
	Torrent Power Ltd. – Distribution Franchise	Doc. No.: TPDF02-DIS01-OCP-008
	OCP - ASSET PATROLLING AND HOUSEKEEPING OF SWITCHING STATION/ SUBSTATION	Rev. No. /Dt: 01 / 01.12.2022

DOCUMENT CONTROL


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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)	Shilajit Ray Satish Shah	Ankit Saha Abdulrashid Shaikh

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1. PURPOSE

- 1.1. Survey patrolling of HT network assets including distribution transformer centres, pole mounted structures/equipment, switchgears, substation/switching station equipment's & their components, housekeeping of Switching Station/ Substation

2. SCOPE OF DOCUMENT

- 2.1. The scope of this document is to define a structured activity-level flow for Survey patrolling of HT network assets & Housekeeping of Switching Station/ Substation
- 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 Asset Patrolling and Housekeeping of Substation 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. MERC Regulations (with its latest amendments)
- 6.2. Central Electricity Authority (Measures Relating to Safety & Electric Supply) Regulations 2010 (with its latest amendments)
- 6.3. IMS Manual whenever implemented.
- 6.4. System diagram books & GIS for network layout
- 6.5. OCP # TPDF02-STO01-OCP-006 - Operational Control Procedure for Handling, Collection, Storage and Management of Hazardous Waste
- 6.6. OCP # TPDF02-STO01-OCP-007 - Waste Management of Non-Hazardous Waste

7. SPECIFIC COMPETENCY REQUIREMENTS

- 7.1. Technician/GET/Jr. Exe/Exe/AM/M should have Knowledge of
 - (1) O&M
 - (2) Network layout, System diagram book and GIS
 - (3) Safe working practices and use of PPE
- 7.2. As per competency profile and assessment.

8. INTERFACE WITH OTHER DEPARTMENTS/SECTIONS, IF ANY

- 8.1. LV, Security & Civil section for their related information

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- 8.2. Store for material issue and reconciliation

9. TOOLS AND TACKLES

- 9.1. Tool bag (If require)
- 9.2. Switching Station/ Substation cleaning work related tools (like Hard and soft broom, duster, fine waste etc.)

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.
- 10.3. Reflective jacket
- 10.4. Safety goggles (if required)
- 10.5. Insulated hand gloves of 22KV class if required


11. SIGNIFICANT RISK PARAMETRS

- 11.1. Quality Management System: Medium
- 11.2. Impact on Environment: Medium
- 11.3. Health and Safety Risk: Low
- 11.4. Energy Management: Low
- 11.5. Asset Management Risk: Low

12. PROCEDURE

12.1. JOB PREPARATION

- (1) Collect following list (as applicable)
 - (a) List of switching station/ substation for housekeeping
 - (b) List of cable route for patrolling
 - (c) List of OH line for patrolling
 - (d) List of DTCs
 - (e) List of switchgears
- (2) Study of HT network route & equipment's locations, SDB, cable route/OH line layout drawings or GIS.
- (3) Ensure that the crew has necessary outsourced manpower to carry out Housekeeping of switching station/substation premises & only authorisation persons to work at site.
- (4) Daily planning for the survey patrolling shall be prepared.
- (5) As per the planning, survey observations shall be entered in hard copies & stored in

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excel survey check list or fetched from FFA.

12.2. PRECAUTIONS

- (1) Aware all persons for nearby live equipment, maintain safe clearance & safety while working.
- (2) Use all required PPEs during execution of the job.
- (3) No person shall be moved at places other than his/her own workplace without instruction of his/her immediate superior.

12.3 ISOLATION


- (1) Not applicable

12.4 WORK PROCEDURE

In asset patrolling of network equipment, following shall be checked and recorded in the report.

- (1) Power Transformer Inspection:
 - (a) Walk around the unit to look at key areas
 - (b) Check the paint conditions
 - (c) In the conservator system, check the oil level and condition of Silica gel.
 - (d) Check the tank for leaks and rust
 - (e) In the bushing, check the presence or absence of cracks.
 - (f) In the OLTC system, check the oil level and condition of silica gel.
 - (g) Mention the Oil temperature and Winding temperature in the report.
 - (h) In the OLTC system, note the number of OLTC operations.
 - (i) Check all radiators for leaks and rust
 - (j) Check butterfly valve of all radiators open or closed.
 - (k) Check the earthing with PTR body and neutral well connected.
 - (l) Check the cable laying and support on HV and LV cables.
 - (m) Take the thermal image of HV and LV side of the PTR
 - (n) Check the condition of the transformer at various places using thermography camera. If any hot spot observed, capture the image, and note down the details in the format # TPDF02-DIS01-CHK-F02-001.

If any other abnormality found while inspection of Power Transformer it shall be recorded in the report.

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(2) Switching Station/Substation Building (wherever present) Related:

- (a) Check Cracks in Wall and Ceiling
- (b) Check Water Seepage from wall and ceiling
- (c) Check Termite on wall or ceiling
- (d) Check Condition of plaster
- (e) Check SS door/ fencing condition
- (f) Check transformer/Switch gear plinth condition
- (g) Check transformer/ Switch gear room trench cover condition
- (h) Check substation lighting condition
- (i) Check Fire Extinguisher condition
- (j) Check Shock treatment board condition

If any other abnormality found like Cracks in Wall, water seepage, fencing/door broken, trench cover not properly placed etc. shall be mentioned in the report.


(3) Housekeeping of Switching Station/Substation:

- (a) Go to switching station/ substation for housekeeping as planned.
- (b) Pick garbage from floor of switching station/ substation.
- (c) Sweep substation floor, wall, and ceiling with a broom.
- (d) Collect all garbage from switching station/ substation and dispose of into garbage collection container.
- (e) Grass Cutting required or not
- (f) Whitewash required or not
- (g) Termite Treatment required or not
- (h) Roof Cleaning required or not
- (i) Inform concern executive if any abnormality found in substation.

If any other abnormality found, it shall be mentioned in the report.

(4) Distribution Transformer Inspection:

- (a) Check KVA rating, Type and Make of DT
- (b) Check Oil level in Conservator indicator glass
- (c) Check Oil leakage from any part of DT
- (d) Check Body and Neutral Earthing
- (e) Check Breather and Silica Gel Condition

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- (f) Check LT cable and LT cable support Condition wherever present
- (g) Check Capacitor cable condition at Transformer end.
- (h) Take Thermal Images of LT side and CT, record it.
- (i) Check the condition of the transformer at various places using thermography camera. If any hot spot observed, capture the image, and note down the details in the format # TPDF02-DIS01-CHK-F02-001.

If any other abnormality found while transformer inspection it shall be recorded in the report.

(5) HT Capacitor Inspection:

- (a) Check Type, Make and Size (KVAR) of Capacitor
- (b) Check Enclosure Condition
- (c) Check Body Earthing

If any other abnormality found it shall be noted down in the report.

(6) Fuse Section Pillar Inspection:


- (a) Check type of Fuse Section pillar
- (b) Check enclosure condition
- (c) Check Door Condition
- (d) Check Incoming LT cable, LT Switch and Bus bar Condition
- (e) Check Body and neutral Earthing
- (f) Check cable clamp and Muffing condition if available

If any other abnormality found it shall be noted down in the report.


(7) Check the condition of the cable termination, cable connections in FSPs using thermography camera, if any hot spot observed captured the image and note down the details in the report format # TPDF02-DIS01-CHK-F02-001.

(8) Cable Route

- (a) During patrolling, collect following information & escalate immediately if any abnormality is noticed.
 - I. Site Location.
 - II. Identification of type of excavation i.e., manual or with J.C.B
 - III. Route of excavation
 - IV. Name of excavating agency
 - V. Number, size, and type of cables
- (b) Give following details of cable to excavation agency (if required)
 - I. Cable route


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- II. Number of HT cable
- III. Type of cable
- IV. Cable road crossing
- (c) To find cable route and for the prevention of cable damage, inform concern engineer for requirement of trial pit and communicate to the other agency if required.
- (d) Inform excavation completion and site clearance to concerned engineer
- (9) Patrolling of HT/LT OH line.
 - (a) Overhead line related following data are to be captured & same should be submitted in # TPDF02-DIS01-CHK-F01-001 (Survey/patrolling format) captured through hard copy or FFA
 - I. Feeder Name.
 - II. Name of S/S from which the feeder is being emanating.
 - III. Line data verification
 - (i) Pole number
 - (ii) Details of number and type of conductors mounted
 - (iii) Number of circuits.
 - IV. Check type of pole (pre-stressed concrete pole, rail pole, Tubular Pole, H-beam)
 - V. Check if earthing connection available between common earth terminal and earth pit.
 - VI. Check for mounting details
 - VII. Check if pole is in permissible verticality.
 - VIII. Check if pole mounted in convenient position with respect to other functional area around it.
 - IX. Check if it causes obstruction to traffic.
 - X. Pole numbers are readable
 - XI. Check for Danger board
 - XII. Checking of Stay
 - (i) Check number of stay wires present.
 - (ii) Check tension of all stay wires present.
 - (iii) If stay wire tension is less, then check if the nut and the straining bolt of the stay anchor are serviceable.
 - (iv) Check if stay insulators present in all stay wires.
 - (v) Check if additional stays required.
 - (vi) Check if additional stay wire is feasible from space

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availability point of view.

- XIII. Check number of support poles present.
 - (i) Check if support pole is mounted correctly.
 - (ii) Check if additional stay pole required.
- XIV. Checking Insulator
 - (i) Check physically the condition of pin or disc insulators.
 - (ii) If it is required to be changed then note the pole number.
- XV. Number of trees required to be trimmed/cut (span wise details).
- XVI. Details of any damage pole / leaning pole
- XVII. Details of damage conductor / jumper / pole fitting.
- XVIII. Physical condition of DO fuse element/DO unit/DO fitting etc. wherever required.
- XIX. Checking of Guarding
 - (i) Check if guard wire provided.
 - (ii) Check for correct sag.
 - (iii) Check for any damage / missing guard wire with span details.
 - (iv) Check for adequate binding of guy wires.
- XX. Check if cradle guarding provided in case of insulated conductor / road crossing etc.
 - (i) If cradle guarding provided, then condition is OK/Not OK
 - (ii) Check for any damage / missing cradle guarding with span details.
 - (iii) Check for correct sag.
 - (iv) Check for adequate binding of guy wires.
 - (v) Check for required cradle wire availability.
- XXI. Check for construction near O.H. Line.
 - (i) If construction is near O.H. Line, then check distance between the construction & the overhead line. Distance between the two must be equal or more than specified in CEA regulations 2010 or its latest revisions.
 - (ii) If distance between construction & overhead line is not sufficient then such locations are to be verified by concerned Executive/AM of HV Cell.
 - (iii) Take the details like the name of building, address, Name of the building holder, if possible, take the service no.
 - (iv) Issue Safety Notice to the above person, regarding

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insufficient distance between O.H. Line & the building and copy to Electrical Inspector's Office (through Safety Dept.) & other concerned offices.

- (b) Check the condition of the OH network jumpers, cable terminations, joints, DL/tap-DO etc. visually as well as using thermography camera, if any hot spot observed captured the image and note down the details in the report # TPDF02-DIS01-CHK-F02-001.
- (c) Patrolling of HT OH line under fault (restoration of supply needed in this case)
 - I. Following points are to be taken care during patrolling of OH under permanent fault.
 - (i) Identify type of breakdown.
 - (ii) Details of relays on which the feeder breaker has been tripped.
 - (iii) Also details of any earth passage indicator (if provided) is glowing which is provided either on line or switchgear for the purpose of quick identification & isolation of faulty section.
 - (iv) In case, OH Line is not tripped but single phasing complaints have been received. In such case identify the locations
 - (v) Scrutinising the consumer's complaints from respective NPC if specific location is known to them.
 - (vi) To visit the location of breakdown site if details available from control room in-charge else during patrolling same may be located.

12.5 RESTORATION

- (1) Not Applicable

12.6 WORK CHECKLIST

- (1) Update in survey/patrolling format


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/missed observation)
 - (b) Incompetent manpower (Wrong / Improper housekeeping of distribution substation)
 - (c) Work not done as per OCP

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- (2) Details of Quality Assurance plan
 - (a) Work Quality Training
 - (b) On job Training
 - (c) Effective supervision on survey activities

13.2 HEALTH AND SAFETY


- (1) Details of Health and Safety Hazard involved
 - (a) Animal/ insect bite
 - (b) Fall of external object
 - (c) working/travelling in extreme weather condition
 - (d) Working in unhygienic area
 - (e) Slips, trips and Falls of Persons
 - (f) Contact with sharp edges
- (2) Health and Safety Precautions required
 - (a) Use of proper PPEs & maintain safe distance always from live parts
 - (b) Ensure that authorized person should work
 - (c) Use torch wherever required

13.3 ENVIRONMENT

- (1) Details of Environmental impact
 - (a) Air Pollution
 - (b) Resource Depletion
- (2) Precautions to minimize Environmental impact
 - (a) Ensure that all persons working at site are aware about the environmental impact
 - (b) Monitoring paper consumption

13.4 ENERGY MANAGEMENT

- (1) Details of energy use involved
 - (a) Fuel consumption in vehicle used during survey/ material movement
 - (b) Use of computers for report preparation
 - (c) Use of lights and air-conditioners in offices
- (2) Precautions to minimise energy use
 - (a) Ensure Optimum Usage & Turn off the engine when not in use
 - (b) Use of Energy efficient lighting and air-conditioning units

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13.5 ASSET MANAGEMENT

- (1) Details of Asset related risks
 - (a) NIL
- (2) Mitigation plan for asset related risks
 - (a) Effective Supervision
 - (b) Proper route survey
 - (c) Effective Utility Co Ordination
 - (d) On Job Training

14 LIST OF ATTACHMENTS

Sr	Document /Record Description	Reference No.
1.	Network Survey/patrolling report format	TPDF02-DIS01-CHK-001-F01
2.	Thermography report format	TPDF02-DIS01-CHK-001-F02
3.	Distribution substation inspection report format	TPDF02-DIS01-CHK-001-F04
4.	Deviation Format	TPDF02-DIS00-FOR-001

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