DOCUMENT CONTROL

Document Number	**TPDF02-DIS01-OCP-026**	
Title of Document	**HT EQUIPMENT BREAKDOWN**	
Document owner:	General Manager (HV Cell)	
Prepared by / Modified by	Mr. Amit Magdum Manager HV Cell	07.11.2021
Reviewed by	Mr. Shilajit Ray Mr. Satish Shah Assistant General Manager HV Cell	22.11.2021
Approved by	Mr. Snehal Shah Mr. Abdulrashid Shaikh General Manager HV Cell	30.11.2021
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Amendment Details:

Sr.	Issue No.	Rev. No.	Date	Amendment Details	Reviewed by	Approved by
1	1	0	01.12.2021	First Issue	Shilajit Ray Satish Shah	Snehal Shah Abdulrashid Shaikh
2	1	0	01.12.2022	First Review Done (No changes)	Shilajit Ray Satish Shah	Ankit Saha Abdulrashid Shaikh

1. PURPOSE

1.1. Restoration of 22/11 KV Power Transformer/Feeder/ Bus under Breakdown and their Operation

2. SCOPE OF DOCUMENT

2.1. The scope of this document is to define a procedure for Operation of following Segment/Element

(1) 11 KV/22 KV Power transformer tripping
(2) 22 KV & 11 KV Feeder tripping & Breakdown.
(3) 11 KV/22 KV bus tripping

2.2. The process document aims to define the guidelines to ensure the process efficacy and effectiveness as required by the Integrated Management System.

3. FIELD OF APPLICATION

3.1. This procedure is used for operation of 22/11 KV Power Transformer/Feeder/ Bus in TPL-D's Franchisee areas of Bhiwandi & SMK.

4. FREQUENCY

4.1. As and when required

5. AUTHORITIES AND RESPONSIBILITY

5.1. The Head of HT network distribution is responsible for implementation of this procedure for effectiveness

5.2. The Head of Section at respective location is responsible for execution of this procedure

5.3. HT department is responsible for execution of the work in accordance with this procedure.

6. REFERENCES

6.1. Not Applicable

7. SPECIFIC COMPETANCY REQUIREMENTS OF Operator/JE/Exe/AM/M

7.1. Knowledge of

(1) HT network (System diagram)

(2) Loading capacity of concern equipment.

(3) Electrical equipment and its operation with related safety aspects.

(4) Use of PPEs.

7.2. Tech/ JE/Exe/AM/M shall have authority for electrical isolation and issue of LCP/OUTAGE CODE/PTW

8. INTERFACE WITH OTHER DEPARTMENTS/SECTIONS, IF ANY

(1) SCADA

(2) EHV- MSETCL

(3) HV/HT Cell

(4) NPC

9. TOOLS AND TACKLES

(1) SCADA/SAP system.
(2) Operating Handle of switchgears
(3) Lock for LOTO
(4) Live Line Detector
(5) Caution Board
(6) Shorting & discharge rods.

10. PERSONAL PROTECTIVE EQUIPMENTS / SAFETY TOOLS

Following PPEs shall be used to carry out work at site.

(1) Safety shoes

(2) Safety helmet

(3) Face visor

11. SIGNIFICANT RISK PARAMETRS

11.1. Quality Management System : Low

11.2. Impact on Environment: Low

11.3. Health and Safety Risk: High

11.4. Energy Management: Low

11.5. Asset Management Risk: Low

12. PROCEDURE

12.1. JOB PREPARATION

(1) Alarm on SCADA or information received from switchgears installed in Bhiwandi & SMK DF area. Direct intimation from MSETCL on duty shift in charge or call centre or NPC
(2) Control room to inform concern on duty breakdown engineer/HV Cell regarding tripping detail/ historical data
(3) Prepare interruption outage in SAP module by control room
(4) Control room / HT department to check the feeder/equipment status for any shutdown/ temporary switching/ network diversion.

12.2. PRECAUTIONS

(1) Instruct substation /switching in charge to inspect the switchyard or 22 kV /11 KV panel room for any abnormalities.

(2) Instruct substation in charge to move crew working the substation switch yard to safe location during operation.

12.3. ISOLATION 22 / 11 KV Power Transformer

(1) Control room to initiate the load transfer.
(2) External switching to be carried out by concern HT team if load transfer is not possible on redundant source.
(3) Control room to collect the details of tripping relay.
(4) Inform the concern section to carry out inspection/testing of the power transformer.
(5) Collect information about any abnormalities of LV panel and power transformer.
(6) Rack out the LV 11 KV breakers.
(7) Inform the concern engineer / department for the tripping and proceed for the 11 KV Incomer Breaker isolation as per the OCP NO TPDF02-DIS01-OCP-005

(8) Put Caution tag on relevant equipment and on local HV/LV panel.

(9) Control Room to inform all concern about the tripping details and restoration.

12.4. Restoration of 22/11 KV feeders.

1) Control room to initiate the load transfer on redundant source.
2) External switching to be carried out by concern department if load transfer is not possible on redundant source.
3) Control room to collect the relay details.
4) If the feeder has been tripped on over current due to over-load, then after relieving the load, normalize the feeder.
5) If feeder has been tripped on over current/earth-fault relay, then inform HT breakdown team for suspected cable/line fault.
6) Collect information about any abnormalities at panel end
7) Inform concern HV cell / Shift Engineers for further action.
8) If the feeder contains automation RMU and restore part section of the feeder in consultation with control room as early as possible.
9) Restore the remaining healthy section of feeder in co-ordination with NPC /HV Cell by patrolling & attending of fault.
10) Relay setting to be normalized after faulty section is isolated.
11) Field engineer to report breakdown/no power detail to concern department for attending & normalization. (HT consumer installation/ DTC fault et.)

12.5. Restoration of 22KV / 11 KV Bus

(1) Control room to collect the relay details.

(2) Physical Inspection to carry out by engineer/ operator to check the abnormality.

(3) If abnormality is observed control room to initiate the load transfer & communicate to concern department.

(4) External switching to be carried out by HT team if load transfer is not possible on redundant source.

(5) Inform the concern engineer / department for the tripping and proceed for the 22 kV and 11 KV Bus isolation as per the OCP NO TPDF02-DIS01-OCP-005 (Isolation Procedure for 22 KV/11 KV Bus)

(6) After Completing the Work and clearance by site engineer proceed for the 22 kV / 11 KV Bus Restoration as per the OCP NO TPD05-DIS01-OCP-005 (Normalization Procedure for 11 KV/22 KV Bus)

(7) Control Room to inform all concern about the tripping/ breakdown details and restoration.

12.6. Necessary documentation

(1) Control room to create notification

(2) Control room to create breakdown outage in SAP.

(3) Field engineer to report breakdown detail to concern department for attending & normalization.

13. IMPACT ANALYSIS OF SIGNIFICANT RISKS

13.1. Quality Management System

(1) Details of Quality Issues involved

a) Incompetent manpower (Over Loading of segment/equipment)

(2) Details of Quality Assurance plan

a) Operational training & skilled manpower

b) Load flow management & Load transfer study carried out.

13.2. Health and Safety

(1) Details of Health and Safety Hazard involved

a) Person working at site without TPL supervision

b) working/travelling in extreme weather condition

c) Animal/ insect bite

d) Contact with Live terminal/ cable/ wire/ busbar

e) Working in congested area

f) Use of faulty Tools

g) Negligence of use of safety PPEs / Non usage of PPEs/ Use of

faulty PPEs

h) Accident to public due to Working without Area barricading

i) Accident to public due to Working without Area barricading

j) Fall of overhead line

k) Working in unhygienic area

l) Contact with sharp edges

m) Fall of person from Height

n) Slips, trips and Falls of Persons

o) Fall of material /equipment during loading / unloading / shifting/handling

p) Travelling in heavy traffic

q) Electric shock due to improper earthing of welding / Other electrical tools

r) Failure of loading / unloading equipment

(2) Health and Safety Precautions required

a) Use of Face wiser / full mask helmet during switching

b) Isolation checklist/OCP and nomenclature on earth trolley

c) Live line detector hand gloves, safety shoes and helmet

d) Survey based maintenance of equipment, personnel awareness, VCB vacuum bottle continuity checking before inserting in VCB compartment

e) SF6 gas level inspection in RMUs / Auto recloser.

f) PPE verification before work

g) Safety shoes, Safety helmet, Isolation OCP / checklist.

h) Personnel awareness, Authorised person

i) Entry allowed authorizing person only in switchyard.

j) Safety Shoes/Gum boots, torch

k) Discharge rods & shorting.

1.2. Environment

(1) Details of Environmental impact

a) Nil

(2) Precautions to minimize Environmental impact

a) Nil

1.3. Energy Management

(1) Details of energy use involved

a) Nil.

(2) Precautions to minimise energy use

a) Nil

1.4. Asset Management

(1) Details of Asset related risks

a) Loss of Equipments
b) Frequent Small Duration Forced Outages
c) Sustained Forced Outage requiring Major Repair
d) Frequent Planned Outages
e) Overloading of equipment
f) Mishandling by handling equipment

(2) Mitigation plan for asset related risks

a) Load flow study, Load monitoring and if required then Load transfer to save over loading of segment/equipment.

b) Network reconfiguration.

c) Use of skilled manpower.

2. LIST OF ATTACHMENTS

Sr.	Document /Record Description	Reference No.
1)	Permit To Work	TPDF02-SAQ02-OCP-005-F02
2)	PPEs Tools Check List	TPDF02-DIS01-CHK-001-F06

***** End of Procedure *****