



**HIMACHAL PRADESH POWER TRANSMISSION
CORPORATION LTD.**

PERMIT TO WORK MANUAL

Version-01

Aug 2018

Version History

VERSION	COMMENCEMENT DATE	CHANGES
1(Original)	Aug-2018	

Table of Contents

1. THE BASIC SAFETY RULES	4
1.1 DEFINITIONS.....	4
1.2 APPLICATION OF RULES.	8
1.3 APPROACH TO EXPOSED EXTRA HIGH VOLTAGE AND HIGH VOLTAGE CONDUCTORS AND INSULATORS.....	8
1.4 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR NEAR TO EXTRA HIGH VOLTAGE OR HIGH VOLTAGE EQUIPMENT.	9
1.5 SAFETY PRECAUTIONS FOR WORK ON OR NEAR TO MEDIUM AND LOW VOLTAGE EQUIPMENT.....	9
1.6 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR NEAR TO MECHANICAL EQUIPMENT.....	10
1.7 OPERATION OF EQUIPMENT.....	11
1.8 DEMARCATION OF WORK AND TESTING AREAS.	11
1.9 IDENTIFICATION OF EQUIPMENT.....	11
2. EHV AND HV SWITCHING, EARTHING AND SAFETY DOCUMENT PROCEDURE HPPTCL SAFETY INSTRUCTION	12
2.1 PURPOSE:.....	12
2.2 SCOPE.....	12
2.3 PROCEDURE.....	12
3. AUTHORISATION (WORK ALLOCATION) OF PERSONS	17
3.1. PURPOSE.....	17
3.2. SCOPE.....	17
3.3. DEFINITIONS.....	17
3.4. PROCEDURE.....	17
ANNEXURE-SAMPLE AUTHORIZATION FOR SWITCHING OPERATIONS FROM SLDC.	19
ANNEXURE-PTW FORMAT	20
ANNEXURE-PTT FORMAT	22
ANNEXURE-OPERATIONS REGISTER FORMAT	24
ANNEXURE-OP (TRANSMISSION ELEMENTS OUTAGE PLANNING NRLDC)	28

1. THE BASIC SAFETY RULES.

1.1 DEFINITIONS

Additional Earth(s):	Temporary, portable Earth(s) which are issued to the recipient of the Permit to Work or Permit to Test and are included in an Earthing Schedule. They are applied within an Isolated Zone in order to discharge any induced voltage. Additional Earth(s) shall be minimum 35 sq. mm copper equivalent.
Approved Procedure:	HPPTCL Safety Instructions or other specialized procedures approved by GM / DGM/ Safety Consultant
Authority:	Shall have the meaning attributed thereto in the array of Parties as set forth in the Recitals in the Transmission Agreement
Authorized Person:	Maintenance / Testing Engineer. Maintenance Engineer: Responsible for carrying out maintenance works of EHV & HV equipment, transmission lines & LT systems. Testing Engineer: Responsible for carrying out testing of protective systems, PLCC panels and other related equipment
Caution Notice:	A notice in prescribed form to be placed at all points of isolation, or attached to all vents and drains and to Primary Earths where practicable and to control and operating devices to indicate that work or testing is being carried out
Certificate of No Back Feed:	A certificate which records the details of Isolation carried out at a remote substation in order to achieve safety from EHV/HV systems and from test supplies.
Certificate of Earthing	A certificate which records the details of Isolation & earthing carried out at a remote substation in order to achieve safety from EHV / HV systems and from test supplies.
Company:	H.P. Power Transmission Corporation Ltd. (HPPTCL)
Competent Person:	A person not below the level of Supervisor or Technician.
Danger:	A risk to health, or of bodily injury, or to life.
Danger Notice:	An approved notice reading "Danger" in Hindi and English with a sign of skull

	& bones.
Dead:	Not electrically Live or Charged.
Earthing Device	An approved means of providing a connection between an electrical conductor / equipment and earth, being either a "Primary Earth" or an "Additional Earth".
Earthing Schedule:	A schedule indicating the requirements of Additional Earth(s) for each stage of the work or testing. It must show the number of earths required and either describe or show pictorially their position in the Isolated Zone.
Equipment:	Electrical and mechanical apparatus / equipment used to protect, control, measure, generate, transmit and distribute electricity to which the Safety Rules apply.
Extra High Voltage (EHV):	Any voltage in excess of 33,000 volts (AC/DC).
General Safety:	Those actions required to maintain a safe environment / place for work / testing, e.g., safe access and safe methods of work & testing and the correct use of personal protective equipment
High Voltage (HV):	A voltage between 650 volts and 33,000 volts.
Isolated:	Disconnected from associated Equipment by Isolating Device(s) in the isolated position, or by adequate physical separation.
Isolating Device:	A device for rendering Equipment Isolated.
Isolated Zone:	All items of equipment contained within a work / testing area for which isolation has been achieved at all points of supply.
Keys (Safety Key):	The key from a unique lock (at a location) which is used for locking / interlocking an Isolating Device, Earth or Drain / Vents.
Key Safe:	A designated lockable cabinet for the safe custody of all Safety Keys.
Live:	Charged / Energized at a voltage by being connected to a source of electricity.
Lock / Locks:	A device used for immobilization of an item of Equipment.
Lock Closed:	To secure an item of Equipment with padlocks or other device such that it is immobilized in the closed position.

Lock Open:	To secure an item of Equipment with padlocks or other device such that it is immobilized in the open position.
Low Voltage (LV):	A voltage not exceeding 250 volts.
Medium Voltage (MV):	A voltage between 250 and 650 volts.
Northern Region Load Dispatch Center (N R L D C):-	The center where the operations of Northern Regional Electricity grid constituting the power systems of the constituents of Northern Region are monitored & coordinated
Point(s) of Isolation:	The point(s) at which Equipment has been Isolated and, when practicable, the Isolation Point must remain immobilized and Locked. Caution Notices shall be attached to all Points of Isolation.
Primary Earth(s):	Earth(s) {Either fixed earth Switch(es) or Portable Earth(s) with sufficient / suitable electrical capacity} applied between the point of work and all points of EHV / HV isolation before the Permit To Work or Permit To Test is issued. Primary earth(s) shall be minimum 95 sq. mm copper equivalent.
Permits To Test (PTT):	A safety Document specifying the EHV / HV Equipment and the testing to be carried out and the actions taken to avert / avoid the disturbance of the system during the testing.
Permits To Work (PTW):	A Safety Document specifying the Equipment / Area and the work / testing to be carried out and the actions taken to achieve Safety from the system.
Purged:	A condition of Equipment from which any dangerous contents have been removed.
HPSI:	HPPTCL Safety Instructions.
Safe Electrical Clearance:	A minimum distance of 1.5 meters which must be maintained by lineman / workman from the conductors or jumpers of a de- energized overhead line which has been Isolated & Primary earthed and for which a Safety Document has been issued before connection of Additional Earths under the terms of that Safety Document.
Safety Document:	A Document specifying the Equipment / Area and the work / testing to be carried out and the actions taken to achieve Safety from the system (Permit To Work), or to safeguard the

	disturbance of the system during the testing (Permit To Test).
Safety from the System:	That condition which safeguards persons working on or near to Equipment from the Dangers which are inherent in a System
Safety Working Clearance:	The minimum clearance to be maintained in air between the live part of the equipment on one hand and earth or another piece of equipment or conductor on which it is necessary to carry out the work, on the other.
Senior Authorized Person / Shift In charge:	Engineer responsible for all operations and activities in substations.
Supervision:	Supervision, Personal / direct, by an Authorized Person who is available at the point of work or testing at all times during the course of that work or testing.
State Load Dispatch Centre (SLDC):	The SLDC control room is at Shimla for the purpose of managing the operation of the State Transmission System and co-ordination of State generation and Drawl on a real time basis
HPSEBL	Himachal Pradesh State Electricity Board Limited.
IPP	Independent Power Producer
System:	Items of Equipment which are used either separately or in combination to generate transmit or distribute electricity.
Vented:	Allowing a closed space to have an outlet to atmosphere so that the pressure has equalized to atmospheric.

1.2 APPLICATION OF RULES.

- i. The H.P. Power Transmission Corporation Ltd. Safety Rules and Safety Instructions shall be applied when working on or near to items of Equipment, which are part of a System.
- ii. The System to which these Safety Rules and Safety Instructions apply is all those items of Equipment owned by H.P. Power Transmission Corporation Limited or on its transmission lines.
- iii. Equipment shall be added to and removed from a system only in accordance with an Approved Handing over / Taking over Procedure. The same procedure will determine when the Safety Rules and Safety Instructions shall apply or cease to apply.
- iv. Equipment located on another company's premises and on which HPPTCL personnel work, may be subject to HPPTCL Safety Rules and Safety Instructions, or to the owning Authority Safety Rules and Safety Instructions.

1.3 APPROACH TO EXPOSED EXTRA HIGH VOLTAGE AND HIGH VOLTAGE CONDUCTORS AND INSULATORS.

- i. Persons shall not allow any part of their body or objects / tools & plant to approach within the specified Safety Clearance to exposed EHV / HV conductors, which are Live. The only exception to this is during Live / Hot line work carried out on EHV / HV equipment in accordance with Approved specialized procedure.
- ii. SAFETY WORKING CLEARANCE.

Highest system Voltage (kV)	Safety working Clearance (in meters)
12	4.6
36	4.8
72.5	5.1
145	5.7
245	6.3
420	8.4

- iii. When Points of Isolation have been established but exposed conductors could be subject to Extra High Voltage or High Voltage, the only object permitted to approach within Safety Working Clearance shall be Approved voltage measuring devices or Earthing Devices.
- iv. When Points of Isolation have been established by the application of Earthing Devices, approach is allowed under an appropriate Safety Document within the specified Safety Clearance.

1.4 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR NEAR TO EXTRA HIGH VOLTAGE OR HIGH VOLTAGE EQUIPMENT.

- i.
 - a) When work or testing is to be carried out on or near to EHV / HV equipment, the means of achieving safety must be assessed according to HPPTCL Safety Document Procedure.
 - b) The EHV / HV equipment must be identified.
- ii. **Safety Documents.**
 - a) When work or testing is to be done on the normally energized part / primary side of the EHV / HV equipment and it is necessary to provide Primary Earths, a Permit To Work (PTW) shall be issued. In case it is required to remove the Primary Earth for the purpose of testing, this shall be done after taking due precautions as required.
 - b) When work or testing is to be done on the normally not energized part / secondary side of the EHV / HV equipment, such as for relay testing or CB operation testing or work on secondary side of CT's / PT's and does not require the de – energization of the equipment or the providing of Primary Earths, Permit To Test (PTT) shall be issued.
 - c) The Safety Document must show the Safety Precautions taken to achieve safety from the EHV / HV system and further precautions required to protect persons from inherent dangers in other systems.
 - d) Within any Isolated Zone, any number of PTWs may be issued.
 - e) Only one PTT shall be in force at any time within any isolated zone, No PTWs are permitted at the same time as the PTT is in force in the same isolated zone.
 - f) When the restoration of motive power is required for work or testing, the supplies required must be stated on the Safety Document in accordance with Safety Instruction.
 - g) If motive power supplies have been made available, no other PTWs shall be issued on the same equipment.
- iii. When Danger from induced voltages could arise during the course of work or testing, Additional Earths shall be applied.

1.5 SAFETY PRECAUTIONS FOR WORK ON OR NEAR TO MEDIUM AND LOW VOLTAGE EQUIPMENT

- i. Where reasonably practical, work on or near to Medium and Low voltage equipment should be carried out with that equipment in Dead condition.
- ii. When work or testing is to be carried out on or near to MV / LV Equipment, then the means of achieving safety must be assessed and shall also comply

- with the following rules.
- a. The MV / LV Equipment shall be identified.
 - b. The MV / LV Equipment shall be Isolated and those Points of Isolation secured.
 - c. The method of instructing how the work or testing is to take place can be either a Safety Document or Personal Supervision.
- iii. When it is unavoidable to carry out work or testing on MV / LV equipment which is not Dead, then suitable precautions to avoid Danger must be followed.

1.6 SAFETY PRECAUTIONS FOR WORK OR TESTING ON OR NEAR TO MECHANICAL EQUIPMENT.

- i. When work or testing is to be carried out on or near to mechanical equipment, the means of achieving safety must be assessed according to Safety Instructions.
- ii. Safety Documents.
 - a) For work or testing with the Equipment Isolated and either non - operational or with limited restoration of motive power supplies, the Safety Document issued will be a Permit To Work.
 - b) When testing of mechanical Equipment involves the application of test pressures, the Safety Document issued will be a Permit To Test.
- iii. When the work or testing requires the issue of a Permit To Work, according to the safety rule 1.6-ii-a, the precautions will be specified in the Permit To Work and must include the following: -
 - a) The Mechanical equipment must be Isolated and Points of Isolation established for the work.
 - b) Further precautions taken to protect persons from inherent dangers in mechanical systems. This must include draining, venting, purging and removal of stored energy.
 - c) Venting emissions shall be dissipated so as to avoid Danger. Where reasonably practicable, vents shall be locked open and Caution Notices fixed.
 - d) The removal of the stored energy must be carried out in a manner to contain or dissipate that stored energy safely.
 - e) Where internal access is required and the residue of the contents could cause Danger, the mechanical equipment must be purged and that residue disposed off safely according to an Approved Procedure.
- iv. Where work or testing is to be carried out on mechanical Equipment and it is essential to restore motive power for that work or testing while the Permit To Work is in force, then the following additional precautions shall be applied.

- a) All supplies required must be stated on the Permit To Work in accordance with the Safety Instructions 01.
 - b) If motive power supplies have been made available, no other PTWs shall be issued on the same Equipment.
- v. When the testing requires the issue of a Permit To Test according to Safety Rule 1.6 (ii)-b then the procedures will be as described in Safety Instructions. It is essential that the risks of testing are properly assessed by the Maintenance / Testing Engineer. This procedure should only be used when such testing is an operational necessity.

1.7 OPERATION OF EQUIPMENT

The operation of any Equipment to achieve Safety from the system shall never involve pre - arranged signals or the use of time intervals.

The operation of the equipment and / or its isolation and / or earthing shall be confirmed before the issue of Permit To Work or Permit To Test.

1.8 DEMARCATION OF WORK AND TESTING AREAS.

- i. The work and testing area shall be clearly demarcated.
- ii. Where necessary, physical protection must be provided to prevent Danger to persons in a demarcated area from adjacent System hazards.

1.9 IDENTIFICATION OF EQUIPMENT

Equipment shall be clearly marked with a unique code and / or description, which must be the information used on Safety Documents and in switching instructions.

2. EHV AND HV SWITCHING, EARTHING AND SAFETY DOCUMENT PROCEDURE

HPPTCL SAFETY INSTRUCTION 01

2.1 PURPOSE:

To specify procedure to achieve safety from system when maintenance or testing is to be carried out on HPPTCL's EHV / HV System.

2.2 SCOPE

This HPPTCL Safety Instructions set down the procedure to be adopted when carrying out EHV / HV switching, isolation from other supplies, earthing, issue of Safety Document and control on HPPTCL's EHV / HV Transmission System.

2.3 PROCEDURE

PLANNING/ASSESSMENT

- i. PTW (Permit to Work) will be issued when work requires the providing of primary earths. {Refer Safety Rule 1.4 (ii)a}.
- ii. PTT (Permit to Test) will be issued when work / testing on the substation equipment/ transmission line do not require the providing of primary earths. {Refer Safety Rule 1.4 (ii)b}.
- iii. Any number of PTWs may be issued within any isolated zone, at the discretion of the Shift In-charge (shift in charge shall keep track of the PTWs issued). {Refer Safety Rule 1.4 (ii)d}.
- iv. Only one PTT shall be in force at any time within any isolated zone, No PTWs are permitted at the same time as the PTT is in force in the same isolated zone. {Refer Safety Rule 1.4 (ii)e}.

SHUTDOWN APPROVAL FROM SLDC/NRLDC

- v. The approval of planned as well as emergency outages in the transmission network level in real time is coordinated by SLDC/ RLDCs based on system conditions.
(Detailed procedure for the shutdown shall be as per **Procedure for Transmission Elements Outage Planning in Northern Region (Operating Procedures of the Northern Region)**, which is available on NRLDC website and attached as Annexure-OP.)

REQUEST OF PTW

- vi. Maintenance engineer shall request PTW by completing the Part-A of Permit to Work format.

AVAILING OUTAGE CODE FROM SLDC/NRLDC

- vii. The Shift-In-Charge shall check whether this is an planned outage or emergency and seek the code for availing outage from SLDC.
(In case of NRLDC oversight asset SLDC shall request NRLDC for shutdown code. NRLDC will provide the code to SLDC in case of interstate line/asset)
- viii. SLDC will confirm to the Shift – In - Charge that the shutdown can be availed/or cannot be availed and both will record the instructions in their log sheet(s) and message register together with the message number, date and time that the instruction was given. Mode of communication; Email/ land Line Phone/ Mobile/ PLCC shall also be recorded. Detail of the message recorded in the voice Recording system of the substation, if available, shall also be recorded in the Log sheet and message Register.

SWITCHING OPERATIONS (SHUTDOWN)

- ix. The Shift – In - Charge will carry out switching(**shutdown**) operations as per the instructions of SLDC.
 - a. If SLDC in not coordinating the switching procedure, an authorization for carrying out necessary coordination and switching operations shall be availed from SLDC.
 - b. The Shift - In - Charge of the Sub Station where the PTW / PTT has been applied for, on getting the authorization for operations shall coordinate for carrying out such switching operations as are necessary for isolation of the work / test area.
 - c. All isolations shall be carried out and points of isolations will be Locked Open.
 - d. In case of Line, the Shift - In - Charge shall give a message to the Shift– In – Charge of the Sub Station at the other end(s) for carrying out isolation and locking open the points of isolation.
 - e. The Shift – In – Charge of the Sub Station at the remote end **only after confirming and matching the shutdown code given by SLDC/NRLDC** will isolate and Lock Open all points of isolation and confirm back to the Shift - In - Charge of the Sub Station where the PTW / PTT has been applied for.
 - f. Isolation of the secondary side of voltage transformers and auxiliary transformers (tertiary winding where applicable) will also be carried out including locking.
 - g. These switching operations, along with time stampings of each operation, will be recorded as per Operations Register Format in the substation log sheet(s) and message register together with message number, the date and time.

LOCKING OF ISOLATION POINTS AND NO FEEDBACK/EARTHING CERTIFICATE

- x. **Earth switches shall be closed and Locked** -Once all isolation including voltage transformers and auxiliary transformers (tertiary winding where

- applicable) has been completed, including remote ends where necessary, **and confirmation has been received that the isolation has been completed at the remote end,**
- xi. Shift Incharge shall ensure that **Caution Notices** shall be fixed on all control handles on the control panel and also attached to the locks used to Lock Open all points of Isolation and Lock Closed all earth switches.
These switching operations will be recorded in the Sub-station log sheet(s) and message Register together with message number, date and time.
 - xii. **'No Back Feed Certificate' / 'Earthing Certificate'** must be obtained from all concerned Sub Stations. All details of the 'No Back-Feed Certificate' / 'Earthing Certificate' must be entered in the Sub Station log sheet(s) and message register along with message number, date and time. The message number, date and time must also be recorded on the PTW / PTT.
 - xiii. The Shift – In – Charge shall record the isolation and earthing as per Operations Register Format.
A copy of operations register format is to be attached with Permit To Work or Permit To Test and document no. is to be referred in part B.1 (Sequence of Isolation)of PTW/PTT.
 - xiv. All Safety Keys, fuses and links, etc, which have been used to Lock all points of isolation and earth switches, etc. will be Locked in a Key Safe under the safe custody of the Shift - In - Charge.
 - xv. The Shift - In - Charge will specify the following in Part B of the Permit To Work or Permit To Test before issue:
 - a) Any further precautions which are required to be taken later by the Incharge holding the Permit To Work or Permit To Test to achieve Safety {Refer Safety Rule 1.4 (ii)b}.
 - b) The power supplies that can be resorted for the particular work being carried out {Refer Safety Rule 1.4 (ii)e}.and issue the Approved written procedure.
 - c) The number of Additional Earths required. The use of these Additional Earths will be specified on an Earthing Schedule drawn up by the Maintenance Engineer.

ISSUE OF PTW/PTT

- xvi. The Shift - In - Charge will issue the Permit To Work or Permit To Test to the Person requesting for PTW / PTT who will retain the Safety Document in his possession until all work has been completed.
- xvii. The Shift - In - Charge will record all the details in the substation logbook and Permit To Work or Permit To Test register.
- xviii. In cases where PTW / PTT has been requested over telephone, the confirmation of conveying the approval of the PTW / PTT shall be recorded by the Shift – In – Charge.

RECEIPT OF PTW/PTT AND CODE

xix.

- a) The Person requesting for PTW / PTT will sign Part C (Receipt) to accept the responsibility for carrying out the work / testing on the Sub Station equipment / transmission line.
- b) The Person responsible for the work / testing will draw up the Earthing Schedule, if required, to show the position and use of Additional Earths.
- c) **IMPORTANT:** - When PTW / PTT has been requested over telephone:
The person responsible for the work / testing will give confirmation of receipt of the approval of the PTW / PTT by giving a “**code name**” which shall be not be recorded by the Shift – In – Charge.
The Shift – In – Charge shall verbally convey the “code name” to the next Shift-In-Charge.

xx.

- a) In substations, Additional Earths must be applied in a manner similar to primary portable earths using the same earthing equipment.
- b) On overhead transmission lines, Additional Earths can be applied within Safety Clearance but at not less than Safe Electrical Clearances.

RETURN OF PTW, CODE VERIFICATION AND CANCELLATION OF PTW/PTT

xxi.

- a) The person who has obtained the PTW / PTT will sign the Return of Permit To Work or Permit To Test (Part D) to declare that all work / testing is completed.
- b) The person who has obtained the PTW / PTT over telephone shall convey the above along with the “**code name**” given by him at the time of obtaining the PTW / PTT.
- c) While returning the PTW / PTT, any restrictions applicable / changes made shall be described in part D.
- d) It shall also be confirmed that all men, tools, plant and Additional Earths have been removed.

xxii. The Shift - In - Charge will receive / accept the cleared Permit To Work or Permit To Test and record receipt in the substation log sheet. He will also record the receipt / acceptance in the Permit To Work or Permit To Test register together with date and time, and mention this in Part E.1 of the PTW / PTT.

xxiii. The Shift – In – Charge shall cancel the PTW / PTT by signing in Part E. The PTW / PTT shall then be kept for record.

CONFIRMATION OF NO PTW OUTSTANDING

xxiv. The Shift - In - Charge will verify the local status and confirm that no PTW/PTT is outstanding and it is clear for restoration.

xxv. The Shift - In - Charge where PTW/PTT was issued shall seek from the Shift– In – Charge of the Sub Station at the other end(s) **the confirmation in the form of a certified document that no PTW/PTT is pending at his end** and line is clear to be charged.

This shall be recorded in the substation log sheet(s) and message register

together with message number, the date and time.

AVAILING RESTORATION CODE FROM SLDC/NRLDC

- xxvi. Shift In Charge shall seek restoration code from SLDC that the PTW on the asset has been cancelled and can be energized
(In case of NRLDC oversight asset (refer Operating Procedures of Northern Region), SLDC shall forward the request with their consent to NRLDC. NRLDC will then approve the restoration and provide the code to SLDC)
SLDC shall confirm the Shift-In-Charge with code that restoration of the asset can be availed.

SWITCHING OPERATIONS (RESTORATION)

- xxvii. The Shift – In - Charge will carry out switching (**restoration**) operations as per the instructions of SLDC.
- a. If SLDC is not coordinating the switching procedure, an authorization for carrying out necessary coordination and switching operations shall be availed from SLDC.
 - b. The Shift - In - Charge of the Sub Station where the PTW / PTT has been applied for shall coordinate for carrying out such switching operations as are necessary for restoration of the work / test area.
 - c. The Shift - In - Charge of the Sub Station where the PTW / PTT has been applied for shall then carry out the removal of all the Primary Earthing and switching operations after consultation with remote end(s), recording these in the operations register format, substation log sheet together with date and time.
 - d. These switching operations, along with time stampings of each operation, will be recorded as per Operations Register Format in the substation log sheet(s) and message register together with message number, the date and time.
 - e. Shift-In-Charge will complete Part E.2 of the Permit To Work / Permit To Test to describe the sequence of normalization and refer the Operations register document no. A copy of operations register shall be attached to the cancelled PTW.
- xxviii. All documents shall be filed and maintained.

3. AUTHORISATION (WORK ALLOCATION) OF PERSONS

3.1. PURPOSE

To define guidelines for authorizing persons for carrying out maintenance works in EHV Sub Stations or on transmission lines.

3.2. SCOPE

These HPPTCL Safety Instructions set down procedures for authorization of personnel such as Maintenance Engineer, Testing Engineer, Shift - In - Charge, Sub Station – In – Charge, Line – In - Charge, Operator and Authorized Person

3.3. DEFINITIONS

- 3.3.1. **Maintenance Engineer:** Engineer responsible for carrying out maintenance works of EHV equipment, transmission lines and HV / MV / LT systems.
- 3.3.2. **Testing Engineer:** Engineer responsible for carrying testing of protective relays & systems, PLCC panels and other related equipments
- 3.3.3. **Shift - In - Charge:** Engineer responsible for all operations / activities in Sub Stations.
- 3.3.4. **Sub Station – In - Charge:** Engineer responsible for all operation and maintenance activities being done / to be done in the Sub Station.
- 3.3.5. **Line – In - Charge:** Engineer responsible for patrolling of and maintenance activities being done or to be done on the transmission line.
- 3.3.6. **Lead Shift - In Charge:** Shift - In - Charge of the Sub Station where PTW /PTT has been applied for and who shall be responsible for coordination of operation activities involved for carrying out line maintenance.
- 3.3.7. **Operator:** Person authorized to carry out operations of EHV equipment or to use specific type of vehicles or cranes within Sub Station.
- 3.3.8. **Authorized Person(s):** Person(s) authorized to carry out operation / maintenance work on EHV equipments / transmission lines.

3.4. PROCEDURE

- i** Only **authorized** persons shall be allowed to carry out operation and maintenance activities in Sub Stations / on transmission lines.
- ii** Safety guidelines during O&M of Sub Stations shall be issued by Sub Station - In - Charge. All operation and maintenance activities shall be carried out under the control of Sub Station - In - Charge.
- iii** For carrying out maintenance work, issue of safety document (PTW / PTT) shall be approved by Sub Station - In - Charge.
- iv** Sub Station - In - Charge shall authorise Shift - In – Charge & Maintenance Engineer for carrying out O&M activities. Maintenance Engineer shall also be Testing Engineer for local testing. Engineers of the Protection Wing & other fields who have been assigned specific testing tasks shall also be designated as Testing Engineers. Sub Station safety documents, i.e., PTW / PTT shall be filled by Maintenance Engineer / Testing Engineer for carrying out maintenance / testing activities in Sub Stations. PTW / PTT are to be

approved by Sub Station - In - Charge before being issued by Shift - In - Charge.

- v** All operations including isolation and earthing of equipments shall be carried out by the Operator in the presence of Shift - In - Charge.
- vi** Only after personally confirming isolation and earthing in the work area, the Shift – In – Charge shall issue the PTW / PTT. After receipt of PTW / PTT, the Maintenance Engineer / Testing Engineer shall advise the Authorized Persons for carrying out maintenance / testing activities. All Authorized Persons shall be selected by Maintenance Engineer / Testing Engineer.
- vii** Maintenance Engineer / Testing Engineer shall be responsible for taking all safety precautions during maintenance testing works including use of Personnel Protective Equipment (PPEs).

ANNEXURE-SAMPLE AUTHORIZATION FOR SWITCHING OPERATIONS FROM SLDC

From: SLDC,

Dated: _____

To: _____

Subject : Shutdown on _____

You are hereby allowed to carry out necessary operations and issue PTW to an authorized person after observing all safety precautions to avail shutdown on _____ w.e.f. _____ hrs. to _____ hrs. of dt. _____.

Shutdown timings should be strictly adhered to.

Sig:

SLDC

PTW No.:		SLDC/NRLDC SHUTDOWN CODE:	
----------	--	---------------------------	--

PERMIT TO WORK

(Follow Safe Procedure at all times)

A. REQUEST

1 Work Area			
2 Work to be Done			
3 Period of PTW:	From: Date:	Time:	To: Date:
			Time:
4 Details of Isolation Required	1. 2. 3. 4.		

5 PTW Requested by

Name & Designation:		Date:	
Signature:		Time:	

B ISSUE OF PTW

1. Isolations have been carried out and recorded in Operations register document no.(Copy to be attached)	Operations Register Document No.:		
	i) ii) iii) iv))		
2. Work area is isolated and earthed	Isolation Time:		
	Earthing Time:		
3. “Electrical Isolation/Earthing/No Back-Feed Certificate” Details	Certificate No.:		
	Dt.:		
	Issued by:		
	Time:		
4. Further precautions to be taken to achieve safety	i) ii)		
	From: Date:	Time:	
	To: Date:	Time:	
5. PTW ALLOWED:	(Duration: Hours Minutes)		
6. Entry made in PTW register on page:			

7. PTW Approved by

Name & Designation:		Date:	
Signature:		Time:	

C. RECEIPT:

I Herely declare that I have inspected and have satisfied myself that suchequipment where the work is to be carried out has been switched off and isolated/earthed. I also accept responsibility for carrying out work only on equipment detailed on this permit and that no attempt will be made by me or by any man under my control, to carry out work on any other equipment.

Name & Designation:

Date:

Signature or Code
(in case receipt over
phone)

Time:

D. RETURN OF PERMIT TO WORK

1. Details of Work done

2. Restriction/changes if
any on the equipment
being returned to service

3. CLEARENCE CERTIFICATE

I hereby declare that all men, material & earthing have been withdrawn and all personnel warned that is is no longer safe to work on the equipment specified in this permit and all tools and additional earths are clear and equipment is ready for charging.

Name:

Date:

Signature:

Time:

E. CANCELLATION OF PERMIT TO WORK(PTW)

1. PTW Cancelled and entry
made on PTW register page
no:

2. Sequence of Normalization:
& Operations Register
Document No.:

- I) OPERATIONS REGISTER DOCUMENT NO.:
- II) REMOVAL OF EARTHING: TIME:
- III) CLOSING OF ISOLATORS TIME:
- IV) ENERGIZATION TIME:

Name &
Designation:

Date:

Signature:

Time:

ADDITIONAL COMMENTS

* All Boxes must be completed

NOTES FOR RECIPIENT

THIS CERTIFICATE IS A VALUABLE DOCUMENT AND SHOULD BE RETAINED FOR FUTURE REFERENCE

You should have received an original Certificate and the EAP should have retained a duplicate.
The original Report is to be retained and once work is complete to be returned to the EAP.

PTW No.:		SLDC/NRLDC SHUTDOWN CODE:	
----------	--	---------------------------	--

PERMIT TO TEST
(Follow Safe Procedure at all times)

A. REQUEST

1 Work Area			
2 Work to be Done			
3 Period of PTT:	From: Date:	Time:	To: Date:
			Time:
4 Details of Isolation Required	1. 2. 3. 4.		
5 PTT Requested by			
Name & Designation:			Date:
Signature:			Time:

B ISSUE OF PTT

1. Isolations have been carried out and recorded in Operations register document no.(Copy to be attached)	Operations Register Document No.:		
	i) ii) iii) iv))		
2. Work area is isolated and earthed	Isolation Time:		
	Earthing Time:		
3. “Electrical Isolation/Earthing/No Back-Feed Certificate” Details	Certificate No.:		
	Dt.:		
	Issued by:		
	Time:		
4. Further precautions to be taken to achieve safety	i) ii)		
	From: Date:	Time:	
5. PTT ALLOWED:	To: Date:	Time:	
	(Duration: Hours Minutes)		
6. Entry made in PTT register on page:			

7. PTT Approved by

Name & Designation:			Date:
Signature:			Time:

C. RECEIPT:

I Herely declare that I have inspected and have satisfied myself that suchequipment where the work is to be carried out has been switched off and isolated/earthed. I also accept responsibility for carrying out work only on equipment detailed on this permit and that no attempt will be made by me or by any man under my control, to carry out work on any other equipment.

Name & Designation:

Date:

Signature or Code
(in case receipt over
phone)

Time:

D. RETURN OF PERMIT TO WORK

1. Details of Work done

2. Restriction/changes if
any on the equipment
being returned to service

3. CLEARENCE CERTIFICATE

I hereby declare that all men, material & earthing have been withdrawl and all personnel warned that is is no longer safe to work on the equipment specified in this permit and all tools and additional earths are clear and equipment is ready for charging.

Name:

Date:

Signature:

Time:

E. CANCELLATION OF PERMIT TO TEST(PTT)

1. PTT Cancelled and entry
made on PTT register page
no:

2. Sequence of Normalization:
And Operations register
document no.

- I) OPERATIONS REGISTER DOCUMENT NO.:
- II) REMOVAL OF EARTHING: TIME:
- III) CLOSING OF ISOLATORS TIME:
- IV) ENERGIZATION TIME:

Name &
Designation:

Date:

Signature:

Time:

ADDITIONAL COMMENTS

* All Boxes must be completed

NOTES FOR RECIPIENT

THIS CERTIFICATE IS A VALUABLE DOCUMENT AND SHOULD BE RETAINED FOR FUTURE REFERENCE

You should have received an original Certificate and the EAP should have retained a duplicate.

The original Report is to be retained and once work is complete to be returned to the EAP.

DOCUMENT NO. _____ SLDC/NRLDC CODE NO. _____

ISOLATION Operations of _____ kV _____ Transmission Line _____ - _____
Ckt. _____.

1. **From:** Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **BREAKER** No. _____ Controlling _____ kV _____ Transmission
Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

2. **From:** Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **BREAKER** No. _____ Controlling _____ kV _____ Transmission
Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

3. **From:** Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **ISOLATOR** Nos. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

DOCUMENT NO. _____ **SLDC/NRLDC CODE NO.** _____

Received From: _____ Time: _____

4. From: Substation In-charge _____ kV Substation at _____

To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **ISOLATOR Nos.** _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

5. From: Substation In-charge _____ kV Substation at _____

To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **EARTH SWITCH** No. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

6. From: Substation In-charge _____ kV Substation at _____

To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **EARTH SWITCH** No. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

ANNEXURE: SAMPLE CERTIFICATE OF CLEARANCE FROM REMOTE SUBSTATION

Message No.: XXXXXXXX

Dated: DD/MM/YYYY

To:

Substation Incharge(Where PTW was applied)

It is certified that no PTW is outstanding on _____ Transmission Line.

All the men & material & also temporary earths are removed from the site of work. Line is clear for reenergizing from this end. However the earth switch no. XXXXXX controlling this line is in closed position.

(Signature)

Substation In-Charge/Sub Station Shift In-Charge(Remote End)

Date & Time

DOCUMENT NO. _____ **SLDC/NRLDC CODE NO.** _____

RESTORATION Operations of _____ kV _____ Transmission Line _____ - _____ Ckt. _____.

1. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **EARTH SWITCH** No. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

2. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **OPEN** _____ kV **EARTH SWITCH** No. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

3. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **ISOLATOR Nos.** _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____

Record of Confirmation Received:

Received From: _____ Time: _____

DOCUMENT NO. _____ SLDC/NRLDC CODE NO. _____

4. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **ISOLATOR** Nos. _____ Controlling _____ kV
_____ Transmission Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____
Record of Confirmation Received:

Received From: _____ Time: _____

5. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **BREAKER** No. _____ Controlling _____ kV _____ Transmission
Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____
Record of Confirmation Received:

Received From: _____ Time: _____

6. From: Substation In-charge _____ kV Substation at _____
To: Shift-In-charge _____ kV Substation at _____

Please check & **CLOSE** _____ kV **BREAKER** No. _____ Controlling _____ kV _____ Transmission
Line _____ - _____ Ckt. _____.

Directed To: _____ Time: _____
Record of Confirmation Received:

Received From: _____ Time: _____