Letter for Safety Management

पावर ट्रांसमिशन कारपोरेशन ऑफ उत्तराखण्ड लि0
Power Transmission Corporation of Uttarakhand Ltd.

कारपोरेट आफिस
CORPORATE OFFICE
मानव संसाधन एवं प्रशासनिक विभाग
Human Resource & Administration

No. 1621 **/HR&Adm./PTCUL/P-1** **Date:** 30 **/07/2010**

To,

Chief General Manager – O&M,
PTCUL,
Dehradun.

Sub:- Implementation of Safety Manual, Safety Training, etc.

The need for formulation/introduction of Safety Manual in PTCUL has been under active consideration of the Top Management in the past. Accordingly, the issue was discussed before the authorities of UERC. The Boarc of Directors in their 26th meeting also deliberated on the issue and advised to implement the Draft Safety Manual immediately.

As you are aware, operation and maintenance of EHV Transmission network in PTCUL has inherent hazards/dangers. It is therefore first and foremost imperative to develop a well-documented Safety Manual incorporating SOP (Standard Operating Procedure) and Standard Maintenance Procedure (SMP) in O&M Manual based on Safe Activities in order to safeguard the employees, equipments, and the public at large. In such direction, attempts have been made in the past to develop the draft Safety Manual in PTCUL in consultation with the In-house Committee under your leadership. The following issues merit your immediate intervention and action:

(1) Circulation of Draft Safety Manual

Though the manual is an honest attempt to promote safety awareness/practices by formulating/standardizing safety guidelines, these are illustrative, not exhaustive. Hence the draft Safety Manual needs to be uploaded on the PTCUL website and circulated among all Zonal Office and Division in hard and soft copy for suggestion, views and corrections of all concerned within one month of circulation. The draft Manual incorporating such suggestion/view shall be finalized thereafter.

(2) Constitution of Safety Committee

(i) Safety Organization

In order to promote organization-wide Safety awareness & culture through continuous Education & Training, Celebration of Safety week in March, Safety

Award, Period Inspection and Audit, as well as facilitate investigation/enquiry of Accidents, whether Fatal or Non-fatal, the following Committee is hereby constituted:-

(a)	Chief General Manager – O&M	-	Chairman of the Committee
(b)	General Manager – O&M (Garhwal and Kumaon Zone)	-	Member
(c)	Dy. General Manager – T&C	-	Member
(d)	Dy. General Manager (Tech.) O/o the CGM – O&M	-	Member & Convenor
(e)	Sri Mant Ram, Exec. Engineer – O&M	-	Member

(ii) <u>Safety Officer</u>

It is mandatory to have Safety Officers as per Statutory provisions. Hence in addition to the Committee, which will be involved in the formulation of Safety Manual, and fine-tune policy guidelines, procedure, the following officers are entrusted with the role and responsibilities of enforcing safety guideline in PTCUL, conducting safety audit & causing enquiry into electrical accident.

(a) Sri V.K. Pandey, Dy. General Manager – Tech., will be overall-in-charge of Safety functions in PTCUL in O&M and Project Construction and designated as Head – Safety.

(b) Sri Mant Ram, Executive Engineer – O&M will report to Sri Pandey and function as Safety officer in addition to his usual duties/responsibilities.

(3) <u>Intimation of Accidents (Form and Time of Service of Notice) Rules, 2005 (copy enclosed)</u>

In compliance with the Statutory provision, all Zonal/Division Heads in O&M and Projects are directed to submit the Prescribed Form for Reporting Electrical Accidents in writing in Form A within 48 hours of the knowledge of occurrence of fatal and all other accidents to the Chief Electrical Inspector/Electrical Inspector, District Magistrate under intimation to Sri V.K. Pandey, Dy. General Manager – Tech. and Head – Safety. It is pertinent to mention here all Divisional Heads in overall charge of 400/220/132 KV S/S shall be responsible for compliance with the Statutory safety measures.

THE INTIMATION OF ACCIDENTS (FORM AND TIME OF SERVICE OF NOTICE) RULES, 2005[1]

In exercise of the powers conferred by clause (w) of sub-section (2) of section 176 of the Electricity Act, 2003 (36 of 2003) the Central Government hereby makes the following rules regarding the form and time of service of notices of electrical accidents, namely:—

1. Short title and commencement.—[2][(1) These rules may be called the Intimation of Accidents (Form and Time of Service of Notice) Rules, 2005.]

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions.—(1) In these rules, unless the context otherwise requires,—

(a) "Act" means the Electricity Act, 2003 (36 of 2003);

(b) "Inspector" means the Chief Electrical Inspector or the Electrical Inspector appointed under sub-section (1) of section 162 of the Act.

(2) Words and expression used and not defined in these rules but defined in the Electricity Act, 2003 (36 of 2003), shall have the meanings respectively assigned to them in that Act.

3. Intimation of accidents.—(1) If any accident occurs in connection with the generation, transmission, supply or use of electricity in or in connection with, any part of the electric lines or other works of any person and the accidents results in or is likely to have resulted in loss of human or animal life or in any injury to a human being or an animal, such person or any authorised person of the generating company or licensee, not below the rank of a Junior Engineer or equivalent shall send to the Inspector a telegraphic report within 24 hours of the knowledge of the occurrence of the fatal accident and a report in writing in Form A within 48 hours of the knowledge of occurrence of fatal and all other accidents. Where possible a telephonic message should also be given to the Inspector immediately, if the accident comes to the knowledge of the authorised officer of the generating company/licensee or other person concerned.

(2) For the intimation of the accident, telephone numbers, fax numbers and addresses of Chief Electrical Inspector or Electrical Inspectors, District Magistrate, police station, fire brigade and nearest hospital shall be displayed at the conspicuous place in the generating station, sub-station, enclosed sub-station/switching station and maintained in the office of the in-charge/owner of the Medium Voltage (MV)/High Voltage (HV)/Extra High Voltage (EHV) installations.

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1. *Vide* G.S.R. 1(E), dated 22nd December, 2004, published in the Gazette of India, Extra., Pt. II, Sec. 3(i), dated 1st January, 2005. Nomenclature has been modified by G.S.R. 529(E), dated 11th August, 2005, published in the Gazette of India, Extra , Pt. II, Sec. 3(i), dated 11th August, 2005.

2. Subs. by G.S.R. 529(E), dated 11th August, 2005, for sub-rule (1). Sub-rule (1), before substitution, stood as under:
"(1) These rules may be called the Intimation of Accidents (Form and Time of Service of Notice) Rules, 2004."

FORM A

FORM FOR REPORTING ELECTRICAL ACCIDENTS

1. Date and time to accident.
2. Place of accident.

   (Village/Town, Tehsil/Thana, District and State).
3. System and voltage of supply [Whether Extra High Voltage (EHV)/High Voltage (HV)/Low Voltage (LV) Line, sub-station/generation station/consumer's installations/service lines/other installations].
4. Designation of the officer-in-charge of the generating company/licensee in whose jurisdiction the accident occurred.
5. Name of owner/user of energy in whose premises the accident occurred.
6. Details of victim(s):

   (a) Human

Sl. No.	Name	Father's Name	Sex of victim	Full postal address	Approximate age	Fatal/ non-fatal
1	2	3	4	5	6	7

   (b) Animal

Sl. No.	Description of animal(s)	Number(s)	Name(s) of owner(s)	Address(es) of owner(s)	Fatal/ non-fatal
1	2	3	4	5	6

7. In case the victim(s) is/are employee(s) of supplier:—
   (a) designation of such person(s);
   (b) brief description of the job undertaken, if any;
   (c) whether such person/persons was/were allowed to work on the job.
8. In case the victim(s) is/are employees(s) of a licensed contractor,—
   (a) did the victim(s) possess any electric workmen's permit(s), supervisor's certificate of competency?

   If yes, give number and date of issue and the name of issuing authority;
   (b) name and designation of the person who assigned the duties of the victim(s).
9. In case of accident in the system of the generating company/licensee, was the permit to work (PTW) taken?
10. (a) Describe fully the nature and extent of injuries, *e.g.*, fatal/disablement (permanent or temporary) of any portion of the body or burns or other injuries.
    (b) In case of fatal accident, was the post mortem performed?

11. Detailed causes leading to the accident.
    (To be given in a separate sheet annexed to this form).
12. Action taken regarding first aid, medical attendance etc. immediately after the occurrence of the accident (Give details).
13. Whether the District Magistrate and Police Station concerned have been informed of the accident (If so, give details).
14. Steps taken to preserve the evidence in connection with the accident to extent possible.
15. Name and designation(s) of the person(s) assisting, supervising the person(s) killed or injured.
16. What safety equipments were given to or used by the person(s) who met with this accident (*e.g.*, rubber gloves, rubber mats, safety belts and ladders etc.)?
17. Whether isolating switches and other sectionalizing devices were employed to deaden the sections for working on the same. Whether working section was earthed at the site of work.
18. Whether the work on the live lines was undertaker by authorised person(s)? If so, the name and the designation of such person(s) may be given.
19. Whether artificial resuscitation treatment was given to the person(s) who met with the electric accident. If yes, how long was it continued before its abandonment?
20. Names and designations of persons present at, and witnessed, the accident.
21. Any other information/remarks.

Place.....
Time.....
Date.....

Signature.....
Name.....
Designation.....
Address of the
person reporting.....

Electrical Safety Audit in PTCUL

■ B.L.PRABHU.

A .OBJECTIVE OF THE AUDIT:

1. To evaluate the standard of electrical safety in the organisation.
2. To verify the compliance of statutes such as I.E.Rules and other IS specifications.
3. To examine the safety procedures in maintenance & operations.
4. To scrutinize the pragramme to eliminate electrical fires.

B. PURPOSE OF AUDIT:

1. Statutory requirement (Risk Analysis for Hazardous industries etc.
2. Recomendation of a regulatory body.
3. Process change /capacity addition.
4. To find out corrective action based on the finding of the Audit report
5. Analysis of the fatal and non-fatal accident.

C. SCOPE OF AUDIT:

To study and evaluate the status of following topics by studying the documents, conducting the inspection rounds in Sub-station and associated lines and holding discussions with the employees:

1. Electrical layout in the S/s (General arrangement)
2. Suitability w.r.t. hazardous area classifications
3. Maintenance work practices (Planning schedules, type of maintenance carried out.)
4. Test Schedules / Instruments / Inspection & test reports
5. Operating work practices (SOP)
6. Work permit system and authorising processes

7. New requirement integration (Safety features during concept, design, manufacturing, construction and commissioning)

8. Cable trench / layouts / excavations and other construction activity

9. New Equipment (system to include operation and maintenance safety features while making specification

10. Portable electrical equipment (suitability and condition / Hand tools)

11. PPE and First Aid (Type and condition of PPE, first-aid facilities during electric shocks)

12. Training Programme on Electrical Safety (such as electrical hazards and their control, preventing fires due to electrical faults etc.)

13. Interaction with employees (w.r.t first-aid, work permits, electrical hazards etc.)

14. Compliance of I.E. Rules, IS specification

15. Electrical Accidents

16. Contractors safety while carrying out electrical arc welding,using portable tools etc.

17. Protection system (adequacy of primary and back up protection and their coordination).

18. Compatibility and safety of electrical installations includingcabling, junctions, terminations

19. Back feeding arrangement to MCC from DG set

20. Lighting arrestors / static charge dissipation

21. D C Sources, battery Room and Records

DOCUMENTS TO BE VERIFIED

1. Single line layout drawing of S/s (Approved Plan)
2. Test reports of Transformers, electrical equipment and earth resistance measurement records. Details of earthing system.

3. Inspection report of portable hand tools

4. Wiring diagram of protection and instrumentation systems

5. Accident register with a note to electrical accidents and their investigation records

6. Work permit system – samples
7. Operating manuals (SOP on electrical operations)
8. Training records
9. Original equipment manufacturer's certificates w.r.t. flame proof equipment
10. Documents submitted to electrical inspectors and certificates obtained.
11. Electrical Inspectors approval and record of Annual Electrical Inspection.
12. Procedures for excavations etc.
13. Record on major electrical faults corresponding relay actions in past 5 years
14. Maintenance schedules of electrical equipment and record on types of maintenance carried out.
15. Emergency Lighting Details
16. List of approved and licensed contractors and vendors
17. Log book of operators
18. Battery back up system, battery Maintenance, testing and discharge testing records.
19. Licenses, testing and approval records of lifts, hoists etc.
20. NOC to operate DG set.

Safety Audit Questionnaire

I General Lay Out

1. Who is supplying power to the S/s?
2. What is the status of incoming supply and lines? Viz. voltage level, no. of lines etc.
3. What is the connected load of the plant?
4. What is the working load?
5. What is plant power factor?
6. Are all lines, equipment and workplaces properly nomenclatured?

II Hazardous Classified Zones

7. Are there any classified areas in the plant? If so where?

8. What is the zone criterion?

9. What type of electrical appliance installed w.r.t . these zone?

10) How often they are maintained and by whom?

III Maintenance Work Practices

11) What are the different types of maintenance carried out in the plant and how are they planned?

12) Is there a preventive maintenance programme in place?

13) Is the proramme implemented? Is there any slippage?

14) Are relevant standards (statutes and non statutory) referred and incorporated?

15) Records electrical tests, test procedures and their periodicity maintained?

16) Is there a maintenance manual relevent to the eqiupment in the plant?

17) Is the manual updated / reviewed periodically?

18) Is the periodicity and scope of maintenance work carried out is as per the maintence manual?

19) Who does the job? Are approved and licensed electrical contractors engaged?

20) How prioritization of work is done?

IV Testing Schedule

21) What is the scope and nature of testing of equipment and earth resistance?

22) Which types of tests are carried out?

23) Is trend monitoring being done? If so which action is initiated in case necessary?

24) Does periodic calibration of meters (ammeters, voltmeters, energy meters, temerature gauges etc.), protectives relays and test instruments (insulation megger, earth resistance meggar, multimeters etc.)

25) Who does the job? Are proper records maintained?

V Work Permit System:

26) Does it take care of fool proof electrical isolation and safe guarding?

27) Does it cover critical activities such as working at height, confined space, hot work carried out on equipment under electrical isolation?

28) Is the authorizing procedure in order?

29) Any violations noticed?

VI New Equipment Integration :

30) Are safety features considered durig following stages:

30) Concept stage

31) Detailed Engineering

32) Design and manufacturing stage

33) Erection and commissioning stage & operation and maintenance stage

34) Are operation, maintenance and safety personnel involved during equipment integration at each stage?

VII Cable Trench / Layouts / Excavation

35) What are the procedures prior to trench excavation? How is cable route decided?

36) What are the precautions taken?

37) What is the condition of cable trays, cable dressing, and dentification of cables etc?

VIII Portable Electrical Equipment (Power Hand Tools)

38) What type of hand power are tools used?

39) How are they tested and maintained?

40) How is the healthiness of portable power tools ascertained?

41) Are any records maintained for IR value measured or repairs carried out?

42) How are the defective tools taken out and separated?

IX PPE / First Aid

43) What type of PPE is used for Electrical Safety?

44) How are they stored? How are they issued?

45) How are their healthiness ascertained?

46) Are persons within the plant aware of First Aid & CPR (Cardio Pulmonary Resuscitation) methods? By whom are they trained? List of certified First Aiders?

47) Are adequate display charts provided at proper locations? Are First Aid trained personnel available in each shift?

X Training Programme

48) Does this include topics on electrical safety?

49) What topics are covered and at what level are they imparted?

XI Interaction With Employees (At Site)

This should be conducted as per the working at site and the level of employees to be interacted with.

XII Compliance of IE Rules

50) Is the inspection and certification from Electrical Inspector carried out every year?

51) Are the electrical clearances as per IE Rules?

52) Is the earthing done as per requirement?

53) Are the appliances / Are tools used of specified IS mark?

54) Have rubber mats, voltage indicating danger notices provided wherever required?

55) What are the type of fire extinguishers used? -

Mulsification, Sprinkler, First Aid type fire fighting equipment

XIII Electrical Accidents

56) How many electrical accidents have taken place in past 5 years?

57) Have all the cases been reported? Were there any fatal cases?

58) Have the electrical accidents been investigated?

59) If investigated, have what action has been undertaken to improve condition?Are the reccommendations incorporatedin O&M procedures/work permits ?

60) Have the studies of accidents been explained in the training sessions with a view to avoid reccurrence?

XIV Contractor Safety

61) Is there a system to check the power tools / etc. of contractors?

62) If so, what is check carried out for portable equipment and welding machine etc.?

63) Is there a Work Permit System for contractors?

64) Are they appraised and trained on electrical hazards involved in their jobs before commencing the job? Are they trained on First Aid & CPR ?

XV Protection System

65) What are types of protections used?

66) What are the primary and backup protections available?

67) How often are the relays inspected and tested?

68) Are the relay settings audited regularly (on monthly basis)?

69) If so whom? Any registers maintained?

XVI Compatibility of Electrical Equipment / Interlocking system

70) Are the electrical equipment of adequate capacity?

71) Are all equipment properly identified and nomenclatured?

72) Has any up rating been carried out? If so are records available?

73) Are cables of required type, capacity and class? If so who has ascertained this? What is the condition of joint bays of EHV cables ?

74) Is the cable distribution diagram available? Has it been up dated?

75) How are the cables laid in trays and trenches and distributed? Are the power cables been segregated from instrumentation and protection cables?

76) How are grounding conductors laid? Are they laid along and across other cables?

77) Are heat tracers / smoke detectors provided in the trays?

78) Are there interlocks provoded for multiple power system?

79) Has interlock system for the equipment been provided to prevent inadevertent operations?

80) Is the interlocking system checked regularly?

XVII MCC to DG Set Back Feeding

81) What is the D.G. set capacity?

82) How is it interconnected with present power supply?

83) What are the changeover facilities?

84) Is parallel operation of power carried out?

XVIII Lightning Arrestors

75. Is the Lightning protection as per IS:2309

76. Where have the lightning arrestors been provided?

77. Is the coverage adequate as per statutory requirement?

78. Which are the places / processes where static charge generation is likely?

79 How is static charge dissipation carried out?

80. Are there any instances where by electric shock and fire hazards have occurred in the plant during last 5 years?

XIX Safety Operating Practices (SOP)

81. Are the SOP manuals available for all operation and maintenance practices?

82. Are safe emergency shut down during plant emergency, fire and other hazards clearly documented?

83. Are these updated regularly to suit the condition of the system?

84. Are these SOPs updated regularly ?

XX Static Electricity:

85. Are the locations of static charge generation been identified?

86. Is thee a possibility that any person likely to acquire static charge? If so what are the precautions taken?

87 Are equipment wise control measures to prevent generation of static charge taken?

88. Are sufficient bonding and earthling and other preventive measures have been provided to tanks, pipe lines, trucks, containers etc?

89. What are the measures taken to control static charges in f ammable zones?

90. Are safety instructions made available to men working in these areas?

XXI. Lighting / Illumination:

91. How is emergency lighting is provided ?

92. Is the illumination level O.K.?

93. Is there a programme to replace defective lights? Who does it?

XXII. DC & Battery System.

94. Are batteries of adequate Amp Hour capacity?

95. How batteries are monitored?

96. Records of discharge test carried out available?

97. How daily pilot cell monitoring is done? (Monitoring Sp. Gravity, across cell voltage)

98. Is there backup battery system in place?

99. Are all the batteries kept trickle charged?

100. Are the battery rooms well ventilated? Are emergency provisions such as eye wash and showers provided?

Name of the S/s inspected/audited :

Date & time of the Inspection/Audit:

Name & Designation of the Head of the S/s:

Name & Designation of the of the Head-Safety/Safety Officials:

Signature of the Head of the S/s: **Signature of the Head-Safety/Safety Officer**

NOTES AND ORDER

Director HR, PTCUL

In order to create an environment of absolute awareness about the industrial safety in PTCUL, training programme on safety management were conducted on 9th and 10th March 2010 and 19th and 20th July, 2010 for the field executives. During the discussions in the training programme, it was observed that an environment of industrial safety is needed to be created in the organization urgently and for it the following points needs to be taken care of-

I. Necessary training should be imparted to all field executives, supervisors and workers regarding the safe working practices. This can be done by initially hiring some expert faculties of this field and subsequently developing some trainers of this field within the organization so as to carry out regular refresher courses on the safety. Mock drills on safety may also be carried out from time to time.

II. Necessary personnel protective equipments should be provided to all the workers and the supervisors of the organization. Necessary budgetary provisions for these PPEs may be made by concerned General Managers in their respective annual budgets.

III. The training programme should be so designed as to have the modules for the proper use of PPE's. Proper motivational schemes for using the PPEs in the correct way may also be started.

IV. Display of danger boards and other necessary display boards should be made at all accident prone places inside and outside of the substations.

V. Posters related to safety should be displayed on the walls of the every substaion to underline the importance of the safety. These posters may be procured from the market/National Safety Council.

It is for your kind information please.

23.07.10
(Vinod Kumar Pandey)
Dy. General Manager (T)

23.07.10
(A.C. Goel)
Chief General Manager (O&M)

29/07/10