DOCUMENT CONTROL

Document Number	**TPDF02-DIS01-OCP-024**	
Title of Document	**HT LINE/EQUIPMENT SHUTDOWN**	
Document owner:	**General Manager (Distribution)**	
Prepared by / Modified by	**Mr. Amit Magdum** **Manager** **Distribution**	**07.11.2021**
Reviewed by	**Mr. Shilajit Ray** **Mr. Satish Shah** **Assistant General Manager** **Distribution**	**22.11.2021**
Approved by	**Mr. Snehal Shah** **Mr. Abdulrashid Shaikh** **General Manager** **Distribution**	**30.11.2021**
Last Reviewed on		**01.12.2022**

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	1	01.12.2022	First Revision Done (Clause 12.4)	Shilajit Ray Satish Shah	Ankit Saha Abdulrashid Shaikh

1. PURPOSE

1.1. Operation of 11 KV/22 KV Line/Equipment for Shut down

2. SCOPE OF DOCUMENT

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

(1) 11 KV/22 KV Cable/Line
(2) 11 KV/22 KV Bus
(3) 11 KV /22 KV Outgoing breaker
(4) 11 KV /22 KV Incomer breaker
(5) 11 KV Capacitor bank Breaker
(6) 11 KV/22 KV Bus section breaker
(7) 22 KV Power Transformer
(8) 11 KV /22 KV Capacitor bank

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 shutdown Operation of following 11 KV/22 KV Cable/ Line/Equipment Shut down 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 Department 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. HV Cell is responsible for execution of the work in accordance with this procedure.

6. REFERENCES

6.1. Not Applicable

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

7.1. Knowledge of

(1) EHV/HV network

(2) Loading capacity of concern equipment.

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

(4) Use of PPEs.

7.2. JE/SE/Exe/AM/M shall have authority for electrical isolation and issue of Outage Code/PTW

8. INTERFACE WITH OTHER DEPARTMENTS/SECTIONS, IF ANY

(1) MSETCL/MSEDCL

(2) NPC/HV/DTC/SCADA /HT Cell

9. TOOLS AND TACKLES

(1) SCADA/SAP system
(2) Check List for Isolation & Normalization.
(3) Caution Board
(4) Operating Handle
(5) Lock for LOTO
(6) Live Line Detector

10. PERSONAL PROTECTIVE EQUIPMENTS / SAFETY TOOLS

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

10.1 Safety shoes
10.2 Safety helmet

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

a) Schedule Shutdown request through E-mail / Notification in SAP is received from concern department to Control Room generally one week in advance as per shutdown meeting.
b) Unscheduled Shutdown request received from concern department to Control Room.
c) Co-ordination with Station shift operator / field engineer before operation

a) Prior consent for shutdown from Control Room is required. Inform in

advance all concern persons/Departments involved/ concerned with operations required for shutdown

12.2 PRECAUTIONS

a) Load flow study to be carried out regarding the equipment required for shutdown.
b) Lock/Tie of bus/circuit shutter while working in the breaker compartment.
c) All the temporary switching (Load transfer) /remarks related to shutdown to be checked.
d) Instructions to be given to all engineer concern who are required to carry out work that Circuit side / cable compartment of 11 KV/22 KV outgoing feeder / power transformers are live.
e) Substation in charge/concern engineer has to check that all the apparatus operation work properly at field step by step during operation at either end.

12.3 **Isolation**

b) Not Applicable

12.4 WORK PROCEDURE

1) Isolation procedure for 11 KV/22 KV Line/equipment

a) Carry out necessary switching operation for OFF loading the 11 KV/22 kV feeder required for shutdown.
b) Inform control room engineer to OPEN the load end 11 KV/22 kV feeder circuit breaker through SCADA OR OPEN & isolates manually 11 KV/22 kV feeder Circuit Breaker in consultation with control room.

2) Normalization procedure for 11 KV/22 KV Line/equipment

a) Take switchgear in service position by manually, inform control room engineer to Close the load end 11 KV/22 kV feeder circuit breaker through SCADA OR Close manually 11 KV/22 kV feeder Circuit Breaker in consultation with control room.
b) Carry out necessary switching operation for loading the 11 KV/22 kV feeder load for normalization.

3) Isolation Procedure for 11 KV/22 KV Bus:

a) In consultation of control room OFF load the 11 KV/22 kV bus by carrying out external switching.
b) Switch off and isolate all outgoing breaker connected to bus section.
c) OPEN and isolate 11 KV/22 kV bus coupler (if applicable)
d) OPEN & Isolate 11 / 22 KV incomer of bus section.

4) Normalization Procedure for 11 KV/22 KV Bus
   c) In Consultation with control room normalize bus by carry out external switching & take required switchgears to service position , Close 11 / 22 KV incomer of bus section.
   d) Close 11 KV/22 kV bus coupler (if applicable)
   e) Switch on and normalization all outgoing breaker connected to bus section & take load.
5) Isolation Procedure for 11 KV/22 KV Outgoing breaker
   a) OFF load the 11 KV/22 kV outgoing feeder by carrying out external switching if possible.
   b) OPEN the 11 KV/22KV breaker required for shutdown through SCADA OR instruct the substation in charge/concern engineer to OPEN the breaker Locally & isolate same.
6) Normalization Procedure for 11 KV/22 KV Outgoing breaker

   f) Carry out necessary switching operation for loading the 11 KV/22 kV feeder load for normalization.
   g) Take required switchgears to service position, inform control room engineer to Close the load end 11 KV/22 kV Outgoing breaker through SCADA OR Close manually 11 KV/22 kV Outgoing breaker in consultation with control room.

7) Isolation Procedure for 11 KV/22 KV Incomer Breaker
   a) OFF load the 11 KV/22 kV outgoing feeder by carrying out external switching if possible
   b) OFF & isolate the incomer breaker.
8) Normalization procedure for 11 KV/22 KV Incomer Breaker

   h) Carry out necessary switching operation for loading the 11 KV/22 kV outgoing feeder load for normalization.

i) Take required switchgears to service position Inform control room

engineer to Close the load end 11 KV/22 kV Incoming breaker through SCADA OR Close manually 11 KV/22 kV Incoming breaker in consultation with control room.

9) Isolation Procedure for 11 KV/22 KV Bus Section Breaker

j) In case both incomer is ON, Off and isolate the bus section breaker
k) In case of bus section breaker on, Then OFF load the 11 KV/22 kV outgoing feeder by carrying out external switching if possible.
l) Off and isolate the bus section breaker

10) Normalisation procedure for 11 KV /22 KV Bus Section Breaker

m) Take required switchgears to service position In Consultation with control room normalize bus by carry out external switching & Close 11 / 22 KV incomer of bus section.
n) Close 11 KV/22 kV bus coupler (if applicable)
o) Switch on and normalization all outgoing breaker connected to bus section & take load.

11) Isolation Procedure for 22/11 KV Power Transformer

a) Carryout necessary switching operation for OFF loading the 22 KV Power transformer required for shutdown.
b) First switch OFF 11/22KV–Circuit Breaker then switch OFF 22KV Circuit Breaker of Power transformer which is required for shutdown through SCADA OR manually / Local from C&R panel. Isolate switchgears from system ,open neutral link.
c) OPEN HV Bus Isolator (if applicable) for Power Transformer through SCADA OR instruct substation in charge/concern engineer to OPEN HV Bus Isolator (if applicable) for Power Transformer from local C & R panel or manually.

12) Normalisation Procedure for 22/11 KV Power transformer

p) Connect / insert neutral link of PTR, take primary & secondary breakers in service position. Close HV Bus Isolator (if applicable) for Power Transformer through SCADA OR instruct substation in charge/concern engineer to Close HV Bus Isolator (if applicable) for Power Transformer from local C & R panel or manually.

q) Switch ON 22KV Circuit Breaker of Power transformer which is required for shutdown through SCADA OR manually / Local from C&R panel then switch On 11/22KV Circuit Breaker

r) Carry out necessary switching operation for loading the 11 KV/22 kV outgoing feeder load for normalization.

13 IMPACT ANALYSIS OF SIGNIFICANT RISKS

13.1Quality 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 is carried before giving shutdown.

13.2Health and Safety

(1) Details of Health and Safety Hazard involved

(c) Working/travelling in extreme weather condition

(d) Poor illumination

(e) Animal/ insect bite

(f) Flash Over during switching operation.

(g) Working in congested area

(h) Use of faulty Tools

(i) Negligence of use of safety PPEs / Non usage of PPEs/ Use of faulty PPEs

(j) Hit by handles/tools due to slippage/ mishandling

(k) Working in unhygienic area

(l) Consumer aggression

(m) Contact with Live terminal/ cable/ wire/ busbar

(n) Accident due to improper isolation

(3) 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 Tester, hand gloves, safety shoes and helmet

(d) CBM of equipment, personnel awareness, VCB vacuum bottle continuity checking before inserting in VCB compartment

(e) PPE verification before work

(f) Safety shoes, Safety helmet, Isolation OCP / checklist.

(g) Personnel awareness, Authorised person

(h) Entry allowed authorizing person only in switchyard.

(i) Safety Shoes/Gum boots, torch

13.3Environment

(1) Details of Environmental impact

(j) Nil

(2) Precautions to minimize Environmental impact

(a) Nil

13.4Energy Management

(1) Details of energy use involved

(a) Nil

(2) Precautions to minimise energy use

(a) Nil

13.5Asset 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.

14. LIST OF ATTACHMENTS

Sr.	Document /Record Description	Reference No.
1	SAP Outage Code	SAP ID – YMPD072
2	OCP for Isolation & Restoration procedure	TPDF02-DIS01-OCP-005

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