



भारत सरकार  
Government of India  
केन्द्रीय विद्युत प्राधिकरण  
Central Electricity Authority  
भार प्रेषण एवं दूर संचार प्रभाग

[ISO: 9001: 2008]



**Load Despatch & Telecommunication Division**

एन.आर.ई.बी. परिसर, 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया  
सराय

No.LD&T/1/2011-PTCC/  
To,

Dated: 26.12. 2011.

All the members of Central PTCC.

**Subject: 94<sup>th</sup> Central PTCC meeting - reg:.**

Sir,

The 94<sup>th</sup> Central PTCC meeting will be held at Madurai (Tamilnadu) as per the programme given below:

**DATE** : 20<sup>th</sup> January, 2012 (Friday)  
**VENUE** : Hotel GRT Regency Madurai,  
38, Madakulam Main Road, Palanganatham Signal Junction,  
NH-7, Madurai-625003.  
phone no. 0452 2371155  
**TIME** : 1000 hrs.

The agenda for the ensuing meeting is attached.

The following officers from POWERGRID can be contacted for any assistance in arranging accommodation and transport at Madurai.

1. Sh. S.B.K. Moorthi, CM , Cheif Manager , Madurai 09444394620
2. Sh. M Shanmugasundaram, Cheif Manager , Madudai - 09444394610

In order to enable the host to make appropriate arrangements for the meeting. you are requested to intimate your travel programme and number of officers accompanying from your organization for attending the above meeting to the above mentioned nodal officer(s) with a copy to us,

You are requested to kindly make it convenient to attend the meeting.

Yours faithfully,

(D.K. Malik)  
Director (PTCC)

**Agenda for the 94th Central PTCC meeting**  
**to be held on 20<sup>th</sup> January, 2012**  
**at Madurai.**

**1.0 Confirmation of the Minutes of the 93<sup>rd</sup> Central PTCC meeting held at Daman on 29.04.2010**

The Minutes of the 93<sup>rd</sup> Central PTCC meeting were circulated by LD&T Div. CEA, New Delhi vide letter no. No.LD&T/1/2011-PTCC/ Dated: 21.06.2011. No comments so far have been received. Therefore, the minutes of the 93<sup>rd</sup> Central PTCC meeting may be confirmed by the members.

**2.0 Follow-up of decisions taken in the last (93<sup>rd</sup>) Central PTCC meeting.**

**2.1 Ensuring 'Zero Level' on unguarded power crossings**

In order to bring down unguarded power crossings to zero level, CEA has continuously persuaded the defaulting Power Utilities. BSNL, Inspection Circle has also taken up the matter with the defaulting Telecom Circles. With these efforts, the unguarded power crossings have reduced from 1217 (at the beginning of year 2009) to only ----- at the end of December 2011.

In the last Central PTCC Meeting it was informed that one unguarded power crossing has been reported in the state of Karnataka and 39 reported in the state of Assam. (In Assam, Power Utilities were to take action for 28 unguarded crossings and BSNL was to take action for 11 unguarded crossings). Vide a letter dated 28.06.2011 CEA requested CGM, Assam telecom circle and GM, AEGCL to initiate action for providing suitable guarding at the unguarded crossings. Representatives from Assam Telecom Circle and AEGCL may kindly apprise the committee about the present status.

In the last meeting all the four DETs(PTCC) were requested to make all out efforts in the State Level PTCC/District level PTCC meetings to bring the unguarded crossings to zero level to avoid fatal or non-fatal accidents to the personnel and to properly and to protect equipment / telecom installations.

DETs (PTCC) may apprise the Committee about the present status and difficulties being faced if any, in achieving the target of zero level of unguarded power crossings.

**2.2 Formation of a Committee for Revision of PTCC Manual, 1995 edition**

The revised version of PTCC Manual (2010) was got printed by CEA and is available for sale for Rupees 600/- per copy. It can be purchased from Electric Power Information Society (EPIS), Central Electricity Authority, Sewa Bhawan, RK Puram, New Delhi-110066. The EPIS's telefax nos. are 011-26101696 and 011-26732216. Further details can be obtained from CEA website [www.cea.nic.in](http://www.cea.nic.in)

**This item stands closed.**

## **2.3 Computerization of PTCC Route Approval Process**

The proposal for Computerization of PTCC process had been approved by Ministry of Power and Consultant for be the same has been appointed by CEA. Presently RFP for the Developer/System Integrator is under progress. For the smooth running of the project orientation / user training programme for the concerned officers from BSNL. Power and railways shall be organized by CEA.

### **The orientation programme shall be held as follows:**

The orientation programme for the officers from BSNL, Power and Railways shall be organized by CEA at New Delhi. Two days programme shall be jointly conducted by CEA, Consultant and the Developer. The participants shall be briefed about the new system, its advantages and other inbuilt salient features which shall drastically reduce the processing time for PTCC route approval.

All the participants shall have to make their own travel and stay arrangements at New Delhi. Working Lunch and tea/coffee shall be arranged by CEA during the programme.

### **Training programme for the actual users of the system.**

This training shall be conducted separately for the officers from BSNL/Telecom Sector, Power Sector and Railways.

#### **a. Training for BSNL/Telecom Sector.**

Two/three days training programme shall be conducted by CEA, Consultant and the Developer for all the officers who are involved in PTCC clearance of telecom circuits. The participants shall be given on-hand training for using the web-based system in submitting PTCC proposals for new telecom circuits.

It is proposed to organize the training at the Regional Training Centers of BSNL at four different locations so that the batch size is limited to 20-22 participants. Any charges for the facilities provided by the training centers shall be born by BSNL.

All the participants shall have to make their own travel and stay arrangements at the training centers.

The participants shall be two from each state Telecom Circle plus persons from DET, PTCC office ,Inspection Circle sand may be from some private service provider.

#### **b. Training for Power Sector**

Three days training programme shall be conducted by CEA, Consultant and the Developer for all the officers who are involved in PTCC clearance of EHT Power Lines. The participants shall be given on-hand training in submitting web-based PTCC proposals for new power lines.

It is proposed to organize the training at the Regional Power Committee 's NRPC New Delhi, SRPC Bangalore, WRPC Mumbai and ERPC Kolkata. The training shall be conducted at four different locations so that the batch size is limited to 20-22 participants. All the participants shall have to make their own travel and stay arrangements at the training centers.

The participants shall be two each from each power utility.

**b. Training for Railways.**

Two/three days training programme shall be conducted by CEA, Consultant and the Developer for all the officers who are involved in PTCC clearance of Railway circuits. The participants shall be given on-hand training in submitting web-based PTCC proposals for new Railway telecom circuits.

It is proposed to organize the training at the IRISSET Secunderabad. The Training shall be conducted in two batches so that the batch size is limited to 20-22 participants. Any charges for the facilities provided by the training centers shall be born by Railways.

All the participants shall have to make their own travel and stay arrangements at the training center.

Two participants shall be from each zone of the Railways..

Finalization of modalities for the training shall be worked out with mutual consent after developer is in place. It is requested that designated nodal officers to carry out as under:

- A. Nomination of officer to undergo this training
  - 1. Orientation training.
  - 2. User training.
- B. The nominated officers are to be involved in arranging Legacy data of their respective organization/zone.
- C. The Central PTCC Members are the nodal officers who would be coordinating for arranging the required input for the scheme.
- D. The Central PTCC members from the power sector are nodal officers for this scheme would be attending /present in OCC meetings for a follow-up of data required once the system integrator/developer is appointed.
- E. The nodal officer of BSNL and Railway would also be required to present/represent SLPTCC meeting for data requirement after developer is in place.

**Members may discuss the proposal and offer their suggestions.**

**2.4 Supply of software for calculation of Induced Voltage and related technical guidance to SEBs/Power utilities**

Upgraded version of software for calculation of Mutual Coupling, required for PTCC route approval has been developed by CEA and was offered free of cost along with training to the interested state Govt. power utilities/PSU for their own use. Many power utilities want to own the software and have expressed their willingness to undergo training for this. However due to pre occupation and paucity of staff the training programme could not be started.

For the power utilities who are interested in calculation of Mutual Coupling (MC) it is suggested that they can follow the new method (for calculating MC) given in PTCC Manual 2010. The procedure is given step by step with appropriate examples.

## **2.5 Arranging State Level PTCC meeting at regular intervals**

During the last meeting it was informed by DE (T), PTCC of Northern and Eastern regions that State Level PTCC meetings are not being held at regular intervals in some states. In certain States, these meetings have not been held since long even after repeated reminders to the concerned officials of the Power Utilities/BSNL.

In the last meeting all the four DETs/PTCC were requested to monitor closely the frequency of SLPTCC meetings and apprise the Central PTCC in case of default by any State utility.

CEA vide their letter dated 06.07.2011 reiterated the decision of Central PTCC and requested all the four DETs/PTCC to closely monitor the frequency of SLPTCC meetings.

DETs PTCC may kindly apprise the Committee about the present status.

## **2.6 Non-submission of investigation report by the Chief Electrical Inspector, Govt. of Orissa**

The matter has been under discussion since last several PTCC meetings. On the basis of the report given by Chief Electrical Inspector, it has been established that the accident had occurred since no guarding had been provided at the crossing of power and telecom line and it has emerged that this is a case of violation of PTCC code of practice as it is the responsibility of the later entrant to provide the guarding. The later entrant has not been fixed so far because the dates of existence/date of PTCC approval of the 11 kV line from Khari to Sagarpalli and the telecommunication line emanating from Khameshwarpalli telephone exchange could not be established.

To find out the later entrant a sub-committee was constituted by Central PTCC by inducting one member each from CEA, BSNL (Inspection Circle), WESCO and Orissa Telecom Circle. The job entrusted to the sub-committee was to look into the available records and give its recommendations to central PTCC. In the last Central PTCC meeting the following terms of reference (TOR) of the sub-committee were finalized :-

1. To check the PTCC route approval of the 11kV Khari to Sagarpalli power line.
2. To check the PTCC Route Approval of the telecom line emanating from Khameshwarpalli telephone exchange, involved in the accident

3. In case, no PTCC Route Approval is available then the sub-committee can verify the old records of OSEB to establish the date of existence of the 11kV Khari to Sagarpalli power line.
4. Similarly by verifying the old records of BSNL the date of existence of the telecom line involved in the accident can be established.
5. The committee shall verify the authenticity & credibility of the records produced by the power and telecom authorities. Records should be certified by the senior level officer of concerned utilities.
6. Submit a report before the Chairman, Central PTCC clearly indicating the agency which is the later entrant by 30.6.2011.
7. Orissa Telecom Circle shall be convener for the sub-committee.

In line with the above a meeting of the sub-committee was held on 14 Sept 2011 at Bhubneshwar and was attended by all the four members of the sub-committee. After verifying all the available records and establishing their authenticity the sub-committee concluded as below:

1. ***PTCC approval could not be submitted by the concerned electricak authority i.e. WESCO for 11 kV linefrom Khari Sagarpalli.***
2. ***BSNL could not submithe PTCC approval for the concerned subscriber line 282052 from Khameswarpalli Telephone Exchange.***
3. ***The 11 kV line from Khari to Sagarpalli was commissioned in year 1974 and the same was upgraded in year 1988. It was verified from the Asset Register maintained by WESCO.***
4. ***BSNL exchange at Khameswarpalli was commissioned on 30.03.1994.***
5. ***From the above it is found that BSNL is the later entrant.***

A copy of the above was forwarded to all concerned by Director (PTCC) CEA on 19.09.2011.

The committee members may kindly deliberate on the recommendations of the sub-committee and give its decision.

## **2.7 Nomination of member from DISCOMs (Distribution Companies) for State Level PTCC**

While discussing this agenda point during the 93<sup>rd</sup> Central PTCC meeting, all the four DETs were requested to intimate the names of the DISCOMs who have failed in forwarding their nominations so that issue can be taken up with them at the higher level. Accordingly, CEA vide its letter dated 02.07.2011 requested all the four DETs(PTCC) to intimate the names of the DISCOMs who have failed in forwarding their nominations so that issue can be taken up with them at the higher level.

All DETs (PTCC) may apprise the Committee about the status in their region.

## **2.8 PTCC clearance of HVDC lines**

Proposal for PTCC route approval for  $\pm$  800 kV HVDC power line from Biswanath Chanyali to Agra is being submitted by Powergrid. Since the length of the power

line is nearly 2200 KM and the line passes through three regions i.e. NER-ER-NR the proposal is being submitted in nine sections. Proposal for PTCC Route Approval of **four** sections has already been submitted and out of these **four**, CEA has already received complete Telecom and Railway details for **two** sections. It was decided in the last Central PTCC meeting that since complete details of **two** sections is already available with CEA so these may be processed for computation of Induced Voltages (IV). The IV computation of the balance sections shall be carried out as and when their information is received. It was also decided that initially PTCC RAC shall be issued for each section individually and shall carry a suitable clause that the RAC is subject to clearance of complete length of power line from Biswanath Chanyali to Agra. However, a combined PTCC RAC for the complete HVDC line shall have to be issued at the end.

This item is proposed to be dropped from future agenda.

## **2.9 AGENDA FROM INSPECTION CIRCLES, BSNL**

### **2.9.1 DET PTCC, New Delhi**

DET (PTCC), New Delhi in the last meeting had informed that PTCUL, Uttarakhand is not submitting proposals for PTCC approval and power lines have been charged without PTCC approval. He also informed that proposals for laying underground (armoured) cables by BSNL Telecom Circles in Northern Zone are not being submitted to their unit for PTCC approval.

CEA, vide its letter dated 14.07.2011 had advised CGM PTCUL to adhere to PTCC norms and seek PTCC route approval before charging their EHT power lines.

Representative from PTCUL may apprise the Committee on the action taken.

### **2.9.2 AP Telecom Circle, BSNL, Hyderabad**

Due to falling of 11kV power line on Telecom line(s), some equipment at Dubacherla Telephone Exchange and Pothavaram Telephone Exchange got damaged. A.P. Telecom Circle has asked the power authorities (APPEDCL) to pay the compensation of Rs 2,77,356/- and Rs. 89,400/- respectively for the damage caused. After discussing the issue the Central PTCC established that the accident had occurred since inadequate guarding had been provided at the crossing of power and telecom line. As per the PTCC code of practice it is the responsibility of the later entrant to provide the guarding. The later entrant could not be fixed so far because the dates of PTCC approval of the 11 kV line and the telecom lines are not traceable.

In the 91st Central PTCC Meeting, a sub-committee was formed by inducting one member each from CEA, BSNL (Inspection Circle), APEPDCL and A.P. Telecom Circle to look into this incident. The committee could not make much progress in the absence of terms of reference (TOR) from Central PTCC. While discussing this agenda item during the 93rd Central PTCC meeting following terms of reference (TOR) of the sub-committee were formulated:

1. To check the PTCC route approval of the 11kV power line involved in the accident.
2. To check the PTCC Route Approval of the telecom lines emanating from Dubacherla & Pothavaram telephone exchange that got involved in the accident
3. In case, no PTCC Route Approval is available then the sub-committee can verify the old records of APSEB/AP Transco to establish the date of existence of the 11kV power line.
4. Similarly by verifying the old records of BSNL the date of existence of the telecom line involved in the accident can be established.
5. The committee shall verify the authenticity & credibility of the records produced by the power and Telecom authorities. Records should be certified by the senior level officer of concerned utilities.
6. Submit a report before the Chairman, Central PTCC clearly indicating the agency which is the later entrant by 30.7.2011.
7. A.P.Telecom Circle shall be convener for the sub-committee.

A meeting of the sub-committee was held on 13.10.2010 in the office of CGM, AP Telecom Circle, Hyderabad and the conclusion of the meeting is as follows:

1. *PTCC approval from power authorities could not be submitted in both Dubacherla & Pothavaram cases.*
2. *PTCC approval from the BSNL authorities could not be taken for both the exchanges as it was a overhead line at both the exchange areas.*
3. *There are no records brought by power authorities (APEPDCL) for verification and identification of commissioning of the power line.*
4. *As per BSNL records the telecom overhead lines was existing before 17.04.1992 and 08.06.7992.*
5. *BSNL has submitted all the required documents duly certified by the competent authority. The certified copies of the documents were given to the representative of the power authority and he requested for one month time to authenticate the documents furnished by BSNL and to trace the record in their office. Therefore it was decided that the power authority shall trace their records and furnish certified copies of the same to the sub-committee on or before 30.11.2011. After getting the records from the power authorities the sub-committee will meet again in the month of December 2011 to finalize the case.*

A letter was written by CEA to APEPDCL on 08.12.2011 reminding them to submit the documents regarding date of existence / date of PTCC route approval of the 11 kV power lines.

**The reply from APEPDCL is still awaited. Representative from AP telecom/APEPDCL/APTRANSCO may kindly apprise the chair about the present status.**

## **2.10 Agenda from Powergrid, WR-II, Vadodra**

Powergrid had informed in the last meeting that for according PTCC clearance to 765 kV Seoni-Wardha transmission line, an amount of Rupees 1.85 crore was deposited by them to South East Central Railway (SECR)-Bilaspur for re-



engineering the affected railway circuits. Similarly, for according PTCC route approval for 765 kV Seoni- Khandwa transmission line, an amount of Rs. 3.29 crore was deposited with SECR-Bilaspur towards replacement of overhead telecom circuits to underground co-axial cable on Seoni-Chhindwara section. Powergrid demanded the Auditor certificate from Railways indicating the expenditure break-up.

In the last meeting Director (Telecom)/Railway Board informed that the closure report for Rs 3.29 crore has been forwarded to Powergrid and the closure report for Rs 1.89 crore shall be forwarded soon.

A final utilization certificate for Rs. 1.85 crore has been submitted by SECR, Bilaspur on 22.07.2011.

This agenda item is proposed to be closed.

## **2.11 DET (PTCC), NEW DELHI**

DET (PTCC), New Delhi had submitted that the proposals of PTCC Route approval for 33 KV D/C and above, up to 400 KV power lines have not been submitted by the concerned power authorities of UP (West), UP (East), Uttaranchal and Punjab.

The representatives from PSTCL and PTCUL stated that they have started forwarding the proposals for PTCC RA. Since there was no representative from UP (East) and UP (West) the status could not be known. It was decided that matter shall be pursued by CEA and DET (PTCC) New Delhi.

As decided, CEA issued a letter on 14.07.2011 and requested the concerned officers of UP (East) and UP (West) for seeking PTCC route approval for all the HT/EHT lines already charged without PTCC Route Approval and to seek PTCC Route Approval for future HT/EHT lines as well.

DET (PTCC), New Delhi may apprise the Committee on the current status.

## **2.12 Agenda from Railways**

Director (Telecom) Railway Board brought to the notice of Central PTCC that the annexure regarding induced voltage calculation are being received from power utilities without any Authorized Signature. He wanted that the annexure should be properly signed by the concerned officers.

CEA agreed to comply and also agreed to issue a circular to all the Power Utilities for compliance. Accordingly, Director (PTCC)/CEA issued a letter on 28.02.2011 requesting all the power utilities to put their signatures along with their seal on the Induced Voltage Calculations sheet before forwarding it to Railways/BSNL for PTCC route Approval.

Railway representative may kindly give his feedback.

## **2.13 Assam Telecom Circle**

A list of 33kV Power lines was submitted for which the PTCC clearance is pending since proposals at the office of CGMT, Assam Circle are not traceable. It

was proposed by the Assam telecom circle that ASEB should resubmit the cases or duplicate copies of the proposals may be submitted:

After deliberating on this issue, the Committee ruled that all 11/33 kV cases be discussed at SLPTCC level. The Central PTCC be approached only in exceptional cases with full justification.

DET (PTCC), Kolkatta/ representative from Assam Telecom circle may apprise the Central PTCC about the progress made in this matter in SLPTCC meeting.

#### **2.14 Powergrid, NER**

In the last meeting Powergrid, NER informed that PTCC clearance is pending with Railways in respect of 8 new cases.

On this issue, representative from NE Railways informed that out of 8 cases NOC for 3 has been issued, for 2 cases NOC is under issue, for one case clarification has been sought and remaining cases are under process.

Representative from NE Railways may kindly apprise the committee about the present status.

#### **2.15 Agenda from CEA on 'Cyber Security'**

Additional Secretary, Ministry of Power has desired that issue of cyber security may be flagged in Central PTCC forum so that Constituent members of PTCC may convey the message in their respective organizations down the line.

Regarding cyber security, it is informed that MOP, in view of the security concerns for IT networks in the Power sector, has directed the utilities to draw up their own security programme for their IT systems and networks already created or likely to be created. This is of more significance for Distribution utilities where in large scale IT applications are likely to be created under R-APDRP, Smart Grid etc. The necessary assistance may be taken from organizations like STQC (Standardization Testing and Quality Certification) and CERT-In (Indian Computer Emergency Response Team). STQC has already created necessary infrastructure for security test/evaluation of IT products as per the international Common criteria standard ISO 15408. This facility is capable of carrying out security test/evaluation of IT products up to level 4 of the Common Criteria standard. The numeric rating describes the depth and rigor of an evaluation. Each level corresponds to a package of security concern and requirement. The Common criteria list 7 levels.

In view of above, the utilities may utilize the enabling/facilitation services available at STQC and CERT-In organizations for establishment of Information Security Management System.

All the utilities are therefore requested that the issue may also be discussed at State and District level PTCC meetings and action taken in this regard may be indicated at the earliest so that MOP can be appraised accordingly.

**2.16 Agenda from Power Transmission Corporation of Uttarakhand Ltd. (PTCUL)**

Waiver of PTCC clearance in respect of transmission lines charged 5-6 years earlier and PTCC case not submitted.

In the last Central PTCC meeting PTCUL has submitted a list of 14 power lines which were charged during 2005 to 2007 without seeking PTCC route approval. Out of these 14 power lines 12 are of 132 kV and 1 each of 220 kV & 400 kV.

IPTCUL authority pointed out that there have been no report of any infringement to any telecom lines because of these power lines since their commissioning and requested the Central PTCC for one time waiver of PTCC clearance.

After deliberating on the request of PTCUL Central PTCC decided that the precedence of waiving off the PTCC RA should not be started. Therefore PTCUL was asked to forward PTCC RA proposals for all the 14 power lines that have been charged unilaterally without PTCC RA.

Vide a letter dated 28.06.2011 CEA requested GM PTCUL to apply for PTCC RA for all the power lines already charged without PTCC RA.

Representative from PTUCL/ DET PTCC (NR) may kindly give the present status of this issue.

**2.17 Agenda Item from DE PTCC, Inspection Circle, Southern Region, Chennai..**

Marking of telecommunication circuits of length upto 5 Kms (Previous CLPTCC meeting minutes closed item no.2.12.2)

The doubts raised by DE PTCC SR were clarified in the meeting and recorded in the Minutes of the 93<sup>rd</sup> Central PTCC meeting.

It is proposed to drop this item from future agenda.

**2.18 Agenda from DET(PTCC) Northern Region New Delhi.**

During the last Central DE, PTCC NR submitted a list of nine 11/33 kV power lines which had been charged without PTCC RA.

After deliberation, the Committee decided that all above 11/33 kV cases be discussed at SLPTCC level. The Central PTCC be approached only in exceptional cases with full justification.

The item is dropped from future agenda.

**2.19 Agenda from DET(PTCC) Western Region Mumbai.**

During the last Central PTCC meeting DE PTCC WR reported about non reference of proposal for 11KV/33kV power line / cable by power authority in Maharashtra state. It is also seen that construction of 11KV power line / cable are under progress in most of places of Maharashtra state without maintaining safe separation as well as without obtaining PTCC approval from concerned BSNL authority.

During the last meeting the representative from MSPTCL was requested to issue necessary instructions to the distribution companies to seek PTCC RA before charging their EHT power lines.

The representative from MSPTCL may kindly give the present status of the issue.

## **2.20 Agenda from Orissa Power Transmission corporation limited (OPTCL)**

PTCC Approval awaited for the following proposals.

- a) 220 kV D.C. transmission line from Mendhasal to Bidanasi. BSNL & Rly. Details awaited.
- b) Diversion of 220 kV D.C. transmission line from Meramundali to Duburi BSNL & Rly. Details awaited

## **2.21 Agenda from POWERGRID SRTS-II, Bangalore.**

- a.. East Cochin-Trichur line Charging permission for the above line has been issued.
- b 400 kV Hassan-Mysore D/C Line - IV comments issued by CEA
- c LILO of both ckts of 400kV Nelamangla-SomanahallyD/C line at 400kV Hubli - Proposal not received by CEA
- d LILO of both ckts of Udumalpet – Madakatheraat 400kV chullar - Proposal not received by CEA
- e 230kV D/C KFBR-Sirucheru - Proposal not received by CEA
- f 400kV Tuticorin- Madurai D/c Quad line - IV comments issued by CEA.

## **2.22 Agenda points from PGCIL, WR-II, Vadodara**

- a) 400kV D/C Bachau - Vadavi (Ranchhodpura) Tr. Line

Induced Voltage calculations sent by Director-PTCC, CEA, New Delhi on 20/10/10 to CSTE, WR, Mumbai for Issuance of No Objection Certificate.

The NOC was held up as CSTE, WR, Mumbai raised certain objections regarding the human safety since the I.V. figures was more than 100 Volts on railway O/H communication circuits.

Considering fresh doubts raised by WR involving human safety, Chairman Central PTCC proposed to set up a sub-committee drawing one member each from Railways, CEA and Powergrid to dig out information on the issue from reference books, journals, CCIIT guidelines, etc. The term of reference (TOR) for the sub-committee is to determine voltage limit from human safety point of view for working on over headlines. Sh. NP Gupta, Dy. CSTE, Western Railway was made the Convener of the Sub-Committee. It was also decided that till the sub-committee reaches any conclusion, the WR will not hold up PTCC RA and continue to issue NOC as has been done in the past.

The Sub-committee held its meeting at CEA New Delhi on 23.08.2011 and the minutes of the meeting are placed before the committee for acceptance. The

MoM are annexed, however the Conclusion of the meeting is reproduced below for ready reference.

**Conclusion:**

***It can therefore be concluded that induced voltage of up to 430V is safe for human working on overhead railway telecom circuits. In fact, as per para 6.5.2 and para 6.5.3, even 650 V of induced voltage is considered non-hazardous to human working on railway communication circuits for EHT (66KV and above) lines because of protective devices used in the power line to limit the induced voltage duration to 0.2 seconds and in no case is more than 0.5 seconds in the event of SLG fault conditions. However, for communication circuits the provisions as contained in para 6.5.3 (ii) of the PTCC manual must be adhered to for this be applicable.***

***For block circuits the safe limits as prescribed for various types of block circuits as per Appendix XVII to Chapter I and para 6.11.4 of the manual shall be followed.***

- |     |   |                                 |
|-----|---|---------------------------------|
| (b) | 400kV D/C Mundra - Jetpur Tr. Line                  | IV issued by CEA                |
| (c) | 400kV D/C Mundra - Limbdi (Chorania) Tr. Line       | IV issued by CEA.               |
| (d) | 400kV D/C Gandhar - Navsari transmission Line       | Rly. Details awaited.           |
| (e) | LILO of 2200kV D/C Kawas - Navsari at Navsari. .    | Power details awaited.          |
| (f) | 765kV S/C Bina - Indore Tr. Line.                   | Power and Rly. Details awaited. |
| (g) | 400kV D/C (QUAD) Indore - Indore Tr. Line.          | Rly. details awaited.           |
| (h) | 765kV S/C Satna - Bina Ckt#1 Tr. Line.              | IV issued by CREA.              |
| (i) | 765kV S/C Satna - Bina Ckt#2 Tr. Line.              | IV issued by CEA.               |
| (j) | LILO of 400kV D/c V'chal - J'pur Ckt#3 & 4 at SASAN | Rly. Details awaited.           |
| (k) | 765kV S/C Sasan - Satna Ckt#1 Tr. Line              | Under computation in CEA.       |
| (l) | 765kV S/C Sasan - Satna Ckt#2 Tr. Line              | Under computation in CEA.       |

**2.23 Agenda points from PGCIL, WR-I, Nagpur**

PTCC Route Approval of the following proposals is awaited.

- |    |                                  |                        |
|----|----------------------------------|------------------------|
| a) | 400kV Korba- Raipur              | IV issued by CEA.      |
| b) | 400kV Wardha-Parli-II            | IV issued by CEA.      |
| c) | 400kV Raipur-Wardha.             | IV issued by CEA       |
| d) | 765kV Seoni-Wardha-II            | IV issued by CEA       |
| e) | LILO of Lonik;d-Kalwa at Mumbai. | IV issued by CEA       |
| f) | 400kV Vapi-N.Mumbai              | Rly. Details awaited.  |
| g) | 765kV Ranchi-Sipat.              | Under computation      |
| h) | 400kV Wardha-Wardha.             | Proposal not received. |

**3.0 NEW AGENDA ITEMS**

**3.1 Agenda items from CEA.**

**Monitoring by CEA regarding progress made in collection of legacy data required for Computerization of PTCC Process.**

It is proposed that a representative from CEA shall be present in the SLPTCC meetings, and shall monitor the progress made by BSNL. Power authorities and Railways in collecting the legacy data.

It is proposed that all DET,s shall include the following agenda point in all the future SLPTCC meetings.

“Progress made in collection of legacy data required for Computerization of PTCC Process.”

### **3.2 Agenda from KPTCL.**

#### **a. Regarding NOC from STR for PTCC cases with O/H lines.**

In the 291<sup>st</sup> SLPTCC meeting it was proclaimed by STR that a decision has been taken that “only cases involving laying of power cables need to be referred STR and NOC of STR for cases of O/H power lines is not required. However CGM/GM STR confirmation is required in this regard.” Now CGM STR Chennai has confirmed the nomination of GMM STR Bangalore for accepting clearing all the forthcoming PTCC proposals with U/G power cables vide letter dated 14.09.2011. However DET PTCC Chennai insisted that no reference of the said subject has been placed in Central PTCC meeting for approval and thus the said practice should not be continued.

#### **b. Insisting upon submission of EPR details for the existing Substations when PTCC proposals for new substations are submitted.**

The DET, PTCC Chennai is now insisting upon submission of EPR details for the existing Substations as per para 2.1(1) Section A clause 80 (PTCC questionnaire-1) of the revised PTCC manual KPTCL wants that necessary clarification be issued by the Central PTCC that EPR details of only new substations is required to be given and EPR of the old/existing Substations should not be insisted upon.

### **3.3 Agenda from Chief Engineer (Dist.) Maharashtra State Electricity Distribution Co. Ltd.**

#### **Review of PTCC Standards for power lines approval (upto 33 kV) in respect of special cases mentioned below**

Construction of New power lines / Sub-Stations are under progress at a large scale in Maharashtra & in order not to hold up the progress of these Important Projects, CLPTCC is requested to review the PTCC standards in Special Cases where the Objectives of PTCC i.e. ensuring and enhancing overall safety of precious human life & equipments will also not be hampered.

As it takes minimum 3 to 4 months of time for approval after submission of proposal completed in all respect to SLPTCC, it is felt that special cases can be approved by simplifying the procedure for obtaining approval.

**Short Distance Lines :-** All the proposed power lines where the length of power lines are short & does not have any interference situation & Induction does not

exist approval for such lines can be issued by adopting proposed simplified procedure.

Proposed Power Lines not in proximity to Telecommunication Lines or Railway lines :- Proposed power lines which are not in the vicinity of telecom lines or Railway Lines. Such type of lines can be approved by adopting the simplified procedure. As there is no question of Induced Voltage or interference also, it is observed in many of the proposals the proposed power lines are not in the vicinity of either Telecom or Railway lines.

#### **3.4 Agenda from Western Region Transmission (Gujarat) Pvt. Ltd.**

Rs 80.35 lakh has been deposited by the above company to Western Railway for arranging the protection work on certain Block sections which were likely to get affected under SLG conditions on 400 kV Vadavu – Kansari power line. Subsequently, after careful consideration the company is of the view the estimate submitted by WR is on the higher side. The company has further requested the Chairman Central PTCC to get the estimate scrutinized by the Protection/Re-Engineering Supervisory Sub-Committee formed as per clause 6.14 of the PTCC manual.

#### **4.0 Any fresh agenda item with the permission of the chair.**

## **Minutes of the meeting of the Sub-Committee held on 23rd August 2011 at CEA, New Delhi**

While deliberating on the Agenda Item No. 3.9 during the 93rd Central PTCC Meeting held on 29th April 2011 at Daman the Central PTCC took a note of the concern expressed by POWERGRID regarding delay in issuing NOC by the Western Railway and the doubts raised by Western Railway regarding the human safety whenever the Induced Voltage on the O/H communication circuits exceeds 100 Volts due to Single Line to Ground fault on the paralleling power lines. The representative from Western Railway (WR) stated that protection arrangements are required for human safety where Induced Voltage is more than 100 V for working on overhead lines. Considering fresh doubts raised by WR involving human safety, Chairman Central PTCC proposed to set up a sub-committee drawing members from Railways, CEA and Powergrid to extract latest information on the safe voltage for working on the O/H telecom lines CCIIT directives etc.

In line with the above, a sub-committee was set up comprising the following members:

**From CEA :**

1. Sh. D.K.Malik, Director (PTCC) CEA.
2. Sh. Naresh Bhandari, Director (LD&T) CEA.

**From POWERGRID:**

1. Sh. S. Balakumar, Manager (Engg.), POWERGRID,, WRTS-II. Vadadora..

**From Western Railway:**

1. Sh. N.P.Gupta, Dy. CSTE (Tele), WR, Mumbai.

The sub-committee held its first meeting on 23<sup>rd</sup> August 2011 at CEA, New Delhi, and discussed the issue for an amicable solution.

Sh. N.P.Gupta drew the attention of the members towards the para 6.5.3 (ii) of the recommendations issued by Central PTCC during its meeting held on 15.06.1956

*Para 6.5.3 (ii) of PTCC Manual is reproduced below:*

*For control and Deputy control circuits on which operating personnel work continuously the operators' telephonic sets should be fitted with suitable acoustic shock absorbers and in addition, proper protective device like gas and carbon arresters may be fitted on the circuits whenever they enter an office*

To this it was clarified by Shri D. K. Malik that, the protections recommended above are to be provided whenever the induction is likely to exceed 650 volts on the communication circuits under Single Line to Ground fault conditions on paralleling EHT power lines. This is as per para 6.5.3(i) of the PTCC manual.

Sh. N.P.Gupta further produced Various papers downloaded from WEB sites for hazardous voltage premier and shock physiological effects as per that electricity

kills or injures more than 1000 people a year in the United States. Voltages of 100 to 250V ac in wall outlets are the most common and can be lethal. This voltage range can cause significant current flow through the body. Under shock physiological effects:-



Electric Current (1 second contact)	Physiological Effect	Voltage required to produce the current with assumed body resistance	
		100,000 Ohms	1000 ohms
1 mA	Threshold of feeling, tingling sensation	100 V	1 V

To this it was again clarified by Shri D. K. Malik that Central PTCC follow the recommendation/directives issued by CCITT/ITU which is an international body constituted by the UN. Hence, any paper downloaded from various Web Sites without any authority/authenticity cannot be considered. It was further stated that the duration of fault condition is power lines in India is limited to 0.2 seconds and according to CCITT recommendations induced Voltage upto 650V during that period is non-hazardous.

Shri N. P. Gupta was not satisfied with the clarification given above regarding Para 6.5.3 of PTCC Manual which does not restrict for provision of protective devices whenever the induction is likely to exceed 650 V.

Shri N. P. Gupta further drew the attention on Para 6.5.2 (b) of PTCC Manual, which states that :-

*the CCIF recommendation raising the limit of longitudinal induction to 650 V do not in generally apply to cases of Signaling circuits of Railway Systems and the value of 430 V would be in forced for such circuits.*

*This has been further confirmed during Minutes of the Meeting held on 10.12.1976 to discuss problem relating to protection of Railway telecom and block circuits. Para – 4 of (iii) [reproduced at Appendix-XVI to Chapter – 1 on Page 160 of PTCC manual) of same is states as :-*

*“Wherever the railway electrification has been carried out, the paralleling railway circuits (including block circuits) can be cleared as for telecom lines without additional protective measures being prescribed for the block circuits subject to the condition that the induced voltage does not exceed 430V. In case the induced voltage exceeds 430V, case has to be coordinated and discussed with Railway Board for a decision.”*

Sh. Malik further referred to a circular issued by the Railway Board dated 03.04.1978 to all GM's (S&T) containing guidelines regarding PTCC Route Approvals of EHT Power Lines. (Reproduced at Appendix-XVII to Chapter-1' on page-164 of PTCC Manual). In this circular letter, regarding protection of communication circuits it is recommended that:-

***As for the protective measures on railway communication circuits whether owned or maintained by Railways or P&T,(now BSNL) the standards followed by P&T will be adopted for railways, telecom circuits as well.”***

Regarding protection of Railway Block Circuits, ***the recommendations for proactive measures on railway block circuits is also enclosed with the above circular issued by the Railway Board.***

Attention was further drawn towards a circular issued by P&T (now BSNL) reproduced as Appendix –IX to chapter -1, para 1.0 of PTCC manual which states that;-

*Owing to vast expansion in power & Telecommunication sectors number of power lines happen to run parallel to telecommunication lines. **Telecommunication lines, therefore, need to be protected from low frequency induction in the event of single line to ground fault on paralling power lines when the induced voltage exceeds the prescribed safe limit of 430 volts.** Thus personnel working on these circuits and the equipment installed need also to be protected from the influence of hazardous potentials.*

Railways overhead/underground lines are used for both signaling and communication. Railway Board has clearly laid down the induced voltages that can be tolerated by the signaling circuits depending upon the block instruments being used in a section.

For communication circuits, Railway Board's guidelines are clear that standards followed by P&T (now BSNL) shall be adopted by Railways as well.

It was explained by Shri D. K. Malik that SLG (Single to Ground) faults on EHT (66KV and above) lines do not exceed 0.2 seconds. The Power authorities provides protective devices to see that the duration of SLG fault do not exceed 0.2 seconds and in no case is more than 0.5 seconds. For this duration, 430V induced voltage is not hazardous to human being. This is also substantiated by Appendix IX to chapter I of PTCC manual where 20 GD Tubes formula has been discussed. As per para 6.3.7 of PTCC manual this has been accepted by DoT as well.

### **Conclusion:**

It can therefore be concluded that induced voltage of up to 430V is safe for human working on overhead railway telecom circuits. In fact, as per para 6.5.2 and para 6.5.3, even 650 V of induced voltage is considered non-hazardous to human working on railway communication circuits for EHT (66KV and above) lines because of protective devices used in the power line to limit the induced voltage duration to 0.2 seconds and in no case is more than 0.5 seconds in the event of SLG fault conditions. However, for communication circuits the provisions as contained in para 6.5.3 (ii) of the PTCC manual must be adhered to for this be applicable.

For block circuits the safe limits as prescribed for various types of block circuits as per Appendix XVII to Chapter I and para 6.11.4 of the manual shall be followed.