Power supply from transformer
3. Check - ACB spring in charged condition.
4. Transformer ACB will close automatically.
5. The Transformer ACB will trip automatically in case of Mains failure / Under Voltage / Short circuit and DG system will be ON automatically and LT panel is charged.

**Manual Operation**

1. Check the incoming supply (all 3 phases).
2. Keep Auto/Manual switch in “Manual” position located on Transformer ACB
3. Check - Transformer ACB spring is in charge condition. (If not, charge manually)
4. Close Transformer ACB by pressing “Close” push button located on LT panel and it will close if not closed, press the “Close” push button located on ACB and it will close.
5. Check - DG ACB spring is in charge condition. (If not charge manually)
6. The Transformer ACB will trip automatically if no supply available or under voltage or short circuit.
7. In case of Mains failure, start the DG manually and close the DG ACB.
8. Close Changeover ACB (where applicable) by operating the switchgear.
9. Other Outgoing Load MCCBs can be switched “ON”
10. Whenever Mains resumed open the DG ACB and close the Transformer ACB.

**Safety Precautions**

1. Ensure the work area is adequately lighted.
2. Carry all necessary tools Tackles (Properly insulated) & personnel protective equipments.
3. Lock Out/Tag Out (Keep the keys in your possession) the respective incomer supply before commencing the maintenance work.
4. Discharge the static current (where-ever applicable) before commencing the maintenance work.
5. Wear shock proof shoes / gloves while working on / near live contacts.
6. Remove any ID card, chain etc around the neck before working on any live panel.
7. Check and ensure no tools are left behind in the panel and the same is closed properly after the maintenance is completed.
8. Ensure adequate numbers of serviceable Fire Extinguishers / Sand buckets are kept near the panels of LT/DG/HT.

**Revision Guide:**

Any change in the system needs review of SOP.