DOCUMENT CONTROL

Document Number	**TPDF02-DIS01-OCP-003**	
Title of Document	**HT CABLE IDENTIFICATION**	
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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	1	01.12.2022	First Revision (Clause – 12.4.2)	Shilajit Ray Satish Shah	Ankit Saha Abdulrashid Shaikh

1. PURPOSE

1.1. HT Cable Identification

2. SCOPE OF DOCUMENT

2.1. The scope of this document is to define a structured activity-level flow for HT Cable Identification and cutting of the identified cable

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

3. FIELD OF APPLICATION

3.1. This procedure is used for HT Cable Identification 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 Distribution is responsible for implementation of this procedure for effectiveness.

5.2. The Head of HT O&M/Projects at respective locations are responsible for execution of this procedure for effectiveness.

6. REFERENCES

6.1. OEM Manual

7. SPECIFIC COMPETENCY REQUIREMENTS

7.1. Tech/Jr. Exe/Exe/AM/M should have Knowledge of

(1) HT cable segment, SDB/GIS

(2) Safe working practices and use of PPE

7.2. Tech/Jr. Exe/Exe/AM/M having valid authorization from General Manager Distribution shall have authority for electrical isolation and issue of Permit to Work (PTW).

7.3. As per competency profile and assessment.

8. INTERFACE WITH OTHER DEPARTMENTS/SECTIONS, IF ANY

8.1. Control Room/NPC for Outage and temporary switching Information

8.2. Safety Department for information of work execution

9. TOOLS AND TACKLES

9.1. Cable identifier equipment

9.2. Earthing leads and testing rod for switchgear.

9.3. Tool kit

9.4. Cable cutting tool

9.5. Live line detector

9.6. Discharge rod

10. PERSONAL PROTECTIVE EQUIPMENTS / SAFETY TOOLS

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

10.1. Safety shoes / Gum boot

10.2. Full mask helmet

10.3. Insulated hand gloves of 22 KV class

10.4. Barricading tape (if required)

10.5. Caution board / “Men at work” sign board (if required)

10.6. Barricading cone (if required)

11. SIGNIFICANT RISK PARAMETRS

11.1. Quality Management System: Low

11.2. Impact on Environment: High

11.3. Health and Safety Risk: High

11.4. Energy Management: Low

11.5. Asset Management Risk: High

12. PROCEDURE

12.1. JOB PREPARATION

(1) Confirm the cable leg as per GIS/SDB drawing before cable identification for faulty cable jointing/looping of new switchgear/substation/cable shifting/Leg upgradation work.

(2) Study of the cable route drawing or GIS drawing for cable identification.

(3) Collect and transport the material and equipment at site.

12.2. PRECAUTIONS

(1) Use required PPEs during execution of the job.

(2) At each location where isolation has been carried out and in which provision is there for pad locking, provide pad locking having LOTO / Padlock & Put the NTC Sticker and mention the details as under.

(3) Keep the NTC Sticker and mention the details as under

(a) Reason for Isolation.

(b) Date and Time of Isolation.

(c) Isolation carried out by Engineer Name / Sign of Engineer.

(4) After isolation, ensure zero potential on equipment where work is to be carried out using suitable device (like HV line detector)

12.3. ISOLATION

(1) For isolation equipment from the system follows the procedure as per OCP No: TPDF02-DIS01-OCP-005 for Distribution Network Isolation and Normalisation as per the switching requirement.

(2) Authorised person issue "Permit to work" as applicable to competent person after required isolation and local earthing.

12.4. WORK PROCEDURE

(1) Cable Identification

(a) Confirm both ends of cable are in the 'Earth' position.

(b) Make connections of cable identifier equipment to the Testing Rod / testing terminal / cable end termination. After connection change isolator position from "Earth" to 'OFF' position.

(c) Start the cable identifier instrument.

(d) Confirm the direction of injected signal (i.e. from the substation towards pit side where the cable is to be identified) by checking the deflection of needle / indicator of transmitter unit and that of receiver unit are in same (positive/green indication) direction.

(e) Identify the require cable at pit with the help of cable identifier receiver unit by confirming direction of injected signal in receiver unit remains same as at the substation end from where the test signal is being injected.

(f) Repeat the same procedure for all cables in pit. The cable which is being isolated for identification and in which signal injected, the deflection will be same (positive/green indication) while in all other cables the deflection will be nil / reverse / negative.

(g) Change direction of CT of receiver (i.e., reverse direction of CT) at pit, which will give negative (reverse indication / Red indication), which will confirm cable and applied signal.

(h) Confirm the sensed signal at pit is the same which is injected at source end by making ON / OFF transmitter.

(i) After proper cable identification mark/ tag the identified cable in open trench/pit.

(j) Put the isolator in 'EARTH' position again.

(k) After cable identification work is completed, remove the connections of the instruments.

(l) If required, repeat the same procedure from opposite (other) end of the cable section.

(2) Cable Nailing & Cutting

(a) Once the desired cable is confirmed then start cable nailing & cutting process.

(b) Check that cable nailing/cutting tool is in good condition.

(c) Inform control room before nailing the cable and check the status of other feeders(cables) emanating from EHV substation.

(d) Provide local earthing to the tool by means of earth spike properly grounded in the earth.

(e) The persons (i.e., person who is holding the insulated cable pricking tool and person who is hammering the tool from its top end) shall wear Safety Shoes / full mask helmet and safety gloves of 22 KV class before puncturing the cable.

(f) Also, while pricking the cable, the persons shall use insulated 22 KV class rubber mat and shall stand on the rubber mat.

(g) Ensure that the nail of the pricking tool is being inserted in identified cable only during cable nailing. With the help of hammer with required force puncture the cable. Above operation may be required for two or three times to ensure that all three cores are being properly punctured.

(h) After nailing/cutting, verify with Control room that there is no feeder 'TRIP' alarm is activated. In case of any feeder tripping due to above, no further activity to be done related to wrongly identified cable till Control Room clearance.

(i) If cable is confirmed, then proceed with further activity.

(3) Site housekeeping (If Applicable)

(a) After completion of work remove all packing, waste material and dump, Collect and submit to stores.

(b) Remove barricades, temporary stakes etc.

(c) Clean the area of dirt, loose soil etc.

(d) Remove caution boards, plastic cones

12.5. RESTORATION

(1) Not applicable

12.6. WORK CHECKLIST

(1) Not Applicable

12.7. UPDATION

(1) Update in GIS / SAP, if applicable.

13. IMPACT ANALYSIS OF SIGNIFICANT RISKS

13.1. QUALITY MANAGEMENT SYSTEM

(1) Details of Quality Issues involved

(a) Incompetent manpower (Wrong switching operation)

(2) Details of Quality Assurance plan

(a) Work Quality Training

(b) Authorisation

(c) Effective supervision

13.2. HEALTH AND SAFETY

(1) Details of Health and Safety Hazard involved

(a) Pick-axe on live cable

(b) Contact with sharp edges

(c) Hit by Excavation tool

(d) Accident to public due to working without Area barricading

(e) Penetration of dust particles in eyes during excavation

(f) Working in bending position / Awkward Posture

(g) Excessive work load

(h) Ingress of polluted water in excavated pit

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

(j) Use of faulty Tools

(k) Flash Over during switching operation

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

(m) Poor illumination

(n) Flash over during connection-Disconnection

(o) Road/RCC breaking activity by JCB Machin or Road breaker - Exposure to continuous Hand-arm & full-body vibrations

(p) Road/RCC breaking activity by JCB Machin or Road breaker - Exposure to continuous Noise

(2) Health and Safety Precautions required

(a) Follow the OCP

(b) Ensure healthiness of PPEs & use all required PPEs during execution

(c) Use of Barricading Tape wherever required

(d) Ensure proper co-ordination with other departments

(e) Keep the fire extinguisher ready within reachable limit.

13.3. ENVIRONMENT

(1) Details of Environmental impact

(a) Resource Depletion

(b) Air Pollution

(c) Land Contamination

(2) Precautions to minimize Environmental impact

(a) Ensure PUC for vehicle

(b) Records the Vehicle's trip (Common monitoring)

13.4. ENERGY MANAGEMENT

(1) Details of energy use involved

(a) Fuel consumption in transportation/ material movement

(2) Precautions to minimise energy use

(a) Ensure Optimum Usage & Turn off the engine when not in use

13.5. ASSET MANAGEMENT

(1) Details of Asset related Risk

(a) NIL

(2) Mitigation plan for asset related risks- NIL

(a) NIL

14. 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 *****