भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

ISO 9001:2008

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No. NERPC/SE/PCC/2016/***3451-76*** Dated: December 09, 2016

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Managing Director, MSPDCL, Electricity Complex, Keishampat, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. Director (Tech), TSECL, Banamalipur, Agartala – 799 001
10. Director (Tech), TPGL, Banamalipur, Agartala – 799 001
11. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
15. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
16. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
17. General Manager, TSECL, Agartala – 799 001
18. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
19. General Manager (Coml.), NTPC, 3rd Floor, OLIC Bldg., Pl No- N.17/2, Nayapalli, Bhubaneswar-12
20. ED, NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
21. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
22. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
23. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
24. GM (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
25. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006

Sir,

The minutes of the 45th Protection Co-ordination Committee (PCC) of NERPC held on **30th November 2016 (Tuesday)** at Hotel Nandan, **Guwahati** at **10:30 hrs.** is sent herewith for your kind perusal and necessary actions of all concerned.

भवदीय / Yours faithfully,

(एल. बी. मुआनथंग/ L. B. Muanthang)
अधीक्षण अभियंता / Superintending Engineer

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. Chief Engineer(Elect), Loktak HEP,Vidyut Vihar, Kom Keirap, Manipur- 795124
11. Addl. GM (O&M & Elec), NTPC Ltd., Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
12. DGM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF THE 45TH PROTECTION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date of Meeting : 30/11/2016 (Wednesday)

Time of Meeting : 10:30 hrs

Venue : "Hotel Nandan", Guwahati.

Member Secretary, NERPC expressed concern for the less attendance in the Protection Co-ordination Meetings and stressed the need for active participation of members from the constituents for resolving protection system issues in the region. He said that protection work in power system is like an indirect tax whose requirement is visible only when the system is under stress. He told that this meeting was conducted earlier to discuss the audit findings of protection audits of Agartala, Surjamaninagr, Udaipur sub-stations of TSECL & Palatana Power Station of OTPC. He then asked Shri L.B. Muanthang, SE(P&SS),NERPC to take up the agenda for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 44TH MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

SE (P), NERPC informed that the minutes of 44th meeting of Protection Sub-committee held on 20th September 2016 at Guwahati were circulated vide letter No. NERPC/SE/PCC/2016/2277-2314 dated 7th October 2016.

As no comments/observations were received from the constituents, the Sub-Committee confirmed the minutes of 44th PCCM of NERPC

ITEMS FOR DISCUSSION

2. Protection audit of Agartala, Surjamaninagar, Udaipur sub-stations of TSECL and Palatana, OTPC.

During Sub Group Committee Meeting of PCC held on 24th Oct'16, the forum decided that the Protection audit of Agartala, Surjamaninagar, Udaipur sub-stations of TSECL and Palatana, OTPC are required to be taken up urgently.

For protection audit of Agartala, Surjamaninagar, Udaipur sub-stations of TSECL and Palatana, OTPC from 7th to 9th November 2016, following members were nominated by the respective constituents:

a. AEGCL- Ashutosh Bhattacharya, Dy. Manager (9435332928)
b. NERTS- Deva Prasad Pal, Sr. Engineer (9435382360)
c. NERPC- Abhijeet Agrawal, AEE (9871266951)
d. NEEPCO- Prosenjit Sen, Sr. Manager (9436167999)
e. OTPC- Smruti Ranjan Das, Manager (9612400784)
f. Tripura- Shankar Chowdhury, Sr. Manager (9436503230)

The team had visited the substations for Protection Audit. The findings of the team and detailed report of Protection Audit of these substations is given in Annexure - I.

Deliberation in the meeting

-Dy. Manager, AEGCL and members of the Protection Audit team have given presentation of the Audit report and expressed his thankfulness at the improvements observed in Tripura substations in respect of management, operations, etc. The Audit team has observed that there are discrepancies in the OTPC protective relay settings which are in contrast with the Ramakrishna Committee Recommendations. The team recommended to OTPC to adopt the actual gradation of proper functioning of all these protective relays in coherence with the Ramakhrishna Committee Recommendations. -OTPC representative stated that the protective settings of the ICT was as per the OEM recommendation and were not permitted to change. The Committee opined that the settings should be as per the requirements of the grid and therefore OTPC should give the audit report to OEM as a valid document to change the settings as per the requirements of the grid within 1 week. OTPC representative informed that they had implemented the recommended feeder setting within 7 days of the audit and this matter is already reported to NERPC & NERLDC through mail. Forum asked OTPC & TSECL to implement the relay settings suggested by Protection Audit Team at the earliest and status to be reported to NERPC & NERLDC.

In addition to this, OTPC expressed the need to implement new SPS scheme to prevent tripping of ICT at Palatana under N-1 contingency. Member Secretary told that Tripura was pressurizing for discussion of increasing its export of 100 MW of power to Bangladesh to 200 MW in the OCC meeting but in the 126th OCC Meeting it was suggested to discuss this issue in the PCC meeting as it would affect the healthiness of the grid system. OTPC stated that in case the loading of ICTs at Palatana goes above 130 MW if one ICT trips then the other ICT will be overloaded and then it will trip too. To prevent this happening new SPS scheme is to be designed, that will monitor the load and trip as required, has to be implemented. It suggested that the new SPS scheme is in such a way that whenever the loading of ICTs exceeds 130 MW and one ICT trips then this SPS would act. NERLDC said that the consent is required from TSECL as the scheme involves shedding of loads of downstream of Udaipur tripping 132 kV Palatana-Udaipur line and shedding of load of Surjamaninagar area by tripping 132/33 kV Transformers at Surajmaninagar and tripping of 132 kV Surjamaninagar-Agartala D/C & 132 kV Surjamaninagar-Budhjangnagar D/C. PGCIL representative expressed that N-1 contingency may not be fulfilled. It is decided that OTPC will make a proposal in this regard and to be circulated to all constituents for their study and concurrence.

3. Identification of short lines to install line differential protection.

During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC informed the forum that for purpose of installation of line differential protection on Short lines it is necessary to identify the list of lines for this purpose.

The identification exercise for installation of Differential Protection relays has to be completed for all Transmission Lines of NER Grid level on a priority basis.

As informed by BgTPP, NTPC & POWERGRID, the installation of Differential Protection on 400 kV BgTPP – Bongaigaon D/C has been completed.

As the 1st stage, differential protection is to be installed on important short lines like 132 kV Silchar – Srikona D/C, 132 kV Imphal(PG) – Imphal(MSPCL) D/C etc.

Deliberation in the meeting

-The sub-committee agreed that in the absence of uniformity of specific length criteria for installation of differential protection installation on short lines (valid for both existing and new transmission lines), the criteria adopted by SRPC could be referred for North-Eastern Region. After detailed deliberation, the following criteria was decided for adoption for identification of short line for differential protection:-

a) All 132 kV transmission lines of length <5 Kms.

b) All 220 kV transmission lines of length <10 Kms

c) All 400 kV transmission lines of length <50 Kms

d) All 132 kV & above dedicated transmission lines of Generators with installed capacity > 50 MW

The short lines as identified would be considered on basis of importance for installation of Differential Protection relays. The process of installation may be started wherever no additional investment in terms of Communication links between two ends of the line are required. Constituents of NER are requested to identify the lines in which line differential protections are to be installed under above criteria.

The Sub-committee noted as above.

4. Preparation of Draft model maintenance procedures that are to be followed by utilities

During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was noted that NERTS and AEGCL have already submitted their maintenance manual to the forum. SE(P), NERPC suggested that PGCIL, NERLDC and AEGCL together will prepare the guidelines for draft model maintenance procedure for transmission systems for all utilities. All constituents were requested to give their suggestions and feedback to them.

Sh. H. Talukdar, PGCIL, Sh. Jerin Jacob (Eng.NERLDC)/Rahul Chakrabarti, (Sr. Engr, NERLDC) and Sh. Ashutosh Bhattacharjee, DM, AEGCL were nominated to draft the guideline within 30th November 2016. The forum also agreed that the nominated members may call on utilities whenever needed.

All constituents are requested to submit their maintenance procedure to the forum for preparation of draft model maintenance procedure at the earliest.

Deliberation in the meeting

As requested by the nominated members, the time-frame was extended up to 31st January 2017. Since this work is pending for the last one year the sub-committee asked the nominated members to expedite the preparation of the draft model maintenance procedure.

The drafting preparation committee is to sit and prepare the procedure and submit report by 31st January 2017. Sh. P.N. Sarkar, E.E./ Sh. A. Agrawal, AEE, NERPC were nominated as new members. NERLDC will send the PGCIL and AEGCL manuals to NERPC. PGCIL representative gave a presentation on Maintenance Practice Schedule of PGCIL and it was decided that this schedule will be circulated amongst the constituents who will decide/select their respective activities and their schedules based on the financial capacity. The draft

maintenance procedures prepared by the members is to be presented and finalized in the next PCC meeting.

The Sub-committee noted as above.

5. Calculation of Relay Setting as per recommendation of V. Ramakrishna task Force

The relay settings details as formulated by NERTS in line with recommendations of V. Ramakrishna Task Force on Power system contingencies, had been circulated by NERLDC to all constituents of NER for comments. During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was agreed that the same can be implemented at the earliest for uniformity in protection systems.

Deliberation in the meeting

During the deliberation on progress of implementation of the relay settings as formulated by NERTS, the Sub-Committee was informed that Meghalaya has started the exercise while Assam has started implementing but having problem in the Resistive Reach setting and will come up with detailed analysis of the issue in the next meeting. Tripura has assured that it will start the work at the earliest. NTPC told that they can start implementing as per NERTS formulation only after receiving comments from their Corporate Office and will communicate the same to NERPC at the earliest.

The Sub-committee noted as above.

6. Review of Zone-II relay settings:

During Sub Group Committee Meeting of PCC held on 24th Oct'16, the forum discussed the relay settings document finalised by NERTS POWERGRID for adoption in NER, for fulfilment with recommendations of V.Ramakrishna Committee Task Force recommendations. The forum had agreed for implementation of Zone-II / Zone-III settings accordingly.

Further, several disturbances and major trippings in NER Grid are occurring on account of fault due to vegetation etc, resulting in high-resistive faults that fall outside the characteristic of Zone-II of Distance Protection. This results in delayed fault clearance by Earth fault relays, and the trippings are reflected at remote ends.

In view of this it is proposed that the Resistive reach of Zone-II of Distance protection be reviewed by all utilities.

The list of lines for implementation of settings is attached as per **Annexure-II.**

Deliberation in the meeting

NERLDC has circulated the impedances of shortest and longest lines as given in the Annexure for review of the reach of Zone-II Relay Settings by the constituents. Till now NERLDC has received comments from Assam, Meghalaya, OTPC and Kopili (NEEPCO).

Forum asked AEGCL to furnish the guidelines of Zone-2 timing followed by them at the earliest to NERPC & NERLDC.

Member Secretary, NERPC said that the software package developed by Power Research Development Corporation (PRDC) is implemented in ERPC which resolved the problem of data inadequacy as well as documentation and analysis will become streamlined. ERPC has implemented this package with funding from PSDF and no state fund is needed for this

purpose. After approval in TCC / RPC forum of NER, the same can be procured for NER as well.

The Sub-committee noted as above.

7. Manual for Protection Systems:

It has been noticed that several grid events are occurring on account of different practices for protection adopted by different utilities leading to lack of co-ordination. As per Sec.7 of CEA Technical Standards for Connectivity to the Grid Regulations, 2007, utilities shall develop their own protection manuals conforming to various standards for the reference and use of its personnel.

During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was noted that standard guidelines for protection system already exists. The recommendations of V. Ramakrishna Task Force Report is to be used by the utilities for all purposes.

It was also noted that CBIP has brought out an updated manual as of 2016 that contains detail guidelines for Transmission line protection. The manual was circulated to all constituents by NERLDC for reference.

The forum decided that the constituents may refer to it as guidelines for Protection systems for transmission.

Deliberation in the meeting

The subcommittee decided that all members may refer to the CBIP manual and give comments, if any during the next PCC meeting.

The Sub-committee noted as above.

8. Review of relay settings- Substation wise (including downstream state substation).

During Sub Group Committee Meeting of PCC held on 24th Oct'16, it was informed that due to ill-coordination in relay settings between State systems and ISTS, frequent tripping of elements are happening. Most of the Grid disturbances in NER Grid are due to this.

P&E Dept., Mizoram and DoP, Nagaland were requested to co-ordinate their relay settings with ISTS systems and implement the same as suggested by NERTS.

NERPC may take up with P&E Dept., Mizoram and DoP, Nagaland in this regard for quick implementation.

NERPC, P&E Dept., Mizoram and DoP, Nagaland to inform the current status.

Deliberation in the meeting

The Chair/Sub-committee noted that whenever any state is absent in the meeting any problem relating to the state would not be discussed as it is obvious that without their presence it is fruitless to discuss the issues related to them.

NERPC noted the absence of representatives from MSPCL, P&E Dept., Mizoram, DOP, Arunachal Pradesh and DoP, Nagaland seriously. The matter was referred to next PCC meeting.

Decision taken in sub group meeting held at Shillong on 24.10.16 are to be implemented at the earliest and status to be reported to NERPC&NERLDC.

The Sub-committee noted as above.

9. Details of PSS installed and activated in all Hydro stations.

During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC requested all power stations to provide details where PSS is installed. It was also requested to activate existing PSS after tuning and inform the same through mail.

NEEPCO vide mail dtd. 27th Oct'16 informed that all hydro stations of NEEPCO have PSS installed and activated. NERLDC vide email dtd. 27th Oct'16 had requested NEEPCO for further details of PSS.

NERLDC requested NEEPCO and NHPC to furnish details and settings of existing PSS (Time constant, PSS gain, PSS output limiter Max, Min etc.). The details of PSS are yet to be received at NERLDC, except for Palatana CCGT.

Deliberation in the meeting

Only Palatana CCGT has provided the details of PSS Installed and activated for damping oscillations to NERLDC, whereas the details provided by NEEPCO is not sufficient and to be submitted to NERPC. NEEPCO has given parameters of block diagram of some of their generators (Khandong, etc.), which do not convey any practical meaning in sense of damping of Low Frequency Oscillations. NERLDC requested NEEPCO to furnish the following details of PSS – Make, Date installed, Last date of tuning by OEM, Tuned frequency range.

NHPC contended that according to CEA only above 50 MW, PSS is to be implemented and hence had not furnished the data as their individual unit is not more than 35 MW. NERLDC expressed concern in the matter of several cases of Poorly Damped/Negatively Damped Oscillations in Southern part of NER Grid, and requested NHPC to tune their PSS if it is already installed, and furnish details of PSS to NERPC&NERLDC.

The Sub-committee noted as above.

10. Review of Recommendations of Empowered Committee for Analysis of GD-V and GD-IV in NER.

- During Sub Group Committee Meeting of PCC held on 24th Oct'16, NERLDC indicated that SPAR (Single Phase Auto Reclosure) is not available in 132 kV AGTPP – Agartala D/C lines, which was resulting in multiple tripping of these lines on transient fault. NERTS was requested for changing of Auto-reclosure scheme to SPAR.
  It was also decided that utilities should identify those transmission lines which have no SPAR scheme for implementation of the same. Implementation of SPAR is considered necessary in view of reliability of the power system.

Deliberation in the meeting

As per CEA Regulation 132 kV and above transmission lines are to be provided with single phase or three phase auto reclosures. PGCIL representative had stated that the work is almost done. Forum requested all constituents to furnish status report of SPAR implementation to NERPC.

- It was noted that most of trippings of transmission lines in NER Grid occur either on account of lightning strikes or due to vegetation infringement problem. It was decided that all utilities will identify the lightning prone areas and conduct checking of high tower footing resistance in transmission lines in these areas.
  Since tripping of line on lightning occurs due to Arcing, to prevent that it is required to either maintain low value of tower footing resistance or go for installation of

lightning arrester for the particular towers having consistent high footing resistance due to prevailing ground conditions.

Deliberation in the meeting

PGCIL representative stated that as the entire region is lightning prone, and identification of such towers by checking each and every tower is a Herculean task and may not be feasible. AEGCL stated that they have started undertaking the exercise. However the cost of checking of tower footing resistance for all towers, maintaining tower footing resistance less than 10 Ohm and installing Lightning Arrester for particularly identified towers are likely to involve huge financial implications. The problem is to be brought to the notice of the competent authorities for effective implementation of the scheme. PGCIL representative also stated that PGCIL transmission towers are old and need replacement, so problem can be dealt with at the time of replacement. PGCIL suggested that lines of 132 kV levels are more prone to lightning than lines of 220 kV & above voltage levels. So counter poise earthing to be done and tower footing resistance to be checked for Towers in the lightning prone areas. Even after that resistance goes high, TSLAs to be put in place to prevent unwanted tripping due to transient lightning faults.

The forum requested all the constituents to complete the process of identification of lightning prone line sections, and initiate action in this regard.

- For purpose of information regarding furnishing of communication outage during Grid disturbance of Category-V in NER, NERLDC had circulated a format as finalized by NLDC. However, till date information has been received only from SLDC-Mizoram, SLDC-Meghalaya, Ranganadi HEP.

  NERLDC had followed up with constituents vide reminder emails dated 26th Oct'16, 01st Nov'16, 21st Nov'16. The information is being sought to solve the matter of telemetry unavailability in real-time SLDC-Mizoram, SLDC-Meghalaya, Ranganadi HEP during Grid Disturbances, which delay the restoration time.

  Format is attached as per ***Annexure-III***.

Deliberation in the meeting

The subcommittee requested all constituents to submit data of communication outage during GD-V to furnish data within 1 week to NERLDC as per format.

The Sub-committee noted as above.

11. Low Frequency Oscillations (LFO) in All India Grid on 21st Nov'16.

Low frequency Inter-area oscillation of around 0.38 Hz was observed in All India Grid on 21st November'16 w.e.f. 13:37 Hrs for a duration of nearly 5 minutes. No conclusive event of switching etc. has been found during or prior to that period that might have caused the LFO to trigger.

It was requested to all utilities to check for any Instances of switching during the time of 13:30 Hrs to 13:50 Hrs, and intimate the same to NERLDC.

Till now, inputs have been received from Palatana-CCGT, Loktak HEP, SLDC-Assam in respect of this event.

This sort of oscillations may be extremely harmful to stability of the interconnected grid, and real-time operators at Control centers (SLDCs / ISGS / etc.) must be aware to report any such cases of oscillation.

A Snapshot of LFO on 21st Nov'16 is attached in **Annexure-IV.**

All entities of NER are requested to be alert in respect of such LFOs in the Grid, and report the same to SLDC / NERLDC / NLDC.

Deliberation in the meeting

NERLDC informed that Oscillations should be viewed by all constituents of NER as a serious phenomenon, and in such cases there is need of prompt response from constituents for identifying the root causes / participation of generators in oscillations.

Therefore constituents/utilities are requested to report such incidences and provide data at the earliest to NERLDC in cases of major LFOs. Data required after LFO, GDs to be discussed in subgroup and tentative list of required data to be circulated among all the constituents.

For proper analysis of LFOs, data of millisecond resolution is required. So the Forum requested all the generators to complete the implementation DAS at the earliest and to furnish data of atleast 1 sec resolution whenever needed to NERLDC & NERPC as per Section 11.2.(i) of CEA's Technical Standards for Construction.

The Sub-committee noted as above

11. Frequent Tripping of 220 kV New Mariani (PG) - Mokokchung (PG) D/C lines.

220kV Mariani (PG) – Mokokchung (PG) D/C lines tripped several times due to the operation of over voltage protection at Mokokchung (PG) end.

Tripping details of the 220 kV Mariani (PG)-Mokokchung (PG) line I are as follows:

Sl. No	Name of Element	Date & Time of Tripping	Name of Nodes	Relay indication	Date & Time of Restoration
1	220 kV Mariani(PG)-Mokokchung (PG) I	06-10-16 12:29	Mariani(PG)	Over Voltage	06-10-16 19:16
			Mokokchung(PG)	Direct Trip received	
2	220 kV Mariani(PG)-Mokokchung (PG) I	25-10-16 2:59	Mariani(PG)	Not Furnished	25-10-16 6:57
			Mokokchung(PG)	Over Voltage	
3	220 kV Mariani(PG)-Mokokchung (PG) I	26-10-16 0:03	Mariani(PG)	Over Voltage	26-10-16 7:00
			Mokokchung(PG)	Not Furnished	
4	220 kV Mariani(PG)-Mokokchung (PG) I	27-10-16 23:19	Mariani(PG)	Direct Trip received	28-10-16 13:25
			Mokokchung(PG)	Over Voltage	
5	220 kV Mariani(PG)-Mokokchung (PG) I	28-10-16 23:11	Mariani(PG)	No tripping	29-10-16 6:43
			Mokokchung(PG)	Over Voltage	
6	220 kV Mariani(PG)-Mokokchung (PG) I	30-10-16 0:42	Mariani(PG)	Over Voltage	30-10-16 11:51
			Mokokchung(PG)	Direct Trip received	
7	220 kV Mariani(PG)-Mokokchung (PG) I	30-10-16 23:38	Mariani(PG)	Direct Trip received	31-11-16 19:54
			Mokokchung(PG)	Over Voltage	
8	220 kV Mariani(PG)-Mokokchung (PG) I	31-10-16 22:34	Mariani(PG)	Direct Trip received	01-11-16 9:36
			Mokokchung(PG)	Over Voltage	

9	220 kV Mariani(PG)-Mokokchung (PG) I	01-11-16 23:02	Mariani(PG)	Direct Trip received	02-11-16 15:33
			Mokokchung(PG)	Over Voltage	
10	220 kV Mariani(PG)-Mokokchung (PG) I	02-11-16 22:39	Mariani(PG)	Direct Trip received	03-11-16 15:05
			Mokokchung(PG)	Over Voltage	
11	220 kV Mariani(PG)-Mokokchung (PG) I	04-11-16 4:13	Mariani(PG)	Over Voltage	04-11-16 17:35
			Mokokchung(PG)	Over Voltage	
12	220 kV Mariani(PG)-Mokokchung (PG) I	05-11-16 21:27	Mariani(PG)	Direct Trip received	07-11-16 21:48
			Mokokchung(PG)	Over Voltage	
13	220 kV Mariani(PG)-Mokokchung (PG) I	13-11-16 21:59	Mariani(PG)	Over Voltage	14-11-16 16:17
			Mokokchung(PG)	Direct Trip received	
14	220 kV Mariani(PG)-Mokokchung (PG) I	14-11-16 21:34	Mariani(PG)	Over Voltage	15-11-16 16:26
			Mokokchung(PG)	Direct Trip received	
15	220 kV Mariani(PG)-Mokokchung (PG) I	15-11-16 23:01	Mariani(PG)	Direct Trip received	16-11-16 16:34
			Mokokchung(PG)	Over Voltage	
16	220 kV Mariani(PG)-Mokokchung (PG) I	17-11-16 1:59	Mariani(PG)	Over Voltage	17-11-16 9:22
			Mokokchung(PG)	Over Voltage	
17	220 kV Mariani(PG)-Mokokchung (PG) I	19-11-16 4:01	Mariani(PG)	Over Voltage	19-11-16 5:56
			Mokokchung(PG)	Over Voltage	
18	220 kV Mariani(PG)-Mokokchung (PG) I	20-11-16 22:20	Mariani(PG)	Direct Trip received	21-11-16 18:01
			Mokokchung(PG)	Over Voltage	

It has been seen from DRs of cases furnished by NERTS that Overvoltage tripping of these lines are occurring at around 242 kV. However, the design voltage for 220 kV elements is 245 kV, and hence lines should trip only for voltages beyond 245 kV.

Deliberation in the meeting

NERLDC intimated that 220 kV Mokokchung-Mariani lines are repeatedly tripping on overvoltage protection, and voltage observed from DR produced by PGCIL are between 239 kV to 242 kV.

DGM (AM), NERTS explained that setting of Overvoltage Stage-1 at 242 kV is alright because some margin below and above 245 kV is taken while setting its tripping limit. He also said that once the 220 kV AGBPP Reactor becomes operational, voltage will improve.

NERLDC informed the forum about the Over Voltage problem persisting during the off peak period in NER grid and also informed that voltage profile is going to deteriorate further in the coming days.

NERTS, POWERGID also do not agree to change the tap settings of transformers saying there are technical issues related to different tap setting.

NERLDC requested NERTS to expedite the reactor at AGBPP and also requested the forum not to avail shutdown of reactors during this period of critical voltages in NER.

The Sub-committee noted as above

12. Training on Protection Systems by M/s Tractebel for remaining activities for Task-II

As informed by M/s Tractebel, a meeting and training programme will be conducted in Shillong during 12th Dec'16 to 16th Dec'16 for remaining activities for Task-II.

M/S Tractebel will impart training on Protection systems during this period.

All the utilities are requested to nominate at least 2 executives and give the names to NERPC/NERLDC at the earliest for proper arrangement of training.

The venue for the training shall be NERLDC Conference Room.

Deliberation in the meeting

As members had requested for a change in the venue for this training, and it has been decided to shift the venue to NEEPCO Bhavan, Guwahati.

The Sub-committee noted as above

13. Analysis & Discussion on Events, Grid Incidences, Grid Disturbances which occurred in NER Grid w.e.f September- October'16.

The following numbers of Grid Disturbances (GD) & Grid Incidents (GI) occurred during the period **w.e.f 1st September, 2016 to 31st October, 2016** :-

Sl No	Control Area	Grid Incidents	Grid Disturbance	Grid Incidents	Grid Disturbance
		Sep-Oct'16	Sep-Oct'16	During 2016	During 2016
1	Palatana	5	0	15	3
2	AGBPP	8	0	24	2
3	AGTPP	6	0	30	5
4	Ranganadi	0	0	1	2
5	Kopili	3	0	4	2
6	Khandong	2	0	6	2
7	Doyang	0	1	3	6
8	Loktak	0	0	2	3
9	BgTPP	0	0	7	2
10	Arunachal Pradesh	0	11	0	45
11	Assam	0	7	0	48
12	Manipur	0	11	0	52
13	Meghalaya	0	10	0	69
14	Mizoram	0	2	0	24

15	Nagaland	0	12	0	63
16	Tripura	0	1	0	6

Sl . No.	Category of GD/GI	Grid Disturbance in nos	
		Sep-Oct'16	During 2016
1	GI-I	8	42
2	GI-II	16	37
3	GD I	51	255
4	GD II	0	4
5	GD III	0	0
6	GD IV	0	0
7	GD V	0	1
8	**Total GI**	**24**	**79**
9	**Total GD**	**51**	**260**

This is for information to the members. **Remedial Measure are to be taken by the concerned power utilities of NER.**

The root cause analysis and remedial measures to prevent the Grid Events were discussed during Meeting of Sub-group of PCC. The same are reproduced below:

I. Salakati (PG) Substation Blackout:

2 Nos of disturbance occurred due to tripping of lines emanating from Salakati (PG) Substation (**Sl No. 1 to 2 of Disturbance Report of NER Grid attached in Annex-III**).

A. Due to tripping of all outgoing elements from Salakati on 16.09.16 at 18:00 Hrs, Salakati station was separated from rest of NER Grid and blacked out. Part of Eastern Bhutan was connected with Indian Grid through 132 kV Salakati - Gelephu line (some of the internal lines of Bhutan kept open for system requirement). At 18:00 Hrs on 16.09.16, 132 kV Salakati - Gelephu line tripped. Due to tripping of this element, Eastern Bhutan was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

B. Due to tripping of 220 kV BTPS - Salakati I line (220 kV BTPS - Salakati I line was not restored after tripping at 18:00 Hrs on 16.09.16 & 220 kV BTPS - Agia I & II lines handtripped at 19:10 Hrs on 16.09.16 to reduce the loading of 220 kV BTPS-salakati I line) at 2107 Hrs on 16.09.16, Dhaligaon area was separated from rest of NER Grid and collapsed due to no source in this area. Part of Eastern Bhutan was connected with Indian Grid through 132 kV Salakati - Gelephu line (some of the internal lines of Bhutan kept open for system requirement). At 21:07 Hrs on 16.09.16, 132 kV Salakati - Gelephu line tripped. Due to tripping of this element, Eastern Bhutan was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

On Salakati - BTPS II jumper failure occurred on R-ph. Rectified by PG. (Line-1 tripped only at BTPS end). SPS operated at Dhaligaon. PG rectified fault current (seen as 9 kA in DR). After 9 mins, there was also jumper failure on Birpara - Salakati I line due to overload

Remedial Measure to be taken:
POWERGRID to ensure healthiness of line sections through proper maintenance activities.

II. Disturbance in Jiribam, Umrangshu & Haflong area:

1 No of disturbance occurred due to tripping of 132 kV Jiribam(PG)- Badarpur (PG) line, 132 kV Haflong(PG)- Umrangshu (AS) line, 132 kV Khandong(NO)- Umrangshu(AS) line, 132 kV Jiribam(PG)- Loktak(NH) line and132 kV Jiribam(PG)- Aizwal(PG) line. (**Sl No. 3 of Disturbance Report of NER Grid attached in Annex-III**).

Due to tripping of this element, Jiribam area, Umrangshu area & Haflong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area

Root Cause Analysis:
Fault was in 132 kV Jiribam - Aizwal line. Non clearance of fault at Jiribam end even after initiation of Zone I caused tripping of lines connected to Jiribam from remote end.As intimated by POWERGRID, during the fault 132 kV Jiribam - Aizwal line was charged through transfer bus at Jiribam end and tie CB was not tripped due to defective tripping relay. DR indicates B-E fault with gradually increasing fault current up to 0.36 kA at Aizwal end & up to 1 kA at Jiribam end.Angle between Vb & Ib around 30 degree at Jiribam end & Gradually increasing nature of fault current indicate fault due to vegetation infringement.

Remedial Measure to be taken:
Vegetation clearence to be done by POWERGRID and status to be reported to NERPC & NERLDC.

III. Disturbances in Arunachal Pradesh System:

Total **8 Nos** Disturbances have occurred in Arunachal Pradesh system during the month of September- October'16. **(Sl No. 4 to 11 of Disturbance Report of NER Grid attached in Annexure-III)**

i. Capital Area:

1 No of disturbance occurred due to tripping of 132 kV Lekhi – Nirjuli line, while Bus Coupler CB of Gohpur kept open for system requirement **(Sl No. 4 of Disturbance Report of NER Grid attached in Annexure-III)**.
Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur Area (Gohpur Load) of Assam were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.

Root Cause Analysis:
Problem may be in Arunachal Pradesh section of 132 kV Lekhi - Nirjuli line. Manager (NERTS) said infringement problem was there in Arunachal Pradesh section.

Remedial Measure to be taken:
NERPC to take up with Arunachal Pradesh seperately for resolving this problem.

j. Ziro Area :

1 No disturbance occurred due to tripping of 132 kV Ranganadi- Ziro line, **(Sl No. 5 of Disturbance Report of NER Grid attached in Annexure-III).**
Due to tripping of this element, Ziro area of Arunachal Pradesh was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis: Fault in the line.Root cause could not be concluded due to unavailabilty of DR output from Ranganadi end.

Remedial Measure to be taken:
NEEPCO to furnish DR output of Ranganadi end to conclude the root cause.

k. Khupi Area :

6 Nos disturbances occurred due to tripping of 132 kV Balipara- Khupi line, **(Sl No. 6 to 11 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Khupi area of Arunachal Pradesh was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

Likely due to vegetation fault in the line.Root cause could not be concluded due to unavailability of DR from Balipara End. As informed by NEEPCO,physical patrolling of critical stretches of the line revealed no fault.

Remedial Measure to be taken:

Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis. NEEPCO to furnish DR data of Balipara end for concluding root cause.

IV. Disturbances in Assam System:

Total **3 Nos** Disturbances have occurred in Assam system during the month of September- October'16 **(Sl. No. 12 to 14 of Disturbance Report of NER Grid attached in Annexure-III).**

A. Boko Area:

1 No disturbance occurred due to tripping of 220 kV Agia - Boko line & 220 kV Boko - Azara line, **(Sl No. 12 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these elements, Boko area of Assam was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

AEGCL said fault in Agia - Boko line. Agia end DP, Z-1 operated. O/C relay should not have operated at Azara / Boko. There could be problem with time co-ordination of O/C relays. (Boko should have cleared first). AEGCL to check

Remedial Measure to be taken:

AEGCL to check and co-ordinate relay settings to prevent unwanted operation

B. Dhaligaon Area:

1 No disturbance occurred due to tripping of 132 kV Dhaligaon-BTPS I & II lines tripped **(Sl No. 13 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these elements, Dhaligaon area of Assam was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

Busbar protection Operated at BTPS. In Bus-bar Zone-1, 220 kV BTPS- Salakati line I is present, and on Zone-2 220 kV BTPS- Salakati line II is present. In Zone-1, it found open isolator on 220 kV BTPS- Salakati line I (incorrectly).

Remedial Measure to be taken:

Rectified by AEGCL

C. Dullavcherra and Hailakandi Area:

1 No disturbance occurred due to tripping of 132 kV Silchar- Hailakandi line while 132 kV Dullavcherra- Dharmanagar line was kept open for system requirement, **(Sl No. 14 &19 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Dullavcherra and Hailakandi area of Assam was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

Fault in the line. Root cause could not be concluded due to unavailabilty of DR outputs from both ends.

Remedial Measure to be taken:

AEGCL&POWERGRID to furnish relay DR outputs of their end for this event.

V. Disturbances in Manipur System:

Total **8 Nos.** Disturbances have occurred in Manipur system during the month of September- October'16. **(Sl No. 15 to 22 of Disturbance Report of NER Grid attached in Annexure-III).**

A. Capital & Karong Areas:

3 No of disturbances occurred due to tripping of 132 kV Imphal (PG)- Imphal (Manipur) I & II lines, **(Sl No. 15 to 17 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these elements, Capital & Karong area of Manipur were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.

Root Cause Analysis:

For Sl. No. 15

Fault in state end; No autoreclose operated at Imphal (PG) end. As per NERTS, problem in Karong feeder from Imphal.

For Sl. No. 16

Likely due to fault in the line as the E/F relay operated at both ends.Root cause could not be concluded due to unavailability of DR from both ends.

For Sl. No. 17

DR indicates R-E fault with fault current gradually increasing up to 1.2 kA.Angle between Vr and Ir around 28 degrees during fault and slowly increasing nature of fault current indicate high resistive fault. There is no vegetation problem in this D/C line as intimated by POWERGRID.So fault was likely due to downstream vegetation infringement.

Remedial Measure to be taken:

For Sl. No. 15

MSPCL to investigate the cause of tripping and intimate the forum.

For Sl. No. 16

POWERGRID shall furnish DR at Imphal(PG) end of the line.MSPCL shall confirm relay indication of Imphal(MA) end of this line and furnish downstream tripping if any.

For Sl. No. 17

Operation of Over current relay at Imphal (MA) is not desirable as these lines are radially fed. MSPCL shall check over current relay settings at Imphal end. Vegetation clearance of downstream lines (downstream of Imphal) to be done by MSPCL and status to be furnished to NERPC & NERLDC.

B. Rengpang Area:

5 Nos. disturbances occurred due to tripping of 132 kV Loktak- Rengpang line while 132 kV Rengpang - Jiribam(MA) line is under outage, **(Sl No. 18 to 22 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Rengpang area of Manipur was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:

Likely vegetation problem (Heavy jungle). Also possible that fault in downstream getting cleared. Manipur to furnish details

Remedial Measure to be taken:

Vegetation clearance to be done in line sections. In forested areas, adequate manpower to be employed. NHPC to check Over Current relay settings at Loktak.

VI. Disturbances in Meghalaya System:

Total **6 Nos.** Disturbances have occurred in Meghalaya system during the month of September- October'16. **(Sl No. 23 to 28 of Disturbance Report of NER Grid attached in Annexure-III).**

A. Khliehriat Area:

4 Nos disturbances occurred due to tripping of 132 kV Khliehriat (PG)- Khliehriat (MePTCL) I & II lines, **(Sl No. 23 to 26 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these elements, Khliehriat area of Meghalaya was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.

Root Cause Analysis:
Trippings in Khliehriat side are not possible to analyse properly due to absence of numerical relays. PGCIL said setting of DP, Z-1 at Khliehriat(PG) is around 70 kms. NERTS to clarify why the distance shown by relay is more than setting distance.

Remedial Measure to be taken:
Meghalaya to review relay co-ordination within their own system. MePTCL to install Numerical relays on all feeders from Khliehriat (MePTCL) on urgent basis. It is to be further co-ordinate with NERTS for upstream. By December, relays will be installed (MePTCL confirmed). Numerical relays now present only on Neigrihms and Leshka feeders from Khlehriat. NERPC also mentioned poor manpower at Byrnihat / Khliehriat substations, and requested MePTCl to take up for improvement.

B. Lumshnong Area:

1 No. of disturbance occurred due to tripping of 132 kV Panchgram - Lumshnong line, while 132 kV Lumshnong - Khliehriat line kept open for system requirement. **(Sl No. 27 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Lumshnong area of Meghalaya was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:
Due to vegetation problem in the line, 132 kV Lumshnong - Panchgram line tripped.

Remedial Measure to be taken:
Vegetation clearance is to be done by MePTCL & AEGCL. Patrolling report is to be submitted and status of vegetation clearance is to be reported by MePTCL & AEGCL.

C. Byrnihat Area:

1 No. of disturbance occurred due to tripping of 132 kV EPIP II-Byrnihat I & II lines while 132 kV Kahilipara-Umtru I & II lines, 132 kV Sarusajai-Umtru I & II lines & 132 kV Umium Stage I - Umium Stage III 1&2 lines kept open for System requirement. **(Sl No. 28 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these elements, Byrnihat area of Meghalaya was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:
Due to vegetation problem in the line, 132 kV Lumshnong - Panchgram line tripped.

Remedial Measure to be taken:
Vegetation clearance is to be done by MePTCL & AEGCL. Patrolling report is to be submitted and status of vegetation clearance is to be reported by MePTCL & AEGCL.

VII. Disturbances in Mizoram System:

Total **2 Nos.** Disturbances have occurred in Mizoram system during the month of September- October'16. **(Sl No. 29 to 30 of Disturbance Report of NER Grid attached in Annexure-III).**

A. Zuangtui Area:

2 Nos. disturbances occurred due to tripping of 132 kV Aizawl - Zuangtui line, **(Sl No. 29 to 30 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:
Relay co-ordination not yet down by Mizoram. P&E Dept., Mizoram not agreed to implement

Remedial Measure to be taken:
NERPC to take up with P&E Dept., Mizoram to ensure Mizoram does co-ordination of it's protection system with NERTS so that un-wanted tripping of EHV lines does not occur

VIII. Disturbances in Nagaland System:

Total **4 Nos.** Disturbances have occurred in Nagaland system during the month of September- October'16. **(Sl No. 31 to 34 of Disturbance Report of NER Grid attached in Annexure-III).**

A. Mokokchung Area:

1 No disturbance occurred due to tripping of 132 kV Doyang - Mokokchung (NA) line and 220 kV Mariani (PG)-Mokokchung (PG) I, **(Sl No. 31 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of these element, Mokokchung area of Nagaland was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis: DoP, Nagaland to give further details. NEEPCO to confirm later after getting details from Doyang HEP

Remedial Measure to be taken:
As per NERTS, Instantaneous element at Mariani disabled so that tripping of 220 kV Mariani - Mokokchung along with 132 kV Doyang - Mokokchung does not occur. DoP, Nagaland to co-ordinate downstream relay settings with NERTS in order to prevent unwanted tripping of EHV elements

B. Capital Area:

3 Nos. disturbances occurred due to tripping of 132 kV Dimapur (PG) - Kohima line, **(Sl No. 32 to 34 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to tripping of this element, Capital area of Nagaland was separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Root Cause Analysis:
Downstream fault in DoP, Nagaland system that was not cleared on time.

Remedial Measure to be taken:
DoP, Nagaland to restore the condition of 132kV Dimapur-Kohima line to original and co-ordinate downstream relay settings with NERTS to prevent unwanted line trippings.

IX. Substation / Power Station Black out:

A. Doyang Power Plant:

1 No. disturbances occurred due to tripping of 132 kV Dimapur - Doyang I & II lines and 132 kV Doyang- Mokokchung line. **(Sl No. 35 of Disturbance Report of NER Grid attached in Annexure-III).**

Due to evacuation problem, Doyang Power Station was blacked out.

Root Cause Analysis:
Likely due to downstream fault in the Nagaland System. Root cause could not be concluded due to unavailability of DR & Relay indications from Doyang End.

Remedial Measure to be taken:
NEEPCO shall furnish DR & Relay indications at Doyang end of the line. Relay coordination is to be done by DoP, Nagaland with POWERGRID to avoid tripping of ISTS lines.

B. Kumarghat Substation:

1 No. disturbances occurred due to tripping of all outgoing lines from Kumarghat Subststion. **(Sl No. 36 of Disturbance Report of NER Grid attached in Annex-III).**
At 18:09 Hrs on 03.10.16, 132 kV AGTPP - Kumarghat line, 132 kV Badarpur - Kumarghat line, 132 kV Aizwal - Kumarghat line & 132 kV P K Bari - Kumarghat line tripped and Kumarghat SubStation was blacked out.

Root Cause Analysis:

Mal-operation during relay testing.

Remedial Measure to be taken:
Relay testing to be done after taking necessary precautions to avoid unwanted trippings.

Deliberation in the meeting

Forum requested all constituents to take remedial actions as suggested by subgroup committee and implementation status is to be reported to NERPC&NERLDC.

14. Analysis of Element trippings of NER Grid from September - October 2016:

The tripping of transmission elements and generating units of NER Grid were discussed during the Meeting of Sub-group of PCC on 24th October'16.

The list of trippings along with Root cause analysis and Remedial measures to prevent recurrence is as per ***Annexure-V.***

The remedial measures as indicates need to be implemented by the utilities at the earliest.

During analysis of the Grid Events, lack of information like relay indications, Disturbance Recorders etc. lead to inconclusive analysis. It has been found that the Doyang HEP has repeatedly failed to furnish the necessary information inspite of reminders. Also, Dimapur(PG), Balipara(PG) for 132 kV Balipara – Khupi line do not furnish the DR outputs in case of events.

Also, DR from Assam and Imphal(PG) are not obtained in most of the disturbances.

Deliberation in the meeting

Forum requested all constituents to take remedial actions as suggested by subgroup committee and implementation status is to be reported to NERPC&NERLDC.

The Sub-committee noted as above

15. Additional Agenda from NPC, CEA: Line Differential Protection: Many transmission lines are now having OPGW or separate optic fibre laid for communication. Where ever such facilities are available, it is recommended to have the line differential protection as Main-I protection with distance protection as back-up (built-in Main relay or standalone). Main-II protection shall continue to be distance protection. For cables and composite lines, line differential protection with built-in distance back up shall be applied as Main-I protection and distance relay as Main-II protection. Auto-recloser shall be blocked for faults in the cables. This is following recommendation of the Sub-Committee on Relay/Protection under Task Force for Power System Analysis under contingencies (Para 14 in Section-6 of the report under Relay setting guidelines for Transmission lines). This is for detailed deliberation by constituents members.

Deliberation in the meeting

Discussed under Item No. 3.

16. Additional Agenda from NLDC: Violation of protection standard in case of tripping of Inter-Regional lines of voltage class 220 kV above:

NLDC, POSOCO has informed vide letter No. POSOCO/NLDC/2016/839 dated 07.11.2016 that the ER/NER Inter-Regional Lines viz. 400 kV Siliguri - Bongaigaon Lines - II & III have tripped on 03.10.2016 at 11:46 Hrs and 27.10.2016 at 11:55 Hrs. respectively. The two lines were restored on 03.10.2016 at 12:19 Hrs and 27.10.2016 at 12:07 Hrs. respectively. The fault clearing times of the two lines are 240 msec and 1120 msec respectively. However as per section 3.e of Grid Standards Regulation of CEA 2011, fault in case of 400 kV Nominal System Voltage maximum time of fault clearing is 100 msec only. It is observed that the faults had not

been cleared within specified time during these incidents. The constituents are requested to clarify at the time of deliberation.

Deliberation in the meeting

NERTS informed that, as it is inter regional line this becomes a boundary case and prior analysis is required to locate the root cause and then suggest remedial action.

NERLDC informed the forum that:

a. Delay in clearing the fault on 3rd Oct'16 event was due to picking of Zone-II for 160 msec.After 160 msec,Zone-I picked up & cleared the fault in 80 msec.

b. On 27th Oct, DPR was not picked up and fault cleared by DEF.

Forum asked NERTS to give detailed report & DR of New Siliguri end in respect of these trippings to NERLDC & NERPC for further analysis. NERLDC requested NERTS to share sincerity in analysis of inter-regional element tripping for benefit of the Grid as a whole.

The Sub-committee noted as above

17. Additional Agenda from NERTS:

Agenda-1: Restoration of PLCC Link between Dimapur (PG) and Bokajan (AEGCL) by AEGCL

The PLCC link of AEGCL between Dimapur (PG) and Bokajan (AEGCL) is not functioning since 2012. AEGCL has installed the PLCC panels at Dimapur but the same is not functioning. AEGCL may restore the link at the earliest for smooth operation of the link.

Deliberation in the meeting

Assam will take up the issue with the Bokajan (AEGCL) substation to address the problem.

The Sub-committee noted as above

Agenda-2: Presentation on Transmission Line Surge Arrester

Transmission Line Surge Arrester - An alternative to arrest Frequent Tripping of 132kV Lines in NER during monsoon.

Deliberation in the meeting

DGM (AM), NERTS give presentation on Transmission Line Surge Arrester (TLSA). Analysis of the last 3 years had shown that tripping due to lightning per 100 km per line is maximum in 132 kV lines which has lower insulation level. TLSA is installed where tower resistance is very high and it is with auto-reclosure. PGCIL is installing TLSA in certain lines. Installation of TLSA needs a huge investments as the cost for single LA is almost Rs 45000/- and 3 LAs per tower is needed. Proposal came from the constituent states that the work can be implemented with PSDF funding. The committee noted that there is no alternative except PSDF funding for the utilities to implement this project. In this connection the utilities are urged to identify the required number of such towers and the amount required per tower for lowering earthing resistance as well as installation of LAs. Then the proposal can be submitted to PSDF for funding the scheme. MS, NERPC suggested that NERPC will write to all constituents/utilities in this regard.

18. Any other Item:

Date and Venue of next PCC

It is proposed to hold the 46th PCC meeting of NERPC on the 1st week of February 2017. The exact venue will be intimated in due course.

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3rd Party Protection Audit of Tripura Sub-Stations & OTPC, Agartala 2016

As per the resolution of protection-related Sub Group Committee Meeting of NERPC held at NERLDC Shillong on 24.10.2016, third party protection audit of Tripura substations viz., 132kV 79 Tilla, 132 kV Surjyamaninagar, OTPC, Agartala & 132 kV Udaipur have been carried out from 07-10 November 2016 by a team comprising of representatives from NERPC, AEGCL, PGCIL, OTPC & NEEPCO. Following are the observations and recommendations of the audit team for the respective substations.

Observations and Recommendations

1. **132kV 79, Tilla Grid Sub-Station, Agartala on 07.11.2016**
   a. Detailed information of various protection tripping is not maintained properly.
   b. Condition of the room in which battery banks are kept is not up to the mark. Adequate amenities such as Air conditioners should be provided.
   c. On 04.04.2016 at 09:08 hrs, in SM Nagar 2 line, a fault was occurred. The respective relay picked up in Zone 3 but within 26 ms it got into Zone 4 which lasted for 254 mSec. Other Zone 4 pickups are also seen recorded by the relay. At present, Zone 4 reach is found to be 10% of Zone 1 impedance. The team recommends TSECL to implement the zone settings as per Ramakrishna Committee recommendations.
   d. The protection audit team helped TSECL Engineers in calculating he various zone settings as well as other protection settings as per Ramakrishna Committee Recommendations and recommends these settings to be implemented in all the feeder relays.
   e. Earth Resistance in the sub-station was found to be 0.56 Ohms which is acceptable.
   f. It is also recommended by the team to keep SOTF only for Z1 and Z2.
   g. DC Negative earth fault is observed. The observed values are following:

72.6 V	Positive to Earth
48.6 V	Negative to Earth

2. **Surjyamaninagar Grid Sub-station, Agartala on 08.11.2016**
   a. Distance protection relay settings of 132kV Palatana Feeder have been verified and found in conformity. A few numbers of disturbance records from the relay have been analyzed. A tripping on **30.08.2016** is found to be correct. The relay picked up in Zone1 and cleared the fault within its stipulated time.
   b. DPR settings of 79 Tilla 1&2 have also been verified and found in order but not as per the Ramakrishna Committee's settings.
   c. The audit team recommends the implementation of Ramakrishna Committee's settings to all the feeder relays of Surjyamaninagar, Sub-Station (primary as well as backup).
   d. It is been noted that the 132kV Palatana feeder relays are maintained by PGCIL and settings as per Ramakrishna Committee has already been implemented in them. TSECL maintains all

the other feeder relays. The concerned TSECL official was explained the calculation of the relay settings as per the Ramakrishna Committee which is to be implemented in their relays.

e. The team also verified the DC voltage of the substation and negative earth fault is observed as given below.

Sr. No.	Item	+ve to Earth voltage	-ve to Earth voltage
1.	220 V DC charger	148V	95V
2.	220 V DC Charger	148V	102.1V
3.	48 V DC Charger	51V	0

f. Earth resistance was found to be 0.6 ohms which is under the acceptable limits.

g. The team recommends installation of exhaust fans in the battery charger and battery bank rooms.

h. In view of the safety of relays and other equipment present in the control room, the team strongly recommends proper insulation of the windows and constant air conditioning of the room.

3. OTPC Grid Sub-Station, Palatana, Agartala on 09.11.2016

a. The Protection Audit team comprising of NEEPCO, NERPC, AEGCL & POWERGRID visited the above mentioned sub-station and inferred the points as under.

b. The 132kV Palatatana – Surjyamaninagar feeder has its primary protections intact and stable with Distance Protection Relays as recommended.

c. In relation to the audit report prepared for Surjyamaninagar Sub - Station, the Distance Protection Relay at Palatana found in conformity for any inevitable electrical fault.

d. More specifically the DPRs at Palatana & Surjyamaninagar acted brilliant on **30.08.2016**, clearing a single phase to ground fault efficiently.

e. The audit team found this authentic to have all the protective devices at the very best of their health at Surjyamaninagar Sub – Station. The investigation finally resulted satisfactory for all relays at Surjyamaninagar end maintained by POWERGRID.

f. Discrepancies noticed at OTPC end are summarized in the following sub – sets : -

I. The 132kV Palatana – Surjyamaninagar feeder's Distance Protection Relay is incorrectly configured for its Directional Earth Fault function. It is seen that the current configuration for directional Earth Fault is chosen to be definite one (DT) with a 1.5 Sec delay & Plug set at 300mA. This setting is in direct contrast to Ramakrishna Committee recommendations.

II. The HV side back-up O/C & E/F relay for ICT -1 at OTPC is having a peculiar setting of O/C stage (instantaneous) with a pick up = 3 X In with zero delay.

III. The E/F parameter of HV side back-up O/C & E/F relay for ICT -1 is also found vulnerable with a pickup = 10% & delay of 0.4Sec.

IV. An incident of Palatana blackout on **01.05.2016** relates to this unexpected relay settings mentioned as above.

V. On 01.05.2016 a disturbance in Y / B-phase of the 132kV Palatana – Surjyamaninagar feeder was observed and consequent tripping of the back-up E/F relay for ICT -1 was found very natural since the back-up E/F relay for the same feeder (132kV Palatana – Surjyamaninagar) could not operate on time due to the setting constraint.

VI. The Audit team recommends OTPC to adopt the actual gradation of proper functioning of all these protective relays in coherence with the **Ramakrishna Committee Recommendations**.

VII. Further help in this regard may please be extended from NERPC / NERLDC / POWERGRID / AEGCL.

g. OTPC also requested the audit team for staging their future demand in front of NERPC for incorporation of another SPS guarding any unwanted tripping of ICTs at OTPC end, when the second ICT comes into its very operation.

4. 132kV Udaipur Grid Sub-Station, Agartala on 09.11.2016

a. The protection audit team calculated the various zone settings as well as other protection settings as per Ramakrishna Committee Recommendations and recommends these settings to be implemented in all the feeder relays.

b. Condition of the room in which battery banks are kept should be improved. Adequate amenities such as Air conditioners should be provided.

Impedances of Shortest Line and Longest Lines

SN	Organisation	Name of Station	Voltage Level	Shortest Line			Longest Line		
				Name	Length	Impedance	Name	Length	Impedance
1	PGCIL	Bongaigaon	400kV	NTPC 1& 2	3.119	0.962	Balipara II&IV	309	77.549
2	PGCIL	Siliguri	400kV	Rongpoh	109	33.626	Bongaigaon III&IV	220	55.212
3	PGCIL	Balipara	400kV	BNC 3&4	57.294	17.675	Bongaigaon II&IV	309	159.475
4	PGCIL	Misa	400kV	Balipara 1&2	95.407	29.433	Balipara 1 & II	95.407	29.433
5	PGCIL	Silchar	400kV	Byrnihat	217	66.945	Azara	265	81.753
6	PGCIL	HVDC BNC	400kV	Balipara III&IV	57.294	17.675	Ranganadi 1&2	129.335	39.900
7	AEGCL	Azara	400kV	Bongaigaon	160	49.360	Silchar	256	78.976
8	MeECL	Byrnihat	400kV	Bongaigaon	201	62.000	Silchar	217	66.945
9	NTPC	BTPS	400kV	Bongaigaon	3	0.923			
10	OTPC	Pallatana	400kV	Silchar	247	76.200			
11	NEEPCO	Ranganadi	400kV	BNC	131	40.414			
12	PGCIL	Salakati	220kV	BTPS I& II	3.7	1.497	Birpara I & II	161.9	65.527
13	PGCIL	Birpara	220kV				Malbase		
14	PGCIL	Balipara	220kV	Sonabil	8.6	3.480	Sonabil	55	22.259
15	PGCIL	Misa	220kV	Samaguri I & II	34.4	13.880	Mariani New	222.682	68.690
16	PGCIL	Dimapur	220kV	Misa I & II	123.52	49.803	Misa I & II	123.52	49.803
17	PGCIL	Mariani New	220kV	Mokokchung I&II	48.8	19.676	Mokokchung I&II	48.8	19.676
18	PGCIL	Mokokchnug	220kV	Mariani New I&II	48.8	19.676	Mariani New I&II	48.8	19.676
19	AEGCL	BTPS	220kV	Salakati	3	1.214	Agia	63	25.496
20	AEGCL	Sonabil	220kV	Balipara	8.6	3.480	Samaguri	47.4	19.183
21	AEGCL	Mariani Old	220kV	Kathalguri	163	50.286	Misa	220	67.870
22	AEGCL	Samaguri	220kV	Misa I & II	35	14.164	Mariani	168	68.000
23	AEGCL	Agia	220kV	Boko (D/C)	38	15.379	Azara (D/C)	107	43.303
24	AEGCL	Boko	220kV	Azara (D/C)	38	15.379	Agia (D/C)	70	28.329
25	AEGCL	Azara	220kV	Sarusajai (D/C)	24	9.713	Agia (D/C)	107	43.303
26	AEGCL	Sarusajai	220kV	Jawahar Nagar (D/C)	11	4.452	Samaguri (D/C)	117	47.350
27	AEGCL	Jawahar Nagar	220kV	Sarusajai (D/C)	11	4.452	Samaguri (D/C)	117	47.350
28	AEGCL	Tinsukia	220kV	Kathalguri D/C	25	10.118	NTPS D/C	40	16.188
29	NEEPCO	Kopili	220kV	Misa I & II	73	29.543	Misa III	76	30.871
30	NEEPCO	Kathalguri	220kV	Deomali	19	7.689	Mariani (PG)	161	49.670
31	PGCIL	Salakati	132kV	Gelephu S/C	49.6	21.575	Gelephu	49.6	21.575
32	PGCIL	Balipara	132kV	Depota	28	12.180	Khupi	77	33.495
33	PGCIL	Dimapur	132kV	Dimapur (s) I	0.4	0.174	Imphal	169	73.515
34	PGCIL	Jiribam	132kV	Jiribam (State)	0.4	0.174	Aizawl	173	75.255
35	PGCIL	Aizawl	132kV	Zemabawk I	0.6	0.261	Jiribam	173	75.255
36	PGCIL	Badarpur	132kV	Badarpur state	1.023	0.429	Kumarghat	118	51.330
37	PGCIL	Imphal	132kV	Imphal state I	1.5	0.653	Silchar	174	53.690
38	PGCIL	Silchar	132kV	Srikona I & II	1.119	0.505	Imphal I & II	174	53.679
39	PGCIL	Khleriat	132kV	Khleriat II	5.35	2.327	Badarpur	76.646	32.168
40	PGCIL	Haflong	132kV	Haflong state	1.2	0.522	Jiribam	100.63	43.770
41	PGCIL	Kumarghat	132kV	P K Bari (state)	1.5	0.653	Badarpur	131	56.980
42	PGCIL	Nirjuli	132kV	Lekhi	41.74	9.696	Gohpur	42.5	18.487
43	PGCIL	Ziro	132kV	Ranganadi	44.292		Daporijo	86.722	37.724
44	PGCIL	BNC	132kV	Pavoi I & II	12.931	5.452	Pavoi I & II	12.931	5.452
45	PGCIL	Mokokchung	132kV	Mokokchung I&II	1.4	0.564	Mokokchung I& II	1.4	0.564
46	BPC	Gelephu	132kV						
47	AEGCL	Bhalukpungi	132kV	Khupi	33	14.355	Balipara	35	15.225
48	AEGCL	Bokajan	132kV	Dimapur	25	10.875	Golaghat	65	28.275
49	AEGCL	Srikona	132kV	Silchar I & II	1	0.452	Pailapool	35	15.855
50	AEGCL	Dullovcherra	132kV	Dharmanagar	29	12.615	Silchar	50	22.035
51	AEGCL	Gohpur	132kV	Nirjuli	43	18.487	Sonabil	88	38.280
52	AEGCL	Pavoi	132kV	BNC I & II	13	12.931	Gohpur	51	21.500
53	AEGCL	Pailapool	132kV	Jiribam (State)	15	6.525	Srikona	35	15.225
54	AEGCL	Panchgram	132kV	Badarpur	1	0.435	Silchar I & II	30	13.335
55	AEGCL	Haflong(state)	132kV	Haflong(PG)	1				
56	AEGCL	Umranshu	132kV	Khandong	11	4.785	Haflong(PG)	52	22.620
57	AEGCL	Balipara	132kV	Sonabil(220kV D/C)	14	5.666	Hkhupi	35	15.295
58	AEGCL	Depota	132kV	Sonabil	17	7.395	Rowta	72	31.464

SN	Organisation	Name of Station	Voltage Level	Shortest Line			Longest Line		
				Name	Length	Impedance	Name	Length	Impedance
59	AEGCL	Mariani	132kV	Jorhat (D/C)	20	8.432	LTPS	54	23.490
60	AEGCL	Jorhat	132kV	Mariani(D/C)	20	8.432	Bokakhat	89	38.715
61	AEGCL	Nazira	132kV	Sibasagar	13	5.655	Jorhat	69	30.015
62	AEGCL	LTPS	132kV	Sonari(D/C)	17	7.168	NTPS (D/C)	60	25.297
63	AEGCL	Sonari	132kV	LTPS (D/C)	17	7.168	NTPS (D/C)	60	25.297
64	AEGCL	NTPS	132kV	Tinsukia	43	18.705	Sonari (D/C)	60	25.297
65	AEGCL	Tinsukia	132kV	Lidu	22	9.570	Dibrugarh	53	23.055
66	AEGCL	Dibrugarh	132kV	Behiating	9	3.915	Tinsukia	53	23.055
67	AEGCL	Behiating	132kV	Dibrugarh	9	3.915	Moran	47	20.445
68	AEGCL	Moran	132kV	LTPS	39	16.965	Behiating	47	20.445
69	AEGCL	Dhaligaon	132kV	BRPL	6	2.610	Nalbari	106	46.110
70	AEGCL	Nalbari	132kV	Rangia(D/C)	22	9.276	Dhaligaon (D/C)	106	44.692
71	AEGCL	Barnagar	132kV	Dhaligaon (D/C)	42	17.708	Rangia n(D/C)	86	36.259
72	AEGCL	Rangia	132kV	Nalbari D/C	22	9.276	Rowta (D/C)	108	45.535
73	AEGCL	Sipajhar	132kV	Rangia D/C	38	16.022	Rowta (D/C)	44	18.551
74	AEGCL	Rowta	132kV	Sipajhar	44	19.140	Rangia n(D/C)	108	45.535
75	AEGCL	Kahilipara	132kV	Dishpur	3	1.305	Sisugram	12	5.220
76	AEGCL	Sisugram	132kV	Kahilipara	12	5.220	Rangia n(D/C)	34	14.335
77	AEGCL	Sarusajai	132kV	Kahilipara	4	1.740	Umtru (I & II)	18	7.589
78	AEGCL	Narengi	132kV	Kahilipara	12	5.220	CTPS	20	8.700
79	AEGCL	Dishpur	132kV	Kahilipara	3	1.305	CTPS	29	12.615
80	AEGCL	CTPS	132kV	Narengi	20	8.700	Baghjap	35	15.225
81	AEGCL	BTPS	132kV	Kokrajhar	10	4.350	Dhaligaon I & II	22	9.276
82	AEGCL	Kokrajhar	132kV	BTPS I& II	10	4.216	Bilasipara	24	10.440
83	AEGCL	Bilasipara	132kV	Gouripur	10	4.350	Kokrajhar	24	10.440
84	AEGCL	Gouripur	132kV	Bilasipara	10	4.350	Gossaigaon	63	27.405
85	AEGCL	Gossaigaon	132kV	Gouripur	63	27.405	Dhaligaon	64	27.840
86	NEEPCO	Khangdong	132kV	Kopili-I & umrangso	11	4.785	Khliehriat(PG)-I	42	18.270
87	NEEPCO	Ranganadi	132kV	Lekhi	18	7.830	Ziro	45	19.575
88	NEEPCO	R C Nagar	132kV	Agartal-I&II	8	3.373	Kumarghat	104	45.240
89	NEEPCO	Doyang	132kV	Mokokchung I&II	28	11.800	Dimapur I &II	93	39.211
90	NEEPCO	Kopili	132kV	Khandong-I	11	4.785	Khandong-II	12	5.220
91	DOP(N)	Dimapur	132kV	Dimapur(PG)	1	0.422			
92	DOP(N)	Kohima	132kV	Dimapur(PG)	45	19.575	Meluri	74	32.190
93	DOP(N)	Mokokchung	132kV	Mokokchung(PG)	1	0.452	Doyang	28	12.180
94	DOP(M)	Nithongkong	132kV	Loktak	11	4.785	Imphal(PG)	26	11.310
95	DOP(M)	Yurembam	132kV	Imphal(PG)- I & II	2	0.843	Karong	60	26.100
96	DOP(M)	Jiribam(S)	132kV	Jiribam (PG)	1	0.435	Rengpang	40	17.400
97	NHPC	Loktak	132kV	Ningthoukhong	11	4.785	Jiribam (PG)	82	35.670
98	MeECL	Khleriat	132kV	Khliehriat(PG)-II	5	2.175	Khandong	42	18.270
99	MeECL	Neigrims	132kV	NEHU	7	3.045	Khliehriat	63	27.405
100	MeECL	Mustem	132kV	Khliehriat(PG)-II	16	6.960	NEHU	42	18.270
101	MeECL	NEHU	132kV	Umium	7	3.045	Mustem	42	18.270
102	MeECL	Umium	132kV	Umium_St_1	5	2.175	NEHU	7	3.045
103	MeECL	Umium_St_1	132kV	Umium_St_2	3	1.305	Mawngap	33	14.355
104	MeECL	Mawlai	132kV	Mawngap	2	0.870	Cherrapunjee	41	17.835
105	MeECL	Mawngap	132kV	Mawlai	2	0.870	Nongstoin	56	24.360
106	MeECL	Umium_St_3	132kV	Umium_St_4 I&II	8	3.373	Umtru I & II	41	17.286
107	MeECL	Umtru	132kV	EPIP_2 I & II	1	0.422	Umium_St_3 I&II	41	17.286
108	MeECL	EPIP_2	132kV	Umtru I & II	1	0.422	Byrnihat I & II	10	4.216
109	MeECL	Lumshnong	132kV	MPL	0.3	0.131	Panchgram	25	10.875
110	Tripura	P K bari	132kV	Kumarghat(PG)	1	0.435	Ambasa	45	19.575
111	Tripuar	SurajmaniNagar	132kV	Agartal/Budhjang	18	7.830	Comilla	67	20.670
112	Tripura	Agartala	132kV	AGTPP-I&II/Budh	8	3.373	Dhalabil	45	19.575
113	Tripura	Udaipur	132kV	Pallatana	34	14.790	Monarchak	41	17.835
114	Tripura	Rokhia	132kV	Monarchak	29	12.615	Agartala-I&II	35	15.225
115	Tripura	Dhalabil	132kV	Kamalpur	32	13.920	Agartala	45	19.575
116	Tripura	Kamalpur	132kV	Ambassa	30	13.050	Dhalabil	32	13.920
117	Tripura	Ambasa	132kV	Teliamura	25	10.875	PK Bari	45	19.575
118	Tripura	Teliamura	132kV	Baramura	14	5.903	Ambassa	25	10.875

SN	Organisation	Name of Station	Voltage Level	Shortest Line			Longest Line		
				Name	Length	Impedance	Name	Length	Impedance
119	Tripura	Baramura	132kV	Teliamura	14	5.903	Jirania	15	6.525
120	Tripura	Jirania	132kV	Budhjungnagar	7	2.951	Baramura	15	6.525
121	Tripura	Budhjungnagar	132kV	Jirania	7	2.951	Srjamaninaga-I&II	18	7.830
122	Mizoram	Zemabawk	132kV	Aizawl(PG)	7	3.045	Serchip	54	23.490
123	Mizoram	Luangmual	132kV	Aizawl(PG)	1	0.435			
124	Mizoram	Kolasib	132kV	Bairabi	30	13.050	Badarpur(PG)	107	46.545
125	DOP(AP)	Lekhi	132kV	Nirjuli	4	1.740	Ranganadi	18	7.830
126	DOP(AP)	Daporijo	132kV	Along	83	36.100	Ziro	87	37.845
127	OTPC	Pallatana	132kV	Udaipur	12	5.220	Surjamanin-I&II	45	13.882

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
1	220 kV BTPS - Salakati I	POWERGRID	**16-09-16 18:00**	BTPS	Not Furnished	Not Furnished	No	No	Loss of Load: 32 (Gelephu area)	GD-I	16-09-16 18:58	No SPS	-
				Salakati	No tripping	Not Furnished	No	No					
	220 kV BTPS - Salakati II	POWERGRID		BTPS	Earth Fault	Not applicable	No	No			17-09-16 4:32	No SPS	
				Salakati	DP, ZII, R-Y-B,3.84 Kms.	Not applicable	No	No					
	220 kV Birpara - Salakati I	POWERGRID		Birpara	Not Furnished	Not Furnished	No	No			16-09-16 19:13	No SPS	
				Salakati	No tripping	Not Furnished	No	No					
	132 kV Salakati-Gelyphu	POWERGRID	**16-09-16 18:00**	Salakati	Hand Tripped	Not applicable	No	No	Loss of Load: 32 (Gelephu area)	GD-I	16-09-16 19:17	No SPS	-
				Gelyphu	No tripping	Not applicable	No	No					
	220 kV Birpara - Salakati II	POWERGRID		Birpara	Not Furnished	Not Furnished	No	No			17-09-16 18:09	No SPS	
				Salakati	DP, ZI, R-E	Not Furnished	Yes	No					
	400/220 kV 315 MVA ICT I at Bongaigaon	POWERGRID		Bongaigaon	Tripped,Indications not furnished	Not applicable	No	No			16-09-16 18:47	No SPS	
	220/132 kV 50 MVA ICT I at Salakati	POWERGRID		Salakati	Backup Over current on LV side	Not applicable	No	No			16-09-16 19:16	No SPS	
	220/132 kV 50 MVA ICT II at Salakati	POWERGRID		Salakati	Backup Over current on LV side	Not applicable	No	No			16-09-16 18:57	No SPS	
	FIR by the constituent	No											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
1	**Brief Description of the Incident**	Salakati station was connected with rest of NER Grid through 400/220 kV 315 MVA ICT at Bongaigaon, 220 kV Birpara-Salakati I & II lines, 220 kV BTPS - Salakati I & II lines and 132 kV Salakati - Gelephu line. At 18:00 Hrs on 16.09.16, 400/220 kV 315 MVA ICT at Bongaigaon, 220 kV Birpara-Salakati I & II lines, 220 kV BTPS - Salakati I & II lines and 132 kV Salakati - Gelephu line tripped. Due to tripping of these elements, Salakati station was separated from rest of NER Grid and blacked out.Part of Eastern Bhutan was connected with Indian Grid through 132 kV Salakati - Gelephu line (some of the internal lines of Bhutan kept open for system requirement). At 18:00 Hrs on 16.09.16, 132 kV Salakati - Gelephu line tripped. Due to tripping of this element, Eastern Bhutan was separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions	**(Antecedent Generation : 2024 MW , Antecedent Load : 2132 MW)**											
	Root Cause	On Salakati - BTPS II jumper failure occurred on R-ph. Rectified by PG. (Line-1 tripped only at BTPS end). SPS operated at Dhaligaon. PG rectified fault current (seen as 9 kA in DR). After 9 mins, there was also jumper failure on Birpara - Salakati I line due to overload											
	Remedial Measures	POWERGRID to ensure healthiness of line sections and realay settings through proper maintenance activities.											
2	220 kV BTPS - Salakati I	POWERGRID	**16-09-16 21:07**	BTPS	Not Furnished	Not Furnished	No	No	Loss of Load: 204	GD-I	16-09-16 21:57	No SPS	0.258
				Salakati	No tripping	Not Furnished	No	No					
	220 kV Birpara - Salakati I	POWERGRID		Birpara	Not Furnished	Not Furnished	No	No			16-09-16 21:25	No SPS	
				Salakati	No tripping	Not Furnished	No	No					
	132 kV Salakati-Gelyphu	POWERGRID		Salakati	Hand Tripped	Not applicable	No	No			16-09-16 22:12	No SPS	
				Gelyphu	No tripping	Not applicable	No	No					
	220/132 kV 50 MVA ICT I at Salakati	POWERGRID		Salakati	Backup Over current on LV side	Not applicable	No	No			16-09-16 21:46	No SPS	
	220/132 kV 50 MVA ICT II at Salakati	POWERGRID		Salakati	Backup Over current on LV side	Not applicable	No	No			16-09-16 21:53	No SPS	
	FIR by the constituent	No											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
2	**Brief Description of the Incident**	Dhaligaon area of Assam was connected with rest of NER Grid through 220 kV BTPS - Salakati I line (220 kV BTPS - Salakati I line was not restored after tripping at 18:00 Hrs on 16.09.16 & 220 kV BTPS - Agia I & II lines handtripped at 19:10 Hrs on 16.09.16 to reduce the loading of 220 kV BTPS-salakati I line). At 21:07 Hrs on 16.09.16, 220 kV BTPS - Salakati I line tripped. Due to tripping of this element, Dhaligaon area was separated from rest of NER Grid and collapsed due to no source in this area. Part of Eastern Bhutan was connected with Indian Grid through 132 kV Salakati - Gelephu line (some of the internal lines of Bhutan kept open for system requirement). At 21:07 Hrs on 16.09.16, 132 kV Salakati - Gelephu line tripped. Due to tripping of this element, Eastern Bhutan was separated from rest of NER Grid and subsequently collapsed due to no source in this area.												
	Antecedent Conditions	**(Antecedent Generation : 2086 MW , Antecedent Load : 2244 MW)**											
	Root Cause	On Salakati - BTPS II jumper failure occurred on R-ph. Rectified by PG. (Line-1 tripped only at BTPS end). SPS operated at Dhaligaon. PG rectified fault current (seen as 9 kA in DR). After 9 mins, there was also jumper failure on Birpara - Salakati I line due to overload											
	Remedial Measures	POWERGRID to ensure healthiness of line sections and realay settings through proper maintenance activities.											
3	132 kV Badarpur - Jiribam	POWERGRID	**27-10-16 12:30**	Badarpur	DP, ZI, B-E	Not Furnished	Yes	Yes	Loss of Load: 3	GD-I	27-10-16 13:11	No SPS	0.004
				Jiribam	No tripping	Not Furnished	Yes	Yes					
	132 kV Khandong - Umrangshu	POWERGRI & AEGCL	**27-10-16 12:30**	Khandong	A/R Lockout, Back up Operated	Lockout	No	No			27-10-16 13:15		
				Umrangshu	No tripping	Not Furnished	No	No					
	132 kV Jiribam - Aizwal	POWERGRID	**27-10-16 12:29**	Jiribam	DP, ZI, B-E, 46.89 kms	Not Furnished	Yes	Yes			27-10-16 13:05		
				Aizawl	DP, ZIII, B-E, 160.9 kms	Not Furnished	Yes	Yes					
	132 kV Loktak - Jiribam(PG)	POWERGRID	**27-10-16 12:30**	Loktak	DP, ZIII, B-E, 117.7 kms	Not Furnished	No	No			27-10-16 12:51		
				Jiribam(PG)	No tripping	Not Furnished	No	No					
	132 kV Haflong-Umrangso	POWERGRID & AEGCL	**27-10-16 12:30**	Haflong	No tripping	Not Furnished	No	No			27-10-16 13:16		
				Umrangso	Earth Fault	Not Furnished	No	No					

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
3	**FIR by the constituent**	No											
	Brief Description of the Incident	Jiribam area of Manipur was connected with rest of NER Grid through 132 kV Jiribam(PG)-Jiribam (MA) line, Umrangshu area of Assam was connected with rest of NER Grid through 132 kV Khandong - Umrangshu line & 132 kV Haflong(PG)- Umrangshu (AS) line & Haflong area of Assam was connected with rest of NER Grid through 132 kV Haflong (PG) - Umrangshu(AS) line & 132 Haflong - Jiribam line (132 kV Jiribam(MA)-Rengpang line is under long outage and Jiribam(PG)- Pailapool(AS) is kept open for system requirement). At 12:30 Hr on 27th October, 132 kV Jiribam(PG)- Badarpur(PG) line, 132 kV Haflong(PG)- Umrangshu (AS) line, 132 kV Khandong(NO)- Umrangshu(AS) line, 132 kV Jiribam(PG)- Loktak(NH) line tripped and At 12:29 Hr on 27th October, 132 kV Jiribam(PG)- Aizwal(PG) line tripped. Due to tripping of this element, Jiribam area, Umrangshu area & Haflong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.										
	Antecedent Conditions	**(Antecedent Generation : 1295 MW , Antecedent Load : 1389 MW)**											
	Root Cause	Fault was in 132 kV Jiribam - Aizwal line. Non clearance of fault at Jiribam end even after initiation of Zone I caused tripping of lines connected to Jiribam from remote end.As intimated by POWERGRID, during the fault 132 kV Jiribam - Aizwal line was charged through transfer bus at Jiribam end and tie CB was not tripped due to defective tripping relay. DR indicates B-E fault with gradually increasing fault current up to 0.36 kA at Aizwal end & up to 1 kA at Jiribam end.Angle between Vb & Ib around 30 degree at Jiribam end & Gradually increasing nature of fault current indicate fault due to vegetation infringement.										
	Remedial Measures	Vegetation clearence to be done by POWERGRID and status to be reported to NERPC & NERLDC.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
4	132 kV Lekhi - Nirjuli	DoP AP & POWERGRID	**08-09-16 19:50**	Lekhi	Earth Fault	Not applicable	No	No	Loss of Load: 33	GD-I	08-09-16 20:17	No SPS	0.015
				Nirjuli	No tripping	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Nirjuli area of Arunachal Pradesh and Gohpur Area(Gohpur load) of Assam were connected with rest of NER Grid through 132 kV Nirjuli-Lekhi line (Bus Coupler CB of Gohpur kept open for system requirement). At 19:50 Hrs on 08.09.16, 132 kV Ranganadi-Lekhi line tripped. Due to tripping of this element, Nirjuli area & Gohpur area were separated from rest of NER Grid and subsequently collapsed due to no source in these areas.											
	Antecedent Conditions	**(Antecedent Generation : 2282 MW , Antecedent Load : 2474 MW)**											
	Root Cause	Problem may be in Arunachal Pradesh section of Lekhi - Nirjuli line. Manager (NERTS) said infringment problem was there in Arunachal Pradesh section.											
	Remedial Measures	NERPC to take up with Arunachal Pradesh seperately for resolving this problem.											
5	132 kV Ranganadi - Ziro	POWERGRID	**10-10-16 4:47**	Ranganadi	DP, ZI, R-Y Ph, 0.70 Kms	Not applicable	No	No	Loss of Load: 12	GD-I	10-10-16 5:18	No SPS	0.007
				Ziro	No tripping	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Ziro area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Ranganadi-Ziro line. At 04:47 Hr on 10-Oct-16, 132 kV Ranganadi-Ziro line tripped. Due to tripping of this element, Ziro area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1747 MW , Antecedent Load : 1560 MW)**											
	Root Cause	Fault in the line.Root cause could not be concluded due to unavailabilty of DR output from Ranganadi end.											
	Remedial Measures	NEEPCO to furnish DR output of Ranganadi end to conclude the root cause.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
6	132 kV Balipara - Khupi	NEEPCO	**11-09-16 0:21**	Balipara	Over Current, R-Y-B phase	Not applicable	NA	NA	Loss of Load: 17	GD-I	11-09-16 0:34	No SPS	0.008
				Khupi	Not Furnished	Not applicable	NA	NA					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 00:21 Hrs on 11.09.16, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1873 MW , Antecedent Load : 1857 MW)**											
	Root Cause	As per preliminary information from NEEPCO, line might have tripped on vegetation infringement											
	Remedial Measures	NEEPCO to take up vegetation clerance and ensure that line section is healthy											
7	132 kV Balipara - Khupi	NEEPCO	**05-10-16 14:30**	Balipara	DP, ZI, B-E, 31.89 Kms	Not Furnished	No	No	Loss of Load: 20	GD-I	05-10-16 15:14	No SPS	0.021
				Khupi	No tripping	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 14:30 Hrs on 05.10.16, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1803 MW , Antecedent Load : 1882 MW)**											
	Root Cause	Likely due to vegetation fault in the line.Root cause could not be concluded due to unavailability of DR from Balipara End.As informed by NEEPCO,disturbance originated at T-Connection at Tippi Steel factory.											
	Remedial Measures	Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis.NEEPCO to furnish DR data of Balipara end for concluding root cause.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
8	132 kV Balipara - Khupi	NEEPCO	**07-10-16 15:17**	Balipara	DP, ZI, B-E, 13.47 Kms.	Not Furnished	No	No	Loss of Load: 21	GD-I	07-10-16 15:43	No SPS	0.014
				Khupi	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 15:17 Hrs on 07.10.16, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1730 MW , Antecedent Load : 1616 MW)**											
	Root Cause	Likely due to vegetation fault in the line as Zone-I operated at Balipara end.As informed by NEEPCO,fault occurred due to forest clearance by ITBP ,54 Battalion for their camp extension											
	Remedial Measures	Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis.NEEPCO to furnish DR data of Balipara end for concluding root cause.											
9	132 kV Balipara - Khupi	NEEPCO	**15-10-16 10:27**	Balipara	DP, ZI, B-E, 13.7 kms	Not Furnished	No	No	Loss of Load: 21	GD-I	15-10-16 12:26	No SPS	0.065
				Khupi	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 10:27 Hr on 15-Oct-16, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 2036 MW , Antecedent Load : 1657 MW)**											
	Root Cause	Likely due to vegetation fault in the line.As informed by NEEPCO,fault occurred due to falling of tree over B phase conductor consequent to forest clearance by ITBP ,54 Battalion for their camp extension.											
	Remedial Measures	Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis.NEEPCO to furnish DR data of Balipara end for concluding root cause.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
10	132 kV Balipara - Khupi	NEEPCO	**20-10-16 11:33**	Balipara	DP, ZI, B-E, 51.99 kms	Not Furnished	No	No	Loss of Load: 21	GD-I	20-10-16 11:50	No SPS	0.012
				Khupi	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 11:33 Hr on 20-Oct-16, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1646 MW , Antecedent Load : 1829 MW)**											
	Root Cause	Likely due to fault in the line.Root cause could not be concluded due to unavailability of DR from Balipara End.As informed by NEEPCO,Heavy lightning and thunder observed between Khupi and Nechiphu at the time of tripping.											
	Remedial Measures	Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis.NEEPCO to furnish DR data of Balipara end for concluding root cause.											
11	132 kV Balipara - Khupi	NEEPCO	**27-10-16 10:05**	Balipara	Earth Fault	Not Furnished	No	No	Loss of Load: 9	GD-I	27-10-16 16:16	No SPS	0.108
				Khupi	No tripping	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Khupi area of Arunachal Pradesh was connected with rest of NER Grid through 132 kV Balipara- Khupi line. At 10:05 Hr on 27th October, 2016, 132 kV Balipara- Khupi line tripped. Due to tripping of this element, Khupi area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1277 MW , Antecedent Load : 1386 MW)**											
	Root Cause	Likely due to vegetation fault in the line.Root cause could not be concluded due to unavailability of DR from Balipara End. As informed by NEEPCO,physical patrolling of critical stretches of the line revealed no fault.											
	Remedial Measures	Vegetation clearance is to be done by NEEPCO and status to be reported to NERLDC & NERPC on a regular basis.NEEPCO to furnish DR data of Balipara end for concluding root cause.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
12	220 kV Agia - Boko	AEGCL	**01-09-16 13:02**	Agia	DP, ZI, R-E	Not applicable	No	No	Loss of Load: 17	GD-I	01-09-16 13:35	No SPS	0.009
				Boko	Over current	Not applicable	No	No					
	220 kV Boko - Azara	AEGCL		Boko	Not Furnished	Not applicable	No	No			02-09-16 20:10	No SPS	
				Azara	Over current	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Boko area of Assam was connected with rest of NER Grid through 220 kV Agia - Boko line & 220 kV Boko -Azara line. At 13:02 Hrs on 01.09.16,220 kV Agia - Boko line & 220 kV Boko -Azara line tripped. Due to tripping of these elements, Boko area was separated from rest of NER Grid and subsequently collapsed due to no source in this area											
	Antecedent Conditions	**(Antecedent Generation : 1911 MW , Antecedent Load : 1657 MW)**											
	Root Cause	AEGCL said fault in Agia - Boko line. Agia end DP, Z-1 operated. O/C relay should not have operated at Azara / Boko. There could be problem with time co-ordination of O/C relays. (Boko should have cleared first). AEGCL to check											
	Remedial Measures	AEGCL to check and co-ordinate relay settings to prevent unwanted operation											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
13	132 kV BTPS - Dhaligaon I	AEGCL	**08-10-16 18:52**	BTPS	Not Furnished	Not Furnished	No	No	Loss of Load: 110	GD-I	08-10-16 20:02	No SPS	0.13
				Dhaligaon	Not Furnished	Not Furnished	No	No					
	132 kV BTPS - Dhaligaon II	AEGCL		BTPS	Not Furnished	Not Furnished	No	No			08-10-16 20:06	No SPS	
				Dhaligaon	Not Furnished	Not Furnished	No	No					
	220 kV BTPS - Salakati II	POWERGRID	**08-10-16 18:52**	BTPS	Not Furnished	Not Furnished	No	No			08-10-16 20:06	No SPS	
				Salakati	Not Furnished	Not Furnished	No	No					
	220 kV BTPS - Agia I	AEGCL	**08-10-16 18:52**	BTPS	Not Furnished	Not Furnished	No	No			08-10-16 20:10	No SPS	
				Agia	Not Furnished	Not Furnished	No	No					
	220/132 kV 160 MVA ICT at BTPS	AEGCL	**08-10-16 18:52**	BTPS	Not Furnished	Not applicable	No	No			08-10-16 19:38	No SPS	
	FIR by the constituent	No											
	Brief Description of the Incident	Dhaligaon area of Assam was connected with rest of NER Grid through 132 kV Dhaligaon-BTPS I & II lines (132 kV Rangia-Bornagar line & 132 kV Rangia-Nalbari line kept open for system requirement). At 18:52Hrs on 08.10.16, 132 kV Dhaligaon-BTPS I & II lines tripped. Due to tripping of these elements, Dhaligaon area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 2259 MW , Antecedent Load : 2569 MW)**											
	Root Cause	Busbar prot. Operated. In Bus-bar zone-1, PG line is present, and on Zone-2 PG line-II is present. In zone-1, it found open isolator on line-1 of PG (incorrectly).											
	Remedial Measures	Rectified by AEGCL											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
14	132 kV Silchar - Hailakandi	POWERGRID & AEGCL	**09-10-16 5:43**	Silchar	DP, ZI, Y-E, 13.71 Kms	Not Furnished	No	No	Loss of Load: 24	GD-I	09-10-16 6:06	No SPS	0.011
				Hailakandi	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Dullavcherra & Hailakandi areas of Assam and Dharmanagar area of Tripura were connected with rest of NER Grid through 132 kV Silchar- Hailakandi line (132 kV P K Bari - Dharmanagar line kept open for system requirement). At 05:43 Hrs on 09.10.16, 132 kV Silchar- Hailakandi line tripped. Due to tripping of this element, Dullavcherra & Hailakandi areas of Assam and Dharmanagar area of Tripura were separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1762 MW , Antecedent Load : 1512 MW)**											
	Root Cause	Fault in the line.Root cause could not be concluded due to unavailabilty of DR outputs from both ends.											
	Remedial Measures	AEGCL&POWERGRID to furnish relay DR outputs of their end for this event.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
15	132 kV Imphal (PG) - Imphal	POWERGRID	**14-09-16 10:55**	Imphal (PG)	Earth Fault	Not applicable	No	No	Loss of Load: 44	GD-I	14-09-16 11:24	No SPS	0.031
				Imphal	Over current	Not applicable	No	No					
	132 kV Imphal (PG) - Imphal	POWERGRID/ MSPCL		Imphal (PG)	Earth Fault	Not applicable	No	No			14-09-16 11:30	No SPS	
				Imphal	Over current	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Capital area & Karong area of Manipur were connected with rest of NER Grid through 132 kV Imphal-Imphal I & II lines (132 kV Kakching-Kongba line & 132 kV Karong-Kohima line kept open for system requirement). At 10:55 Hrs on 14.09.16, 132 kV Imphal-Imphal I & II lines tripped. Due to tripping of these elements, Capital area & Karong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1801 MW , Antecedent Load : 1758 MW)**											
	Root Cause	Fault in state end ; No autoreclose operated at Imphal (PG) end. As per NERTS, problem in Karong feeder from Imphal											
	Remedial Measures	MSPCL to investigate the cause of tripping and intimate the forum.											
16	132 kV Imphal (PG) - Imphal (MA) I	POWERGRID	**06-10-16 9:28**	Imphal (PG)	Earth Fault	Not applicable	No	No	Loss of Load: 41	GD-I	06-10-16 9:47	No SPS	0.024
				Imphal	Earth Fault	Not applicable	No	No					
	132 kV Imphal (PG) - Imphal (MA) II	POWERGRID/ MSPCL		Imphal (PG)	Earth Fault	Not applicable	No	No			06-10-16 9:51	No SPS	
				Imphal	Earth Fault	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Capital area & Karong area of Manipur were connected with rest of NER Grid through 132 kV Imphal-Imphal I & II lines (132 kV Kakching-Kongba line & 132 kV Karong-Kohima line kept open for system requirement). At 09:28 Hrs on 06.10.16, 132 kV Imphal-Imphal I & II lines tripped. Due to tripping of these elements, Capital area & Karong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1898 MW , Antecedent Load : 1750 MW)**											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16														
क्रम संख्या/ Sl. No.	**बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description**	**मालिक / Owner**	**दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator**	**नोड के नाम / Name of Node**	**सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)**	**श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards**	**सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator**	**एसपीएस संचालन के विवरण / Details of SPS Operation**	**एमयू में हानि/ Loss in MU**
16	**Root Cause**	Likely due to fault in the line as the E/F relay operated at both ends.Root cause could not be concluded due to unavailabilty of DR from both ends.											
	Remedial Measures	POWERGRID shall furnish DR at Imphal(PG) end of the line.MSPCL shall confirm relay indication of Imphal(MA) end of this line and furnish downstream tripping if any.											
17	132 kV Imphal (PG) - Imphal (MA) I	POWERGRID	**24-10-16 8:11**	Imphal (PG)	Earth Fault	Not Furnished	Yes	Yes	Loss of Load: 31	GD-I	24-10-16 8:29	No SPS	0.025
				Imphal	Over current	Not Furnished	No	No					
	132 kV Imphal (PG) - Imphal (MA) II	POWERGRID/ MSPCL		Imphal (PG)	Earth Fault	Not Furnished	No	No			24-10-16 8:30		
				Imphal	Over current	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Capital area & Karong area of Manipur were connected with rest of NER Grid through 132 kV Imphal-Imphal I & II lines (132 kV Kakching-Kongba line & 132 kV Karong-Kohima line kept open for system requirement). At 08:11 Hr on 24.10.2016, 132 kV Imphal-Imphal I & II lines tripped. Due to tripping of these elements, Capital area & Karong area were separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1679 MW , Antecedent Load : 1615 MW)**											
	Root Cause	DR indicates R-E fault with fault current gradually increasing up to 1.2 kA.Angle between Vr and Ir around 28 degrees during fault and slowly increasing nature of fault current indicate **high resistive fault**. There is no vegetation problem in this D/C line as intimated by POWERGRID.So fault was likely due to downstream vegetation infringement .											
	Remedial Measures	Operation of Over current relay at Imphal(MA) is not desirable as these lines are radially fed. MSPCL shall check over current relay settings at Imphal end. Vegetation clearance of downstream lines (downstream of Imphal) to be done by MSPCL and status to be furnished to NERPC & NERLDC.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
18	132 kV Loktak - Rengpang	MSPCL	**12-09-16 13:51**	Loktak	DP, ZI, B-E,11.21 Kms.	Not Furnished	Yes	No	Loss of Load: 2	GD-I	12-09-16 14:53	No SPS	0.002
				Rengpang	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	Yes(Loktak)											
	Brief Description of the Incident	Rengpang area of Manipur was connected with rest of NER Grid through 132 kV Loktak-Rengpang line (132 kV Rengpang-Jiribam(MA) line is under long outage). At 13:51 Hrs on 12.09.16, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element,Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1833 MW , Antecedent Load : 1707 MW)**											
	Root Cause	Likely vegetation problem (Heavy jungle). Also possible that fault in downstream getting cleared. Manipur to furnish details											
	Remedial Measures	Vegetation clearance to be done in line sections. In forested areas, adequate manpower to be employed											
19	132 kV Loktak - Rengpang	MSPCL	**13-09-16 11:27**	Loktak	DP, ZI, B-E,11.03 Kms.	Not Furnished	Yes	No	Loss of Load: 2	GD-I	13-09-16 12:45	No SPS	0.003
				Rengpang	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	Yes(Loktak)											
	Brief Description of the Incident	Rengpang area of Manipur was connected with rest of NER Grid through 132 kV Loktak-Rengpang line (132 kV Rengpang-Jiribam(MA) line is under long outage). At 11:27 Hrs on 13.09.16, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element,Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1866 MW , Antecedent Load : 1633 MW)**											
	Root Cause	Likely vegetation problem (Heavy jungle). Also possible that fault in downstream getting cleared. Manipur to furnish details											
	Remedial Measures	Vegetation clearance to be done in line sections. In forested areas, adequate manpower to be employed											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
20	132 kV Loktak - Rengpang	MSPCL	**03-10-16 11:15**	Loktak	DP, ZI, R-Y-B, 11.85 Kms.	Not Furnished	Yes	No	Loss of Load: 2	GD-I	03-10-16 12:37	No SPS	0.003
				Rengpang	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	Yes(Loktak)											
	Brief Description of the Incident	Rengpang area of Manipur was connected with rest of NER Grid through 132 kV Loktak-Rengpang line (132 kV Rengpang-Jiribam(MA) line is under long outage). At 11:15 Hrs on 03.10.16, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element,Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 2018 MW , Antecedent Load : 1758 MW)**											
	Root Cause	DR indicates B-E fault with fault current up to 3 kA.Angle between Voltage & Current in faulty phase(B-phase) around 20 degrees indicates high resistive fault likely due to vegetation.											
	Remedial Measures	MSPCL shall furnish patrolling report of the event. Vegetation clearance is to be done by MSPCL and status to be reported to NERPC & NERLDC.											
21	132 kV Loktak - Rengpang	MSPCL	**04-10-16 11:45**	Loktak	B-ph, O/C	Not applicable	Yes	No	Loss of Load: 2	GD-I	04-10-16 12:54	No SPS	0.002
				Rengpang	No tripping	Not applicable	No	No					
	FIR by the constituent	Yes(Loktak)											
	Brief Description of the Incident	Rengpang area of Manipur was connected with rest of NER Grid through 132 kV Loktak-Rengpang line (132 kV Rengpang-Jiribam(MA) line is under long outage). At 11:45 Hrs on 04.10.16, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element,Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1862 MW , Antecedent Load : 1715 MW)**											
	Root Cause	DR indicates Y-E fault with fault current gradually increasing up to 0.5 kA.Angle between Voltage & Current in faulty phase(B-phase) around 19 degrees indicates high resistive fault likely due to vegetation.											
	Remedial Measures	MSPCL shall furnish patrolling report of the event. Vegetation clearance is to be done by MSPCL and status to be reported to NERPC & NERLDC.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ **Sl. No.**	बिजली व्यवस्था तत्व / विवरण / **Name of tripping element/ Description**	मालिक / **Owner**	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / **Date & Time of Event provided by CR operator**	नोड के नाम / **Name of Node**	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / **Relay indications provided by CR operator**	ऑटो रीक्लोजर का ऑपरेशन / **Operation of Auto Reclose**	**24** घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / **DR output furnished within 24 hours (Y/N)**	**24** घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / **EL output furnished within 24 hours (Y/N)**	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / **Effect (Loss of Load & Generation in MW)**	श्रेणी सीईए ग्रिड मानकों के अनुसार / **Category as per CEA Grid Standards**	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / **Date and time of restoration provided by CR operator**	एसपीएस संचालन के विवरण / **Details of SPS Operation**	एमयू में हानि/ **Loss in MU**
22	132 kV Loktak - Rengpang	MSPCL	**06-10-16 11:35**	Loktak	Over current	Not applicable	Yes	No	Loss of Load: 2	GD-I	06-10-16 11:49	No SPS	0.0005
				Rengpang	Not Furnished	Not applicable	No	No					
	FIR by the constituent	Yes											
	Brief Description of the Incident	Rengpang area of Manipur was connected with rest of NER Grid through 132 kV Loktak-Rengpang line (132 kV Rengpang-Jiribam(MA) line is under long outage). At 11:35 Hrs on 06.10.16, 132 kV Loktak-Rengpang line tripped. Due to tripping of this element,Rengpang area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1776 MW , Antecedent Load : 1831 MW)**											
	Root Cause	DR indicates normal loading in all three phases with phase current of 260 A(~57 MW).Over Current Relay maloperated at Loktak end.											
	Remedial Measures	NHPC to check Over Current relay settings at Loktak.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
23	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	12-09-16 14:42	Khliehriat (PG)	DP, ZI, R-Y-B,50.88 Kms.	Not applicable	No	No	Loss of Load: 31		12-09-16 15:04	No SPS	0.003
				Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL		Khliehriat (PG)	DP, ZI, R-Y-B,80.14 Kms.	Not applicable	No	No			12-09-16 15:11	No SPS	
				Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	132 kV NEHU - NEIGRIHMS	MePTCL		NEHU	Distance protection	Not applicable	No	No			12-09-16 14:46	No SPS	
				NEIGRIHMS	No tripping	Not applicable	NA	NA					
	132 kV Mustem-NEHU	MePTCL		Mustem	Distance protection	Not applicable	No	No			12-09-16 14:47	No SPS	
				NEHU	Tripped	Not applicable	No	No					
	Leshka U 1	MePGCL	12-09-16 14:42	Leshka	86B, 86FT	Not applicable	No	No	Loss of Generation: 70		12-09-16 15:25	No SPS	0.033
	Leshka U 2	MePGCL		Leshka		Not applicable	No	No			12-09-16 15:10	No SPS	
	FIR by the constituent	Yes(Meghalaya)											
	Brief Description of the Incident	Khliehriat area (Khliehriat,NEIGRIHMS,Mustem and Leshka stations) of Meghalaya was connected with rest of NER Grid through 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines,132 kV Mustem-NEHU line and 132 kV NEHU - NEIGRIHMS line (132 kV Khliehriat-Lumnsnong line,132 kV Sarusajai-Umtru I&II lines and 132 kV Kahilipara-Umtru I&II lines kept open for system requirement). At 14:42 Hrs on 12.09.16,132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines,132 kV Mustem-NEHU line and 132 kV NEHU - NEIGRIHMS line tripped. Due to tripping of these elements, Khleihriat area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.											
	Antecedent Conditions	**(Antecedent Generation : 1834 MW , Antecedent Load : 1767 MW)**											
	Root Cause	Trippings in Khliehriat side are not possible to analyse properly due to absence of numerical relays.											
	Remedial Measures	Meghalayal to review relay co-ordination within their own system. MePTCL to install Numerical relays on all feeders from Khliehriat(MePTCL) on urgent basis. It is to be further co-ordinate with NERTS for upstream. By December, relays will be installed (MePTCl confirmed). Numerical relays now present only on Neigrihms and leshka feeders from Khlehriat. NERPC also mentioned poor manpower at Byrnihat / Khliehriat substations, and requested MePTCl to take up for improvement											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
24	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	15-09-16 13:56	Khliehriat (PG)	DP, ZI, R-Y-B,107.6 Kms.	Not applicable	No	No	Loss of Load: 49	GD-I	15-09-16 14:14	No SPS	0.002
				Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL		Khliehriat (PG)	DP, ZI, R-Y-B,107.6 Kms.	Not applicable	No	No			15-09-16 14:15	No SPS	
				Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	132 kV Mustem-Khliehriat	MePTCL	15-09-16 13:56	Mustem	No tripping	Not applicable	NA	NA			15-09-16 14:11	No SPS	
				Khliehriat	DP, ZI, R-Y-B,29.49 Kms.	Not applicable	No	No					
	132 kV Mustem-NEHU	MePTCL		Mustem	Over current	Not applicable	No	No			15-09-16 14:10	No SPS	
				NEHU	No tripping	Not applicable	NA	NA					
	Leshka U 1	MePGCL		Leshka	86A, 86B, 86FT	Not applicable	No	No	Loss of Generation: 70	GD-I	15-09-16 14:37	No SPS	0.063
	Leshka U 2	MePGCL		Leshka		Not applicable	No	No			15-09-16 14:27	No SPS	
	Leshka U 3	MePGCL		Leshka		Not applicable	No	No			15-09-16 14:26	No SPS	
	FIR by the constituent	Yes(Meghalaya)											
	Brief Description of the Incident	Khliehriat area (Khliehriat, NEHU,NEIGRIHMS,Mustem, Leshka & Umiam stations) of Meghalaya was connected with rest of NER Grid through 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines (132 kV Panchgram-Lumnsnong line,132 kV Umiam-Umiam Stg I line & 132 kV NEHU-Mawlai line were kept open for system requirement). At 13:56 Hrs on 15.09.16, 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines, 132 kV Mustem-Khliehriat line and 132 kV Mustem-NEHU line tripped. Due to tripping of these elements, Khleihriat area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.											
	Antecedent Conditions	**(Antecedent Generation : 1794 MW , Antecedent Load : 1761 MW)**											
	Root Cause	Trippings in Khliehriat side are not possible to analyse properly due to absence of numerical relays. PGCIL said setting of DP,Z-1 at Khliehriat(PG) is around 70 kms. NERTS to clarify why the distance shown by relay is more than setting distance.											
	Remedial Measures	Meghalayal to review relay co-ordination within their own system. MePTCL to install Numerical relays on all feeders from Khliehriat(MePTCL) on urgent basis. It is to be further co-ordinate with NERTS for upstream. By December, relays will be installed (MePTCl confirmed). Numerical relays now present only on Neigrihms and leshka feeders from Khlehriat. NERPC also mentioned poor manpower at Byrnihat / Khliehriat substations, and requested MePTCl to take up for improvement											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
25	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	**05-10-16 17:37**	Khliehriat (PG)	DP, ZI, Y-E, 39.03 Kms	Not Furnished	No	No	Loss of Load: 36	GD-I	05-10-16 18:08	No SPS	0.002
				Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**05-10-16 17:37**	Khliehriat (PG)	DP, ZI, Y-E, 22.8 Kms	Not Furnished	No	No			05-10-16 18:09	No SPS	
				Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV NEHU - NEIGRIHMS	MePTCL	**05-10-16 17:37**	NEHU	DP,Other info. Not furnished	Lockout	No	No			05-10-16 17:53	No SPS	
				NEIGRIHMS	No tripping	Not applicable	No	No					
	132 kV Mustem-NEHU	MePTCL	**05-10-16 17:37**	Mustem	DP, ZI, R-Y-B, 28.71 Kms	Not Furnished	No	No		GD-I	05-10-16 17:52	No SPS	
				NEHU	No tripping	Not applicable	No	No					
	Leshka U 1	MePGCL	**05-10-16 17:37**	Leshka	86A, 86B, 86FT	Not applicable	No	No	Loss of Generation: 90		05-10-16 18:47	No SPS	0.087
	Leshka U 2	MePGCL	**05-10-16 17:37**	Leshka	86A, 86B, 86FT	Not applicable	No	No			05-10-16 18:35	No SPS	
	Leshka U 3	MePGCL	**05-10-16 17:37**	Leshka	86A, 86B, 86FT	Not applicable	No	No			06-10-16 11:38	No SPS	
	FIR by the constituent	Yes(Meghalaya)											
	Brief Description of the Incident	Khliehriat area(Khliehriat,NEIGRIHMS,Leshka & Mustem stations) of Meghalaya was connected with rest of NER Grid through 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines,132 kV Mustem-NEHU line & 132 kV NEIGRIHMS - NEHU line (132 kV Khliehriat-Lumnsnong line kept open for system requirement). At 17:37 Hrs on 05.10.16, 132 kV Khliehriat (PG)-Khliehriat (MePTCL) I & II lines,132 kV Mustem-NEHU line & 132 kV NEIGRIHMS - NEHU line tripped. Due to tripping of these elements, Khleihriat area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.											
	Antecedent Conditions	**(Antecedent Generation : 2067 MW , Antecedent Load : 2478 MW)**											
	Root Cause	Due to fault in the Meghalaya system.											
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
26	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	06-10-16 14:06	Khliehriat (PG)	DP, ZI, R-E, 30.73 Kms.	Not Furnished	No	No	Loss of Load: 3	GD-I	06-10-16 14:27	No SPS	0.0002
				Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL		Khliehriat (PG)	DP, ZI, R-E, 22.05 Kms.	Not Furnished	No	No			06-10-16 14:27	No SPS	
				Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV Mustem-NEHU	MePTCL	06-10-16 14:06	Mustem	No tripping	Not applicable	No	No			06-10-16 14:10	No SPS	
				NEHU	DP, ZI, R-Y-B, 55.41 Kms.	Not applicable	No	No					
	132 kV Mustem-Khliehriat	MePTCL		Mustem	No tripping	Not applicable	No	No			06-10-16 14:12	No SPS	
				Khliehriat	DP, ZI, R-Y-B, 82.6 Kms.	Not applicable	No	No					
	FIR by the constituent	Yes(Meghalaya)											
	Brief Description of the Incident	Mustem area of Meghalaya was connected with rest of NER Grid through 132 kV Mustem-NEHU line & 132 kV Mustem-Khliehriat line. At 14:06 Hrs on 06.10.16, 132 kV Mustem-NEHU line & 132 kV Mustem-Khliehriat line tripped. Due to tripping of these elements, Mustem area was separated from rest of NER Grid and subsequently collapsed due to no source in this area..											
	Antecedent Conditions	**(Antecedent Generation : 1747 MW , Antecedent Load : 1798 MW)**											
	Root Cause	Due to fault in the Meghalaya system.											
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
27	132 kV Lumshnong - Panchgram	MePTCL & AEGCL	**12-09-16 19:45**	Lumshnong	Not Furnished	Not Furnished	No	No	Loss of Load: 30	GD-I	18-09-16 0:34	No SPS	0.59
				Panchgram	DP, ZI, R-Y-B,41.1 Kms.	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Lumshnong area of Meghalaya was connected with rest of NER Grid through 132 kV Lumshnong - Panchgram line. (132 kV Khliehriat-Lumnsnong line was kept open for system requirement). At 19:45 Hrs on 12.09.16 ,132 kV Lumshnong - Panchgram line tripped. Due to tripping of this element, Lumshnong area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 2203 MW , Antecedent Load : 2310 MW)**											
	Root Cause	Tripping likely on account of vegetation infringement.											
	Remedial Measures	Lumshnong to at least report the relay details properly to NERLDC. Vegetation clearance to be done											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
28	132 kV EPIP II - Byrnihat I	MePTCL	**03-09-16 14:09**	EPIP II	No tripping	Not applicable	No	No	Loss of Load: 43	GD-I	03-09-16 14:27	No SPS	0.013
				Byrnihat	DP, ZIII, B-E	Not applicable	No	No					
	132 kV EPIP II - Byrnihat II	MePTCL		EPIP II	No tripping	Not applicable	No	No			03-09-16 14:33	No SPS	
				Byrnihat	DP, ZIII, B-E	Not applicable	No	No					
	132 kV EPIP II - Umtru I	MePTCL		EPIP II	Over current	Not applicable	No	No			03-09-16 14:36	No SPS	
				Umtru	No tripping	Not applicable	No	No					
	Umiam Stg IV U 2	MePGCL	**03-09-16 14:09**	Umiam Stg IV	Excitation Over Current	Not applicable	No	No	Loss of Generation: 24	GD-I	03-09-16 14:51	No SPS	0.017
	FIR by the constituent	Yes(Meghalaya)											
	Brief Description of the Incident	Byrnihat area (EPIP I,EPIP II,Umiam Stage III,Umiam Stage IV & Umtru Stations) of Meghalaya was connected with rest of NER Grid throug 132 kV EPIP II-Byrnihat I & II lines (132 kV Kahilipara-Umtru I & II lines, 132 kV Sarusajai-Umtru I & II lines & 132 kV Umium Stage I - Umium Stage III 1&2 lines kept open for System requirement). At 14:09 Hrs on 03.09.16, 132 kV EPIP II-Byrnihat I & II lines tripped. Due to tripping of these elements, Byrnihat area was separated from rest of NER Grid and subsequently											
	Antecedent Conditions	**(Antecedent Generation : 1763 MW , Antecedent Load : 1731 MW)**											
	Root Cause	Transient fault within Meghalaya system. MePTCL will inform further about exact location and cause											
	Remedial Measures												

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
29	132 kV Aizwal - Zuangtui	POWERGRID	**13-09-16 15:40**	Aizawl	Over current	Not applicable	Yes	No	Loss of Load: 36	GD-I	13-09-16 15:56	No SPS	0.013
				Zuangtui	No tripping	Not applicable	NA	NA					
	FIR by the constituent	No											
	Brief Description of the Incident	Zuangtui area of Mizoram was connected with rest of NER Grid through 132 kV Aizawl- Zuangtui line. At 15:40 Hrs on 13.09.16 , 132 kV Aizawl- Zuangtui line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1821 MW , Antecedent Load : 1758 MW)**											
	Root Cause	Relay co-ordination not yet down by Mizoram. P&E Dept, Mizoram not agreed to implement											
	Remedial Measures	NERPC to take up with P&E Dept., Mizoram to ensure Mizoram does co-ordination of it's protection system with NERTS so that unwnated tripping of EHV lines does not occur											
30	132 kV Aizwal - Zuangtui	POWERGRID	**16-09-16 23:36**	Aizawl	Over current	Not applicable	No	No	Loss of Load: 14	GD-I	16-09-16 23:47	No SPS	0.003
				Zuangtui	No tripping	Not applicable	NA	NA					
	FIR by the constituent	No											
	Brief Description of the Incident	Zuangtui area of Mizoram was connected with rest of NER Grid through 132 kV Aizawl- Zuangtui line. At 23:36 Hrs on 16.09.16 , 132 kV Aizawl- Zuangtui line tripped. Due to tripping of this element, Zuangtui area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1683 MW , Antecedent Load : 1791 MW)**											
	Root Cause	Relay co-ordination not yet down by Mizoram. P&E Dept, Mizoram not agreed to implement											
	Remedial Measures	NERPC to take up with P&E Dept., Mizoram to ensure Mizoram does co-ordination of it's protection system with NERTS so that unwnated tripping of EHV lines does not occur											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
31	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**11-09-16 11:30**	Doyang	Over current	Not applicable	No	No	Loss of Load: 15	GD-I	11-09-16 12:04	No SPS	0.008
				Mokokchung(NA)	No tripping	Not applicable	No	No					
	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID		Mariani(PG)	Earth Fault, Y-ph	Not applicable	No	No			11-09-16 12:02	No SPS	
				Mokokchung(PG)	No tripping	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Mokokchung area of Nagaland was connected with rest of NER Grid through 132 kV Doyang-Mokokchung (NA)and 220 kV Mariani(PG)-Mokokchung (PG) I line. (132 kV Mokokchung(NA)-Marianai(AS) is under long outage, 220 kV Mariani(PG)-Mokokchung (PG) II line is out of service since 12.07.16 & 66 kV Tuengsang-Likimro line kept open for system requirement). At 11:30 Hrs on 11.09.16, 132 kV Doyang-Mokokchung (NA)and 220 kV Mariani(PG)-Mokokchung (PG) I line tripped. Due to tripping of these elements, Mokokchung area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1783 MW , Antecedent Load : 1482 MW)**											
	Root Cause	DoP, Nagaland to give further details. NEEPCO to confirm later after getting details from Doyang HEP											
	Remedial Measures	As per NERTS, Instantaenous element at Mariani disabled so that tripping of Mariani - Mokokchung along with Doyang - Mokokchung does not occur. DoP, Nagaland to co-ordinate downstream relay settings with NERTS in order to prevent unwanted tripping of EHV elements											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
32	132 kV Dimapur (PG) - Kohima	POWERGRID & DoP Nagaland	**06-09-16 14:30**	Dimapur (PG)	DP, ZI, B-E,Distance not furnished	Not Furnished	No	No	Loss of Load: 20& Loss of Generation: 24	GD-I	06-09-16 14:56	No SPS	0.008
				Kohima	No tripping	Not Furnished	No	No					
	FIR by the constituent	Yes(Nagaland)											
	Brief Description of the Incident	Capital area of Nagaland was connected with rest of NER Grid through 132 kV Dimapur(PG)-Kohima line (132 kV Kohima-Karong line & 66 kV Tuensang-Likimro line kept open for system requirement). At 14:30 Hrs on 06.09.16, 132 kV Dimapur(PG)-Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to load generation mismatch.											
	Antecedent Conditions	**(Antecedent Generation : 1841 MW , Antecedent Load : 1857 MW)**											
	Root Cause	Downstram fault in DoP, Naglaand system that was not cleared on time.											
	Remedial Measures	DoP,Nagaland to restore the condition of 132kV Dimapur-Kohima line to original and co-ordinate downstream relay settings with NERTS to prevent unwanted line trippings											
33	132 kV Dimapur (PG) - Kohima	POWERGRID & DoP Nagaland	**13-09-16 15:55**	Dimapur (PG)	DP, ZI, R-E,Distance not furnished	Not Furnished	No	No	Loss of Load: 28	GD-I	14-09-16 15:10	No SPS	0.06
				Kohima	Not Furnished	Not Furnished	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Capital area of Nagaland was connected with rest of NER Grid through 132 kV Dimapur(PG)-Kohima line (132 kV Kohima-Karong line & 66 kV Tuensang-Likimro line kept open for system requirement). At 15:55 Hrs on 13.09.16, 132 kV Dimapur(PG)-Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 1812 MW , Antecedent Load : 1715 MW)**											
	Root Cause	Downstram fault in DoP, Naglaand system that was not cleared on time.											
	Remedial Measures	DoP,Nagaland to restore the condition of 132kV Dimapur-Kohima line to original and co-ordinate downstream relay settings with NERTS to prevent unwanted line trippings											

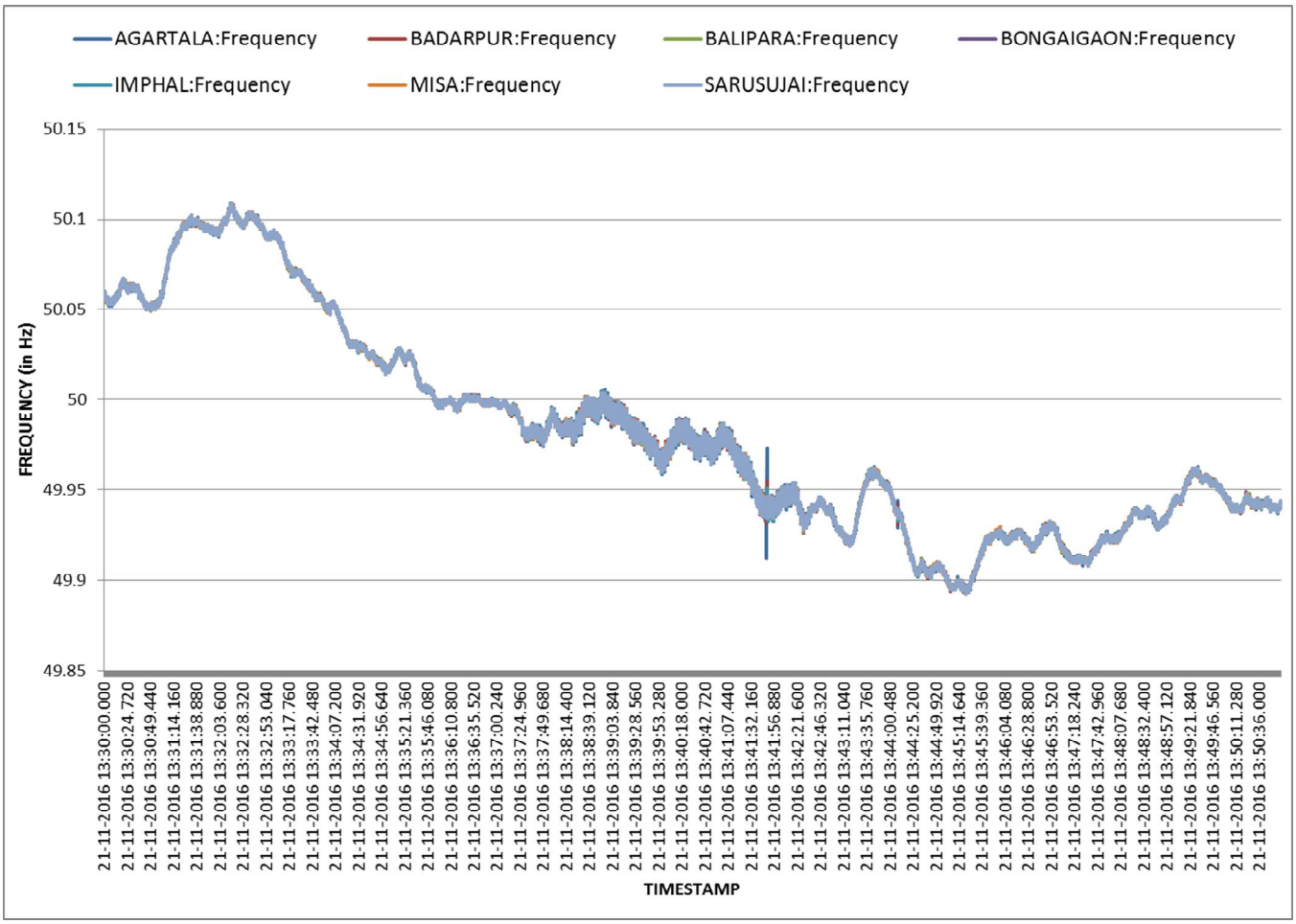
List of Grid Disturbances in North-Eastern Regional Grid during September and October'16													
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
34	132 kV Dimapur (PG) - Kohima	POWERGRID & DoP Nagaland	**10-10-16 15:17**	Dimapur (PG)	Over current	Not applicable	No	No	Loss of Load: 30 Generation Loss: 16	GD-I	10-10-16 15:34	No SPS	0.018
				Kohima	Earth Fault	Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Capital area of Nagaland was connected with rest of NER Grid through 132 kV Dimapur-Kohima line (132 kV Karong-Kohima line & 66 kV Tuensang-Likimro line kept open for system requirement). At 15:17 Hr on 10-Oct-16, 132 kV Dimapur-Kohima line tripped. Due to tripping of this element, Capital area was separated from rest of NER Grid and subsequently collapsed due to no source in this area.											
	Antecedent Conditions	**(Antecedent Generation : 2106 MW , Antecedent Load : 1586 MW)**											
	Root Cause	Likely due to fault in the line or downstream fault in the Nagaland System.Root cause could not be concluded due to unavailability of DR from both Ends.											
	Remedial Measures	POWERGRID&DoP Nagaland shall furnish DR outputs of their end for this event.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

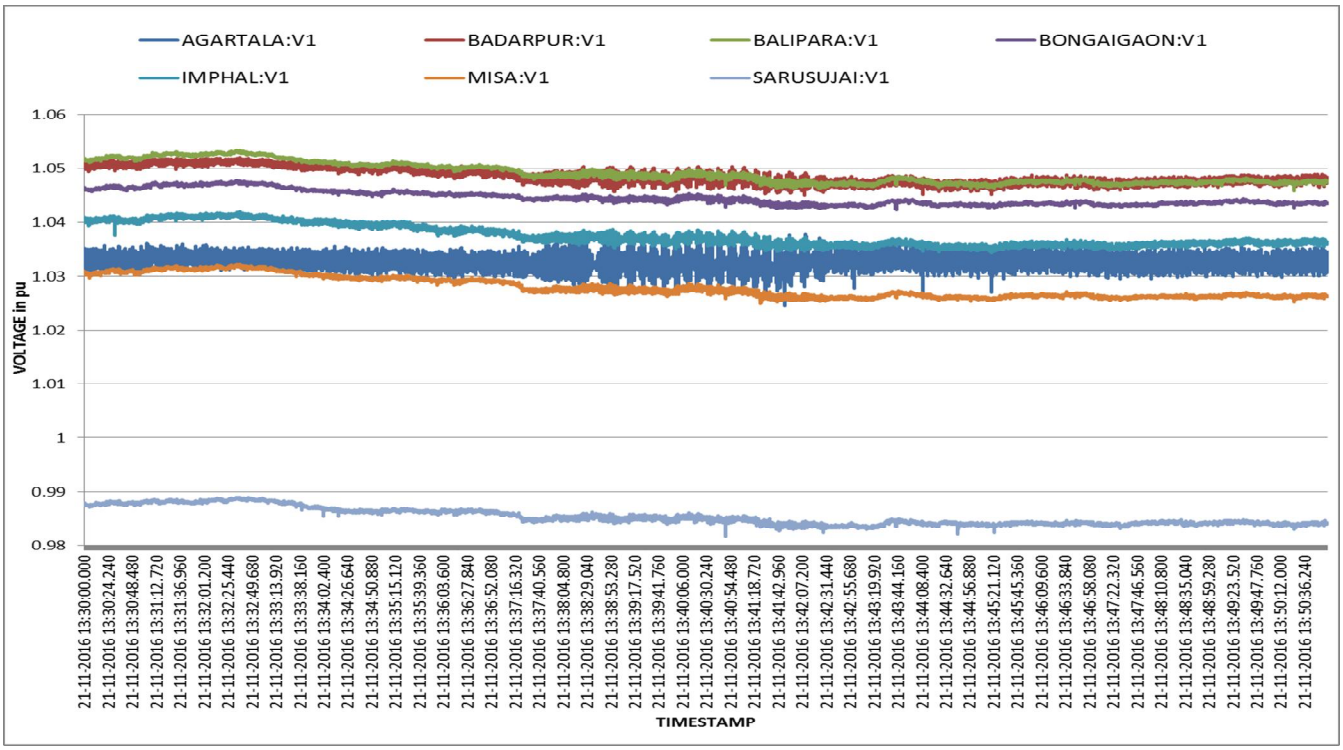
क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
35	132 kV Dimapur - Doyang I	POWERGRID	**03-10-16 21:26**	Dimapur	No tripping	Not Furnished	No	No	Loss of Load: 0	GD-I	03-10-16 21:30	No SPS	-
				Doyang	Not Furnished	Not Furnished	No	No					
	132 kV Dimapur - Doyang II	POWERGRID		Dimapur	No tripping	Not Furnished	No	No			03-10-16 21:45	No SPS	
				Doyang	Not Furnished	Not Furnished	No	No					
	132 kV Doyang - Mokokchung (NA)	DoP Nagaland		Doyang	Not Furnished	Not Furnished	No	No			04-10-16 7:59	No SPS	
				Mokokchung(NA)	Not Furnished	Not Furnished	No	No					
	Doyang U 1	NEEPCO	**03-10-16 21:26**	Doyang	Over Speed	Not applicable	No	No	Loss of Generation: 70	GD-I	03-10-16 23:00	No SPS	0.028
	Doyang U 2	NEEPCO	**03-10-16 21:26**	Doyang		Not applicable	No	No			03-10-16 21:50	No SPS	
	Doyang U 3	NEEPCO	**03-10-16 21:26**	Doyang		Not applicable	No	No			03-10-16 22:35	No SPS	
	FIR by the constituent	No											
	Brief Description of the Incident	Doyang Power Station was connected with rest of NER Grid through 132 kV Doyang- Dimapur I & II lines & 132 kV Doyang-Mokokchung(NA) line. At 21:26 Hrs on 03.10.16, 132 kV Doyang- Dimapur I & II lines & 132 kV Doyang-Mokokchung(NA) line tripped. Due to evacuation problem, Doyang Power Station was blacked out.											
	Antecedent Conditions	**(Antecedent Generation : 2026 MW , Antecedent Load : 2294 MW)**											
	Root Cause	Likely due to downstream fault in the Nagaland System.Root cause could not be concluded due to unavailability of DR&Relay indications from Doyand End.											
	Remedial Measures	NEEPCO shall furnish DR&Relay indications at Doyang end of the line. Relay coordination is to be done by DoP,Nagaland with POWERGRID to avoid tripping of ISTS lines.											

List of Grid Disturbances in North-Eastern Regional Grid during September and October'16

क्रम संख्या/ Sl. No.	बिजली व्यवस्था तत्व / विवरण / Name of tripping element/ Description	मालिक / Owner	दिनांक और घटना के समय सीआर ऑपरेटर द्वारा प्रदान की / Date & Time of Event provided by CR operator	नोड के नाम / Name of Node	सीआर ऑपरेटर द्वारा प्रदान की रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	प्रभाव (मेगावाट में लोड और उत्पादन की हानि) / Effect (Loss of Load & Generation in MW)	श्रेणी सीईए ग्रिड मानकों के अनुसार / Category as per CEA Grid Standards	सीआर ऑपरेटर द्वारा प्रदान की तिथि और समय या बहाली / Date and time of restoration provided by CR operator	एसपीएस संचालन के विवरण / Details of SPS Operation	एमयू में हानि/ Loss in MU
35	132 kV AGTPP - Kumarghat	POWERGRID	**03-10-16 18:09**	AGTPP	Bus dead at Kumarghat during relay testing	Not applicable	No	No	-	GD-I	03-10-16 18:51	No SPS	-
				Kumarghat		Not applicable	No	No					
	132 kV Badarpur - Kumarghat	POWERGRID	**03-10-16 18:09**	Badarpur		Not applicable	No	No	-		03-10-16 18:36	No SPS	-
				Kumarghat		Not applicable	No	No					
	132 kV Aizwal - Kumarghat	POWERGRID	**03-10-16 18:09**	Aizawl		Not applicable	No	No	-		03-10-16 18:40	No SPS	-
				Kumarghat		Not applicable	No	No					
	132 kV P K Bari - Kumarghat	TSECL	**03-10-16 18:09**	PK Bari		Not applicable	No	No	-		03-10-16 19:08	No SPS	-
				Kumarghat		Not applicable	No	No					
	FIR by the constituent	No											
	Brief Description of the Incident	Kumarghat SubStation was connected with rest of NER Grid through 132 kV AGTPP - Kumarghat line,132 kV Badarpur - Kumarghat line,132 kV Aizwal - Kumarghat line & 132 kV P K Bari - Kumarghat line. At 18:09 Hrs on 03.10.16, 132 kV AGTPP - Kumarghat line,132 kV Badarpur - Kumarghat line,132 kV Aizwal - Kumarghat line & 132 kV P K Bari - Kumarghat line tripped and Kumarghat SubStation was blacked out.											
	Antecedent Conditions	**(Antecedent Generation : MW , Antecedent Load : MW)**											
	Root Cause	Maloperation during relay testing.											
	Remedial Measures	Realy testing to be done after taking necessary precautions to avoid unwanted trippings.											



[In figure above, Oscillations in frequency observed with similar magnitude across all buses of NER]



[In figure above, Oscillations in Bus Voltage magnitude seen most prominently at Agartala and Badarpur PMUs. Both are close to generators of NER (Agartala = near Palatana, AGTPP, Tripura generators ; and Badarpur = close to Kopili, Khandong, Leshka generators)

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
1	220 kV Birpara - Salakati I	POWERGRID	**POWERGRID**	**29-08-2016 04:27**	Birpara	DP, ZI, R-E	Successful operation	No	No	-	-	29-08-2016 04:53	No SPS	-
					Salakati	DP, ZI, R-E, 121 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to inform later after gathering details from ERTS												
	Remedial Measures													
2	400 kV Ranganadi-Biswanath Charali 1I	POWERGRID	**NEEPCO & POWERGRID**	**29-08-2016 21:04**	Ranganadi	DP, ZI, B-E, 7.61 Kms.	Not Furnished	No	No	-	-	29-08-2016 21:16	No SPS	-
					Biswanath Charali	DP, ZII, B-E, 131 Kms.	Successful operation	Yes	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													
3	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**29-08-2016 14:29**	Khliehriat (PG)	DP, ZI, R-Y-B-E, 80.69 Kms.	Not Furnished	No	No	-	-	29-08-2016 14:48	No SPS	-
					Khliehriat(ME)	No tripping	Not Furnished	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													
4	220 kV Misa - Mariani(AS)	POWERGRID	**POWERGRID & AEGCL**	**30-08-2016 01:30**	Misa	DP, ZI, R-E, 142.6 Kms.	Not Furnished	No	No	-	-	30-08-2016 03:04	No SPS	-
					Mariani (AS)	DP, ZI, R-E, 15.71 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
5	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**30-08-2016 03:03**	Mariani(PG)	Direct Trip received	Not applicable	No	No	-	-	30-08-2016 13:47	No SPS	-
					Mokokchung(PG)	Over Voltage	Not applicable	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													
6	132 kV Silchar - Srikona I	POWERGRID	**POWERGRID & AEGCL**	**30-08-2016 14:39**	Silchar	SPS I operated	Not applicable	Yes	No	-	-	30-08-2016 14:49	SPS 1 operated	-
					Srikona		Not applicable	No	No					
	132 kV Silchar - Srikona II	POWERGRID	**POWERGRID & AEGCL**	**30-08-2016 14:39**	Silchar		Not applicable	Yes	No	-	-	30-08-2016 15:36	SPS 1 operated	-
					Srikona		Not applicable	No	No					
	132 kV Silchar - Panchgram	POWERGRID & AEGCL	**POWERGRID & AEGCL**	**30-08-2016 14:39**	Silchar		Not applicable	No	No	-	-	30-08-2016 15:02	SPS 1 operated	-
					Panchgram		Not applicable	No	No					
	132 kV Badarpur - Panchgram	POWERGRID	**POWERGRID & AEGCL**	**30-08-2016 14:39**	Badarpur		Not applicable	No	No	-	-	30-08-2016 15:07	SPS 1 operated	-
					Panchgram		Not applicable	No	No					
	Root Cause	Operation of SPS												
	Remedial Measures													
7	132 kV Surjamaninagar-Palatana II	POWERGRID	**TSECL & OTPC**	**30-08-2016 17:00**	Surjamaninagar	DP, ZI, R-E,15.52 Kms.	Not Furnished	No	No	-	-	30-08-2016 17:41	No SPS	-
					Palatana	DP, ZI, R-E,19.84 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
8	132 kV Biswanath Charali-Pavoi I	POWERGRID	**POWERGRID & AEGCL**	**30-08-2016 18:21**	Biswanath Charali	DP, ZI, R-E, 2.8 Kms.	Not Furnished	Yes	No	-	-	30-08-2016 18:48	No SPS	-
					Pavoi	DP, ZI, R-E, 7.719 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													
9	220 kV BTPS - Salakati I	POWERGRID	**AEGCL & POWERGRID**	**31-08-2016 17:45**	BTPS	Tripped	Not Furnished	No	No	-	-	31-08-2016 18:48	No SPS	-
					Salakati	No tripping	Not Furnished	No	No					
	220 kV BTPS - Salakati II	POWERGRID	**AEGCL & POWERGRID**	**31-08-2016 17:45**	BTPS	Not Furnished	Not Furnished	No	No	-	-	31-08-2016 19:01	No SPS	-
					Salakati	Due to tripping of Bus Coupler	Not Furnished	No	No					
	220/132 kV, 50 MVA ICT I at Salakati	POWERGRID	POWERGRID	**31-08-2016 17:45**	Salakati	Earth Fault	Not applicable	No	No	-	-	31-08-2016 19:22	No SPS	-
	Root Cause	AEGCL / NERTS to inform later												
	Remedial Measures													
10	132 kV AGTPP - Agartala II	POWERGRID	**NEEPCO & TSECL**	**31-08-2016 08:01**	AGTPP	No tripping	Not Furnished	No	No	-	-	31-08-2016 14:46	No SPS	-
					Agartala	Not Furnished	Not Furnished	No	No					
	Root Cause	NEEPCO to check further. How fault cleared is not apparent from available details												
	Remedial Measures													
11	132 kV AGTPP - Agartala II	POWERGRID	**NEEPCO & TSECL**	**31-08-2016 23:44**	AGTPP	DP, ZI, Y-B-E, 2.124 Kms.	Not Furnished	No	No	-	-	01-09-2016 11:50	No SPS	-
					Agartala	Not Furnished	Not Furnished	No	No					
	Root Cause	Y-ph jumper opened at location no.15. Agartala end also tripped												
	Remedial Measures													

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
12	220 kV Birpara - Salakati I	POWERGRID	**POWERGRID**	**31-08-2016 17:45**	Birpara	Directional Earth Fault	Not applicable	No	No	-	-	31-08-2016 19:15	No SPS	-
					Salakati	No tripping	Not applicable	No	No					
	Root Cause	NERTS to inform later after gathering details from ERTS												
	Remedial Measures													
13	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**31-08-2016 00:01**	Jiribam	DP, ZI, R-Y-B-E, 34.78 Kms.	Not Furnished	Yes	No	-	-	31-08-2016 00:19	No SPS	-
					Aizawl	DP, ZI, R-Y-B-E, 132.9 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to inform later												
	Remedial Measures													
14	220 kV Birpara - Salakati I	POWERGRID	**POWERGRID**	**01-09-2016 23:22**	Birpara	Not Furnished	Not Furnished	No	No	-	-	02-09-2016 00:17	No SPS	-
					Salakati	DP, ZI, R-E, 83.66 Kms.	Not Furnished	Yes	No					
	220 kV Birpara - Salakati II	POWERGRID	**POWERGRID**	**01-09-2016 23:22**	Birpara	Not Furnished	Not Furnished	No	No	-	-	02-09-2016 01:03	No SPS	-
					Salakati	DP, ZI, R-Y-E, 49.59 Kms.	Not Furnished	Yes	No					
	Root Cause	Fault due to lightning. Simulataneous lightning strike at 2 different locations.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
15	132 kV Aizwal - Kumarghat	POWERGRID	**POWERGRID**	**03-09-2016 12:40**	Aizawl	DP, ZI, Y-E, 21 Kms.	Successful operation	Yes	No	-	-	03-09-2016 12:45	No SPS	-
					Kumarghat	DP, ZII, Y-E, 105 Kms.	Not Furnished	Yes	No					
	Root Cause	Iy lags Vy by 15 degree. Banana tree touched line. Banana trees slided from uphill side and touched circuit between loc 53-54												
	Remedial Measures	Vegetation clearance in vulnerable areas to be done by POWERGRID												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
16	132 kV Haflong(PG) - Jiribam	POWERGRID	**POWERGRID**	**03-09-2016 22:28**	Haflong(PG)	DP, ZI, R-Y-B-E, 70.03 Kms.	Not Furnished	Yes	No	-	-	Not Yet Restored	No SPS	-
					Jiribam	DP, ZI, R-Y-B-E, 21.75 Kms.	Not Furnished	Yes	No					
	Root Cause	Ir lags Vy lags by 70 deg. At Loc No. 241 Y-ph insulator damaged and decapped, location flooded. Likely strike of lightning on insulator.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
17	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**04-09-2016 22:58**	Rangia	No tripping	Not Furnished	No	No	-	-	04-09-2016 23:33	No SPS	-
					Motonga	Distance Protection	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												
18	220 kV Misa - Mariani(PG)	POWERGRID	**POWERGRID**	**05-09-2016 22:06**	Misa	DP, ZI, Y-E,88.5 Kms.	Successful operation	Yes	No	-	-	05-09-2016 23:15	No SPS	-
					Mariani (PG)	DP, ZI, Y-E,99.5 Kms.	Not Furnished	No	No					
	Root Cause	Iy lags Vy by 72 deg Lightning fault. Flahover marks found at Loc 800-801 due to lightning.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
19	132 kV Silchar-P K Bari II	POWERGRID	**POWERGRID & TSECL**	**05-09-2016 20:33**	Silchar	DP, ZI, R-E,71.07 Kms.	Not Furnished	Yes	No	-	-	05-09-2016 21:00	No SPS	-
					PK Bari	DP, ZI, R-E,91.74 Kms.	Not Furnished	No	No					
	Root Cause	Fault current in faulty phase around 1.57 kA ; Angle b/w V & I in faulty phase around 70 degree ; Likely tripping due to lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
20	220 kV Misa - Mariani(PG)	POWERGRID	**POWERGRID**	**06-09-2016 15:31**	Misa	Over Voltage	Not applicable	Yes	No	-	-	06-09-2016 15:46	No SPS	-
					Mariani (PG)	Direct Trip received	Not applicable	No	No					
	Root Cause	DR indicates maximum Ph. Voltage of around 137 kV (viz. 237 kV). No overvoltage is present. Likely maloperation of protection.												
	Remedial Measures	NERTS to check and intimate to PCC forum												
21	132 kV Salakati-Gelephu	POWERGRID	**POWERGRID & BPC**	**06-09-2016 04:28**	Salakati	DP, ZIII, R-Y-B-E,63 Kms.	Not applicable	Yes	No	-	-	06-09-2016 04:52	No SPS	-
					Gelephu	No tripping	Not applicable	No	No					
	Root Cause	Fault in Bhutan system as found from Relay indications												
	Remedial Measures	NERTS to co-ordinate with BPC, Bhutan to maintain healthiness of line												
22	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**06-09-2016 13:30**	Rangia	No tripping	Not Furnished	No	No	-	-	06-09-2016 22:32	No SPS	-
					Motonga	Not Furnished	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												
23	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**07-09-2016 09:52**	Doyang	Over Current,B-Phase	Not applicable	No	No	-	-	07-09-2016 10:40	No SPS	-
					Mokokchung(NA)	No tripping	Not applicable	No	No					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
24	400 kV Palatana - Silchar I	NETC	**OTPC & POWERGRID**	**08-09-2016 11:17**	Palatana	DP, ZI, R-E,196.1 Kms.	Not Furnished	No	No	-	-	08-09-2016 11:34	No SPS	-
					Silchar	DP, ZI, R-E,39.11 Kms.	Lockout	No	No					
	Root Cause	NETC has indicated that tripping was on account of vegetation infringement. It is also mentioned that Routine maintenance of this is suspended due to objection of line owner, and that 3 cases are pending in this regard before District Judge, Hailakandi.												
	Remedial Measures	Matter is serious considering this 400 kV D/C Palatana - Silchar lines serve as the evacuation path of Palatana. NERPC may take up with relevant authorities for resolution												
25	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	**POWERGRID & MePTCL**	**09-09-2016 01:43**	Khliehriat (PG)	DP, ZI, R-Y-B-E,67.78 Kms.	Not operated	No	No	Loss of Generation: 126	-	09-09-2016 02:09	No SPS	-
					Khliehriat(ME)	No tripping	Not operated	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**		Khliehriat (PG)	DP, ZI, R-Y-B-E,41.41 Kms.	Not Furnished	No	No			09-09-2016 02:12	No SPS	
					Khliehriat(ME)	No tripping	Not Furnished	No	No					
	Root Cause	Khl-Khl I: Ir lags Vr by 75 deg. Likely tripping on account of lightning strike. MePTCL to further investigate as to the location of the lightning strike and identify lightning prone areas for remedial measures like reduction of Tower footing resistance or Installation of Line LAs.												
	Remedial Measures	MePTCL to further investigate as to the location of the lightning strike and identify lightning prone areas for remedial measures like reduction of Tower footing resistance or Installation of Line LAs. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												
26	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**10-09-2016 15:10**	Khliehriat (PG)	Earth Fault	Not applicable	No	No	-	-	10-09-2016 15:38	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Problem in Meghalaya state system that was not cleared by relays at Khliehriat (MePTCL)												
	Remedial Measures	MePTCL to further investigate as to the location of the lightning strike and identify lightning prone areas for remedial measures like reduction of Tower footing resistance or Installation of Line LAs. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
27	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**11-09-2016 09:55**	Doyang	Over current	Not applicable	No	No	-	-	11-09-2016 10:55	No SPS	-
					Mokokchung(NA)	No tripping	Not applicable	No	No					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												
28	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**12-09-2016 10:05**	Doyang	Over current	Not applicable	NA	NA	-	-	12-09-2016 12:49	No SPS	-
					Mokokchung(NA)	Not Furnished	Not applicable	NA	NA					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												
29	132 kV Haflong(PG) - Jiribam	POWERGRID	**POWERGRID**	**13-09-2016 20:04**	Haflong(PG)	DP, ZI, R-Y-E,58.73 Kms.	Not operated	No	No	-	-	13-09-2016 20:25	No SPS	-
					Jiribam	DP, ZI, R-Y-E,33.85 Kms.	Not operated	Yes	No					
	Root Cause	Iy lags Vy by 80 Deg in faulty phase. Tripping on account of lightning.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
30	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**14-09-2016 14:44**	Khliehriat (PG)	DP, ZI, R-Y-B	Not applicable	No	No	-	-	14-09-2016 15:02	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Iy lags Vy by 80 deg Lightening fault. FAULT BEYOND LINE LENGTH.												
	Remedial Measures	MePTCL to further investigate as to the location of the lightning strike and identify lightning prone areas for remedial measures like reduction of Tower footing resistance or Installation of Line LAs. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												

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क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
31	132 kV Salakati-Gelephu	POWERGRID	**POWERGRID & BPC**	**15-09-2016 22:49**	Salakati	DP, ZII, R-Y-B,59.54 Kms.	Not applicable	No	No	-	-	15-09-2016 23:07	No SPS	-
					Gelephu	No Trip Bus Dead	Not applicable	No	No					
	Root Cause	Fault in Bhutan system as found from Relay indications												
	Remedial Measures	NERTS to co-ordinate with BPC, Bhutan to maintain healthiness of line												
32	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**15-09-2016 22:31**	Rangia	Not Furnished	Not Furnished	No	No	-	-	15-09-2016 23:51	No SPS	-
					Motonga	Not Furnished	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												
33	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**16-09-2016 14:54**	Khliehriat (PG)	No tripping	Not applicable	No	No	-	-	16-09-2016 15:21	No SPS	-
					Khliehriat(ME)	Earth Fault	Not applicable	No	No					
	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**16-09-2016 14:54**	Khandong	O/C	Successful operation	No	No	-	-	16-09-2016 15:08	No SPS	-
					Khliehriat(PG)	DP, ZI, R-Y-B, 32.78 Kms.	Successful operation	No	No					
	132 kV Khandong - Khliehriat(PG) II	POWERGRID	**NEEPCO & POWERGRID**	**16-09-2016 14:54**	Khandong	Earth Fault	Not operated	No	No	-	-	16-09-2016 15:25	No SPS	-
					Khliehriat(PG)	DP, ZII, R-Y-B,36 Kms.	Not operated	No	No					
	Root Cause	Kha-Khl I: Ib lags Vb by 65 deg Lightening fault. Khan-Khl II: Iy lags Vy by 75 deg Lightening fault.												
	Remedial Measures	NEEPCO to co-ordinate relay settings with NERTS so that 132 kV Khandong - Khliehriat D/C line does not trip on unwanted relay operation. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												
34	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**16-09-2016 00:11**	Rangia	Not Furnished	Not Furnished	No	No	-	-	16-09-2016 02:05	No SPS	-
					Motonga	Not Furnished	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												

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क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
35	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**16-09-2016 11:02**	Rangia	No tripping	Not Furnished	No	No	-	-	16-09-2016 11:17	No SPS	-
					Motonga	Not Furnished	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												
36	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**16-09-2016 17:46**	Rangia	No tripping	Not Furnished	No	No	-	-	16-09-2016 19:15	No SPS	-
					Motonga	Not Furnished	Not Furnished	No	No					
	Root Cause	AEGCL confirmed that Rangia was being fed from Motonga, and that fault was within their system. Exact location of fault could not be gathered due to absence of proper relay indications.												
	Remedial Measures	AEGCL to do proper maintenance of their line section and also take up with BPC, Bhutan for the same in respective line section.												
37	132 kV Loktak - Imphal (PG)	POWERGRID	**NHPC & POWERGRID**	**16-09-2016 11:19**	Loktak	DP, ZI, R-B-E,9.32 Kms.	Not Furnished	Yes	No	-	-	16-09-2016 11:28	No SPS	-
					Imphal (PG)	DP, ZII, B-E,34.26 Kms.	Successful operation	Yes	No					
	Root Cause	Ib lags Vb by 26 deg . Brioken tree from uphill side was found very near to B-ph conductor at Loc 23-24												
	Remedial Measures	Vegetation clearance in vulnerable areas in line sections to be done by POWERGRID												
38	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**17-09-2016 01:08**	Jiribam	DP, ZI, R-E,136.3 Kms.	Not Furnished	No	No	-	-	17-09-2016 01:22	No SPS	-
					Aizawl	DP, ZI, R-E,8.376 Kms.	Successful operation	Yes	No					
	Root Cause	Ir lags Vr by 65 Deg. Suspected vegetation fault.												
	Remedial Measures	Vegetation clearance in vulnerable areas in line sections to be done by POWERGRID												
39	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**17-09-2016 13:38**	Khliehriat (PG)	DP, ZI, R-Y-B,119.9 Kms.	Successful operation	No	No	-	-	17-09-2016 14:00	No SPS	-
					Khliehriat(ME)	No tripping	Successful operation	No	No					
	Root Cause	Problem in Meghalaya state system that was not cleared by relays at Khliehriat (MePTCL)												
	Remedial Measures	MePTCL to further investigate as to the location of the lightning strike and identify lightning prone areas for remedial measures like reduction of Tower footing resistance or Installation of Line LAs. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
40	132 kV Khandong - Khliehriat(PG) II	POWERGRID	**NEEPCO & POWERGRID**	**17-09-2016 14:22**	Khandong	DP, ZI, R-E	Not Furnished	No	No	-	-	17-09-2016 14:37	No SPS	-
					Khliehriat(PG)	DP, ZI, R-E,27.01 Kms.	Successful operation	No	No					
	Root Cause	Ir lags Vr by 75 deg in faulty phase. Likely tripping on account of Lightening strike. For 1-phase fault, A/R should have operated succesfully, but did not at Khandong end												
	Remedial Measures	Cause of Non-operation of Auto-reclose at Khandong end to be investigated by NEEPCO. Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
41	400 kV Silchar - Byrnihat	NETC & MePTCL	**POWERGRID & MePTCL**	**17-09-2016 14:34**	Silchar	DP, ZI, R-E,148 Kms.	Not Furnished	Yes	No	-	-	17-09-2016 15:13	No SPS	-
					Byrnihat	DP, ZI, R-E	Not Furnished	No	No					
	Root Cause	Ir lags Vr by 52 deg Suspected fault due to vegetation infringement.												
	Remedial Measures	Vegetation clearance in vulnerable areas in line sections to be done by NETC												
42	400 kV Balipara-Biswanath Charali II	POWERGRID	**POWERGRID**	**18-09-2016 07:00**	Balipara	Over Voltage	Successful operation	Yes	Yes	-	-	19-09-2016 12:04	No SPS	-
					Biswanath Charali	Direct Trip received	Successful operation	No	No					
	Root Cause	Overvoltage could not be seen from DR (238 kV Phase volt viz. 412 kV L-L). From PMU, maximum voltage seen at Balipara and Bongaigaon respectively were 416 kV andd 409 kV. Relay mal-operation												
	Remedial Measures	NERTS to check Overvoltage relay settings on this line												
43	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**18-09-2016 10:56**	Khandong	DP, ZI, R-Y-B,22.72 Kms.	Not Furnished	No	No	-	-	18-09-2016 11:05	No SPS	-
					Khliehriat(PG)	DP, ZI, R-Y-B,22.16 Kms.	Successful operation	No	No					
	Root Cause	Tripped due to lightning. 3.6 kA in all 3 phases, Iy lags Vy by 67 deg. Likely tripping on account off lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
44	220/132 kV 50 MVA ICT II at Balipara	AEGCL	POWERGRID	**18-09-2016 06:57**	Balipara	Buchholz relay operated	Not applicable	No	No	-	-	Not Yet Restored	No SPS	-
	Root Cause	Transformer damaged due to internal fault.												
	Remedial Measures	Already replaced by NEEPCO. Maintenance of transformers to be done properly by NEEPCO.												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
45	400 kV Bongaigaon - Azara	NETC & AEGCL	**POWERGRID & AEGCL**	**19-09-2016 01:21**	Bongaigaon	DP, ZI, R-E,160.79 Kms.	Successful operation	Yes	No	-	-	19-09-2016 01:51	No SPS	-
					Azara	DP, ZI, R-E,145.4 Kms.	Not Furnished	No	No					
	400 kV Balipara - Bongaigaon II	POWERGRID	**POWERGRID**	**19-09-2016 01:21**	Balipara	No tripping	Not applicable	No	No	-	-	19-09-2016 01:39	No SPS	-
					Bongaigaon	Power Swing	Not applicable	Yes	No					
	Root Cause	Bon-Azara: Ir Lags Vr by 65 Deg, Lightening fault. Bali-Bong II: Tripped due to powerswing at Bongaigaon end												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
46	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**19-09-2016 17:17**	Doyang	Over current	Not applicable	No	No	-	-	19-09-2016 17:50	No SPS	-
					Mokokchung(NA)	Not Furnished	Not applicable	No	No					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												
47	220 kV Misa - Byrnihat II	MePTCL	**POWERGRID & MePTCL**	**20-09-2016 13:43**	Misa	No tripping	Not Furnished	No	No	-	-	21-09-2016 16:44	No SPS	-
					Byrnihat	DP, ZI, B-E,32.69 Kms.	Not Furnished	No	No					
	Root Cause	MePTCL and NERTS to give further details in respect of this tripping												
	Remedial Measures													
48	132 kV AGTPP - Kumarghat	POWERGRID	**NEEPCO & POWERGRID**	**20-09-2016 04:04**	AGTPP	DP, ZI, B-E,61.35 Kms.	Not operated	No	No	Loss of Generation: 20	-	20-09-2016 04:32	SPS 6 operated	-
					Kumarghat	DP, ZI, R-Y-E,37.5 Kms.	Not operated	Yes	No					
	Root Cause	Ir lags Vr by 75 deg.Flashover marks found on insulator, Flashover marks at loc 213. Likely tripping on account of lightning												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
49	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**20-09-2016 05:50**	Doyang	Over current	Not applicable	No	No	-	-	20-09-2016 06:50	No SPS	-
					Mokokchung(NA)	No tripping	Not applicable	No	No					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												
50	132 kV Badarpur - Jiribam	POWERGRID	**POWERGRID**	**20-09-2016 08:25**	Badarpur	DP, ZI, R-E,17.97 Kms.	Lockout	No	No	-	-	20-09-2016 08:40	No SPS	-
					Jiribam	DP, ZI, R-E	Lockout	No	No					
	Root Cause	Ir Lags Vr by 70 deg. Flash over marks observed in R-ph of Loc 66. Likely tripping on account of lightning												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
51	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**20-09-2016 12:45**	Khliehriat (PG)	DP, ZI, R-Y-B-E,85.7 Kms. IR-1.28KA,IB-1.18KA, IC-1.26 KA	Successful operation	No	No	-	-	20-09-2016 13:02	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	Root Cause	Fault within Meghalaya system that was cleared by remote end relays at Khliehriat(PG) substation, due to absence of relays at Khliehriat(MePTCL) end												
	Remedial Measures	MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												
52	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**21-09-2016 10:36**	Khliehriat (PG)	DP, ZI, R-Y-B,103.2 Kms.	Not applicable	No	No	-	-	21-09-2016 10:50	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	NA	NA					
	Root Cause	Ib lags Vb by 60 deg. Low fault current. Suspected vegetation fault.												
	Remedial Measures	MePTCL to ensure vegetation clearance in line sections. MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
53	132 kV Badarpur - Kolasib	POWERGRID	**POWERGRID & P&ED, Mizoram**	**21-09-2016 18:30**	Badarpur	DP, ZI, R-Y-B,35.4 Kms.	Not operated	Yes	No	-	-	21-09-2016 19:26	No SPS	-
					Kolasib	DP, ZIII, R-Y-B,68.2 Kms.	Not operated	No	No					
	Root Cause	Ib lags Vb by 74 deg. Jumper strand demaged at LOC 124 due to lightening. Likely fault on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
54	220 kV Misa - Byrnihat I	MePTCL	**POWERGRID & MePTCL**	**21-09-2016 09:55**	Misa	DP, ZI, B-E,85.9 Kms.	Not Furnished	No	No	-	-	21-09-2016 10:17	No SPS	-
					Byrnihat	Not Furnished	Not Furnished	No	No					
	Root Cause	MePTCL and NERTS to give further details in respect of this tripping.												
	Remedial Measures													
55	132 kV Haflong-Umrangso	POWERGRID & AEGCL	**POWERGRID & AEGCL**	**22-09-2016 13:07**	Haflong	E/F, B-Ph O/C	Not operated	No	No	-	-	22-09-2016 13:55	No SPS	-
					Umrangso	DP, ZIII, R-Y-B,10.5 Kms.	Not operated	No	No					
	Root Cause	Ib lags Vb by 65 deg. Flash over marks found in B-ph insulator of Loc 63. Likely tripping on account of lightning.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
56	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**23-09-2016 11:13**	Khliehriat (PG)	DP, ZI, R-Y-B, 86.42 Kms.	Not applicable	No	No	-	-	23-09-2016 12:42	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Fault within Meghalaya system that was cleared by remote end relays at Khliehriat(PG) substation, due to absence of relays at Khliehriat(MePTCL) end												
	Remedial Measures	MePTCL to install Numerical relays on all outgoing feeders from Khliehriat(MePTCL) s/s and co-ordinate with NERTS for review of the protection system after relay installation.												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
57	132 kV Aizwal - Kumarghat	POWERGRID	**POWERGRID**	**23-09-2016 12:31**	Aizawl	Earth Fault	Not applicable	Yes	No	-	-	23-09-2016 12:42	No SPS	-
					Kumarghat	DP, ZI, Y-E,102.4 Kms.	Not applicable	Yes	No					
	Root Cause	Iy lags Vy by 30 deg, Suspected vegetation fault. Insulator flash over mark at Y-ph in LOC 33.												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by NERTS												
58	132 kV Aizwal - Kumarghat	POWERGRID	**POWERGRID**	**23-09-2016 17:14**	Aizawl	DP, ZI, Y-E,109.2 Kms.	Successful operation	Yes	No	-	-	23-09-2016 17:29	No SPS	-
					Kumarghat	DP, ZI, Y-E,11.56 Kms.	Successful operation	Yes	No					
	Root Cause	Fault current growing gradually. Angle b/w V & I in faulty phase max. 19 deg. Tripping likely due to vegetation infringment.												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by NERTS												
59	132 kV Biswanath Charali-Pavoi I	POWERGRID	**POWERGRID & AEGCL**	**23-09-2016 00:15**	Biswanath Charali	DP, ZI, R-Y-E,3.61 Kms.	Not operated	Yes	No	-	-	23-09-2016 01:10	No SPS	-
					Pavoi	Not Furnished	Not operated	No	No					
	132 kV Biswanath Charali-Pavoi II	POWERGRID	**POWERGRID & AEGCL**	**23-09-2016 00:15**	Biswanath Charali	DP, ZI, R-Y-E,4.43 Kms.	Not operated	Yes	No	-	-	23-09-2016 01:10	No SPS	-
					Pavoi	Not Furnished	Not operated	No	No					
	Root Cause	BNC-Pavoi: Ir lags Vr by 76 deg Lightening fault. BNC-Pavoi II: Iy lags Vy by 72 deg Lightening fault.												
	Remedial Measures	AEGCL to furnish relay details in respect of every tripping. Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
60	400 kV Ranganadi-Biswanath Charali 1	POWERGRID	**NEEPCO & POWERGRID**	**23-09-2016 16:10**	Ranganadi	Over Voltage	Not Furnished	No	No	-	-	23-09-2016 16:25	No SPS	-
					Biswanath Charali	DP, ZI, B-E,45.82 Kms.	Successful operation	No	No					
	Root Cause	Heavy lightening has been reported. DR from either end is not available. Snaps of Accuweather do not prove fault on account on lightning. NERTS to provide further details in respect of this tripping												
	Remedial Measures													

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
61	400 kV Bongaigaon - New Siliguri I	POWERGRID	**POWERGRID**	**24-09-2016 23:29**	Bongaigaon	DP, ZI, R-B-E,50.32 Kms.	Not Furnished	Yes	No	-	-	25-09-2016 00:03	No SPS	-
					New Siliguri	DP, ZI, R-B-E,190.52 Kms.	Not Furnished	No	No					
	400 kV Bongaigaon - New Siliguri II	POWERGRID	**POWERGRID**	**24-09-2016 23:29**	Bongaigaon	DP, ZI, R-B-E,56.11 Kms.	Not Furnished	Yes	No	-	-	24-09-2016 23:58	No SPS	-
					New Siliguri	DP, ZI, R-B-E,190.52 Kms.	Not Furnished	No	No					
	Root Cause	NERTS to confirm the details after collecting relevant information.												
	Remedial Measures													
62	220 kV Kopili - Misa I	POWERGRID	**NEEPCO & POWERGRID**	**24-09-2016 10:07**	Kopili	DP, ZI, B-E, 5.365 kms	Successful operation	No	No	-	-	24-09-2016 10:50	No SPS	-
					Misa	DP, ZI, B-E,67 Kms.	Not Furnished	Yes	No					
	Root Cause	Bamboo came down from uphill location and touched line ; due to heavy rain. Ib = 2.26 KA. Fault on account of vegetation infringement												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by NERTS												
63	132 kV Loktak - Jiribam(PG)	POWERGRID	**NHPC & POWERGRID**	**25-09-2016 01:26**	Loktak	DP, ZII, R-Y-B,82.58 Kms.	Not applicable	No	No	-	-	25-09-2016 01:54	No SPS	-
					Jiribam(PG)	DP, ZI, B-E,11.2 Kms.	Successful operation	Yes	No					
	Root Cause	Ib lags Vb by 65 Deg. Ib = 2.719 KA. Likely tripping on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
64	132 kV Badarpur - Jiribam	POWERGRID	**POWERGRID**	**25-09-2016 01:59**	Badarpur	DP, ZII, R-E,64.24 Kms.	Not operated	Yes	No	-	-	25-09-2016 02:20	No SPS	-
					Jiribam	DP, ZI, R-E,12.7 Kms.	Not operated	No	No					
	Root Cause	Ir Lags Vr by 68 Deg. Flash over marks observed in R-ph of Loc 189. Likely tripping on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
65	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**26-09-2016 13:13**	Khandong	DP, ZI, R-Y-B, 17.1 Kms.	Not Furnished	Yes	No	-	-	26-09-2016 13:21	No SPS	-
					Khliehriat(PG)	DP, ZI, R-Y-E, 30.22 Kms.	Successful operation	No	No					
	Root Cause	Khlt A/R successfully. Ir by Vr by 86 deg. High fault current. Likely tripping on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
66	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**26-09-2016 13:47**	Khandong	DP, ZI, R-Y-B, 17.06 Kms.	Not Furnished	No	No	-	-	26-09-2016 13:53	No SPS	-
					Khliehriat(PG)	DP, ZI, R-Y-E, 36.71 Kms.	Successful operation	No	No					
	Root Cause	All phase currents around 2.3 kA. Iy lags Vy by 74 deg. Likely tripping on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
67	220 kV BTPS - Agia II	AEGCL	**AEGCL**	**26-09-2016 13:57**	BTPS	Not Furnished	Not applicable	No	No	-	-	26-09-2016 15:18	No SPS	-
					Agia	Not Furnished	Not applicable	No	No					
	Root Cause	Details to be furnished by AEGCL in respect of this tripping												
	Remedial Measures													
68	**220/132 kV 80 MVA ICT at BTPS**	AEGCL	AEGCL	**26-09-2016 13:57**	BTPS	Not Furnished	Not applicable	No	No	-		26-09-2016 15:11	No SPS	-
	Root Cause	3 phase trip, DP as recorded by relays at both ends of 220 kV BTPS - Agia II line. ICT E/F on HV side. Protection interfacing exists in ICT and hence LV side E/F would also have operated. Jumper snapped on BTPS-Agia line as mentioned by AEGCL to be reason of fault												
	Remedial Measures	Maintenance of line sections to be done appropriately to maintain healthiness of line.												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
69	132 kV Doyang - Mokokchung(NA)	DoP Nagaland	**NEEPCO & DoP,Nagaland**	**26-09-2016 10:54**	Doyang	Not Furnished	Not Furnished	No	No	-	-	26-09-2016 11:05	No SPS	-
					Mokokchung(NA)	No tripping	Not Furnished	No	No					
	Root Cause	NEEPCO to check and confirm. As intimated by Sh.Joypal Roy, Sr.Manager (NEEPCO), details from Doyang HEP could not be gathered.												
	Remedial Measures	Matter may be raised in PCC forum and take up individually with Doyang HEP regarding non-furnishing of informtion												
70	132 kV Silchar-P K Bari II	POWERGRID	**POWERGRID & TSECL**	**26-09-2016 17:46**	Silchar	Mal-operated during SAS testing	Not applicable	No	No	-	-	26-09-2016 17:58	No SPS	-
					PK Bari	No tripping	Not applicable	No	No					
	Root Cause	Maloperation at Silchar(PG) end during SAS testing.												
	Remedial Measures	Rectified by NERTS												
71	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**27-09-2016 14:17**	Khandong	DP, ZII, R-Y-B, 35.7 Kms.	Not Furnished	Yes	No	-	-	27-09-2016 23:43	No SPS	-
					Khliehriat(PG)	DP, ZI, Y-E, 12.9 Kms.	Successful operation	No	No					
	Root Cause	Iy lags Vy by 46 deg. AT Loc 39 Y ph insulator Decapped and conductor grounded due to lightening. Tripping on account of lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
72	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**27-09-2016 14:17**	Khliehriat (PG)	No tripping	Not applicable	NA	NA	-	-	27-09-2016 14:42	No SPS	-
					Khliehriat(ME)	Earth Fault	Not applicable	No	No					
	Root Cause	Iy lags Vy by 46 deg. Y-phase insulator decapped at loc. 39. Tripping on account of lightning												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
73	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	**POWERGRID & MePTCL**	**28-09-2016 11:07**	Khliehriat (PG)	DP, ZI, Y-E, 16.88 Kms.	Not operated	No	No	-	-	28-09-2016 11:31	No SPS	-
					Khliehriat(ME)	No tripping	Not operated	NA	NA					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**		Khliehriat (PG)	DP, ZI, Y-E, 2.279 Kms.	Not Furnished	No	No			28-09-2016 11:37	No SPS	
					Khliehriat(ME)	No tripping	Not Furnished	NA	NA					
	Root Cause	For Khl-Khl I: Internal fault of Mehgalya, Iy lags Vy by 62 deg. Meghalaya to intimate the root cause. Likely tripping on account of lightning												
	Remedial Measures	MePTCL to install numerical relays on all outgoing feeders from Khliehriat(MePTCL) substation and further co-ordinate with NERTS for protection relay settings.												
74	132 kV Badarpur - Panchgram	POWERGRID	**POWERGRID & AEGCL**	**28-09-2016 23:52**	Badarpur	DP, ZIII, R-E, 25.6 Kms.	Not applicable	Yes	No	-	-	29-09-2016 00:19	No SPS	-
					Panchgram	Earth Fault	Not applicable	No	No					
	Root Cause	Fault within AEGCL system that was not cleared on time												
	Remedial Measures	AEGCL to co-ordinate relay settings with that of NERTS to ensure unwanted tripping does not occur												
75	132 kV Silchar - Panchgram	POWERGRID & AEGCL	**POWERGRID & AEGCL**	**28-09-2016 23:48**	Silchar	Earth Fault	Not applicable	Yes	No	-	-	29-09-2016 00:17	No SPS	-
					Panchgram	No tripping	Not applicable	No	No					
	Root Cause	Likely fault in downstream of AEGCL system. AEGCL to confirm.												
	Remedial Measures	AEGCL to co-ordinate relay settings with that of NERTS to ensure unwanted tripping does not occur												
76	400 kV Bongaigaon - New Siliguri III	ENICL	**POWERGRID**	**28-09-2016 17:27**	Bongaigaon	DP, ZI, B-Y-E, 54.4 Kms.	Not Furnished	Yes	No	-	-	29-09-2016 15:25	No SPS	-
					New Siliguri	DP, ZI, Y-B-E	Not Furnished	No	No					
	Root Cause	NERTS to confirm the details after collecting relevant information.												
	Remedial Measures													

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
77	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**28-09-2016 03:50**	Mariani(PG)	DP, ZI, Y-E,	Not operated	No	No	-	-	28-09-2016 04:16	No SPS	-
					Mokokchung(PG)	Over Voltage	Not operated	No	No					
	Root Cause	Tripped due to over voltage. From DR, Maximum voltage of 141 kV (L-G) viz. 244 kV L-L was observed. Maximum band of O/V permitted by IEGC is 245 kV for 220 kV level. This relay should not have operated to cause tripping even before the IEGC band was breached.												
	Remedial Measures	NERTS to rectify relay settings so that unwanted tripping does not occur												
78	132 kV Dimapur - Imphal	POWERGRID	**POWERGRID**	**28-09-2016 10:36**	Dimapur	DP, ZII, R-E, 91.85 Kms.	Successful operation	Yes	No	-	-	28-09-2016 10:57	No SPS	-
					Imphal	DP, ZI, R-E, 59.43 Kms.	Successful operation	Yes	No					
	Root Cause	Ir lags Vr by 31 deg. Fault due to vegetation infringment. AR attempted at both end.												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by NERTS												
79	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**28-09-2016 23:36**	Jiribam	DP, ZI, R-Y-E, 54 Kms.	Not Furnished	Yes	No	-	-	29-09-2016 00:04	No SPS	-
					Aizawl	DP, ZI, R-Y-B, 33.94 Kms.	Successful operation	Yes	No					
	Root Cause	Patrolling report indicates broken insulator. Cause of tripping is not on account of any natural calamity or reasons beyond control of Transmission Licensee. Also, it is not clear how broken insulator disk was repaired in 30 minutes and line restored. NERTS to clarify the cause of this tripping												
	Remedial Measures	Proper maintenance activites are to be done by NERTS using trained manpower in forested areas												
80	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**28-09-2016 23:53**	Khliehriat (PG)	No tripping	Not applicable	NA	NA	-	-	29-09-2016 00:03	No SPS	-
					Khliehriat(ME)	Earth Fault	Not applicable	No	No					
	Root Cause	Ir lags Vr by 20 deg. Vegetation fault, Disc insulator found broken in R-ph Loc 185.												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by MePTCL.												

List of Element Tripping during September'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
81	220 kV Azara - Sarusajai I	AEGCL	**AEGCL**	**29-09-2016 08:45**	Azara	Not Furnished	Not Furnished	No	No	-	-	29-09-2016 12:59	No SPS	-
					Sarusajai	General Trip	Not Furnished	No	No					
	Root Cause	Fault on line section as confirmed by AEGCL. Transient fault. Not much vegetation exists in line section. Exact reason of fault could not be determined due to absence of complete information												
	Remedial Measures	AEGCL to maintain healthiness of line, and do patrolling after trippings to get reason for fault. Transient faults are usually due to vegetation infringment or lightning strikes. AEGCL to check the line section is clear of vegetation, and in case indication about line tripping on account of lightning strike is obtained, corrective measures are to be taken												
82	132 kV Silchar-P K Bari II	POWERGRID	**POWERGRID & TSECL**	**29-09-2016 01:33**	Silchar	DP, ZI, B-E, 84 Kms.	Not Furnished	Yes	No	-	-	29-09-2016 01:54	No SPS	-
					PK Bari	Not Furnished	Not Furnished	No	No					
	Root Cause	NERTS / TSECL to provide further details. Root cause in Not clear												
	Remedial Measures													
83	132 kV Silchar - Panchgram	POWERGRID & AEGCL	**POWERGRID & AEGCL**	**29-09-2016 17:30**	Silchar	DP, ZIII, Y-E, 53.67 Kms.	Not applicable	No	No	-	-	29-09-2016 18:22	No SPS	-
					Panchgram	Not Furnished	Not applicable	No	No					
	Root Cause	Likely fault in downstream of AEGCL system. AEGCL to confirm.												
	Remedial Measures	AEGCL to co-ordinate relay settings with that of NERTS to ensure unwanted tripping does not occur												
84	132 kV Haflong(PG) - Jiribam	POWERGRID	**POWERGRID**	**30-09-2016 12:32**	Haflong(PG)	DP, ZII, Y-E, 87.63 Kms.	Not Furnished	Yes	No	-	-	30-09-2016 12:47	No SPS	-
					Jiribam	DP, ZI, Y-E, 12.57 Kms.	Not Furnished	No	No					
	Root Cause	Iy lags Vy by 9 deg High resistive fault, Bamboo cut by miscrients at Loc 275-276 fell on Y-ph.												
	Remedial Measures	Vegetation clearance in line sections in forested areas / bamboo grass areas to be done on regular basis by NERTS												
85	132 kV Aizwal - Kolasib	POWERGRID	**POWERGRID & P&ED, Mizoram**	**30-09-2016 12:51**	Aizawl	DP, ZI, R-E, 19.39 Kms.	Not Furnished	No	No	-	-	30-09-2016 13:11	No SPS	-
					Kolasib	DP, ZI, R-E, 28.6 Kms.	Not Furnished	No	No					
	Root Cause	T&P Slipped and fell on conductor												
	Remedial Measures	Rectified by NERTS												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
86	132 kV Khandong - Khliehriat(PG) I	POWERGRID	**NEEPCO & POWERGRID**	**30-09-2016 13:54**	Khandong	DP, ZI, R-Y-B, 25.9 Kms.	Not Furnished	No	No	-	-	30-09-2016 14:05	No SPS	-
					Khliehriat(PG)	DP, ZI, R-Y-B, 17.7 Kms.	Successful operation	Yes	No					
	Root Cause	Ib lags Vb by 62 deg, Ib = 4.24 KA. Likely fault on account of Lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
87	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**30-09-2016 15:25**	Khliehriat (PG)	DP, ZI, R-Y-B, 88.08 Kms.	Not Furnished	No	No	-	-	30-09-2016 15:46	No SPS	-
					Khliehriat(ME)	No tripping	Not Furnished	No	No					
	Root Cause	Fault within Meghalaya system that was cleared by remote end relays at Khliehriat(PG) substation, due to absence of relays at Khliehriat(MePTCL) end												
	Remedial Measures	MePTCL to install numerical relays on all outgoing feeders from Khliehriat at the earliest and co-ordinate with NERTS.												
88	132 kV AGTPP - Kumarghat	POWERGRID	**NEEPCO & POWERGRID**	**30-09-2016 23:59**	AGTPP	DP, ZI, R-B-E, 7.356 Kms.	Not Furnished	No	No	-	-	01-10-2016 00:21	SPS-6 operated	-
					Kumarghat	DP, ZII, R-B-E, 100.6 Kms.	Not Furnished	Yes	No					
	Root Cause	As seen from DR, Ir lags Vr by 75 deg. Attached photographs show flashover marks on insulator. Tripped due to lightning strike												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LA are to be installed												
89	+/- 800 kV Biswanath Charali-Agra I	POWERGRID	**POWERGRID**	**30-09-2016 11:01**	Biswanath Charali	Mal-operation of emulsifier system	Not applicable	No	No	-	-	30-09-2016 14:06	No SPS	-
					Agra		Not applicable	No	No					
	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**	**30-09-2016 11:01**	Biswanath Charali	Mal-operation of emulsifier system	Not applicable	No	No	-	-	30-09-2016 14:06	No SPS	-
					Agra		Not applicable	No	No					
	Root Cause	Mal-operation of emulsifier system												
	Remedial Measures	Rectified by POWERGRID												

List of Element Tripping during September'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
90	220 kV Misa - Dimapur I	POWERGRID	**POWERGRID**	**01-10-2016 04:38**	Misa	Earth Fault	Not applicable	Yes	No	-	-	01-10-2016 05:25	No SPS	-
					Dimapur	DP, ZI, R-E, 43.32 Kms.	Not applicable	No	No					
	Root Cause	Details to be furnished by NERTS in respect of this tripping												
	Remedial Measures													
91	132 kV Aizwal - Kolasib	POWERGRID	**POWERGRID & P&ED, Mizoram**	**02-10-2016 09:38**	Aizawl	DP, ZI, B-E, 17.8 Kms.	Not Furnished	No	No	-	-	02-10-2016 10:28	No SPS	-
					Kolasib	DP, ZI, B-E	Not Furnished	No	No					
	Root Cause	Details to be furnished by NERTS in respect of this tripping												
	Remedial Measures													

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
1	400 kV Bongaigaon - New Siliguri II	POWERGRID	**POWERGRID**	**03-10-2016 11:46**	Bongaigaon	DP, ZI, B-E, 83.55 Kms	Not Furnished	Yes	No	-	-	03-10-2016 12:19	No SPS	-
					New Siliguri	Not Furnished	Not Furnished	No	No					
	Root Cause	DR indicates B-E fault likely due to vegetation with fault current 2.7 kA & angle between Vb&Ib around 38 degrees at Bongaigaon end.												
	Remedial Measures	Patrolling report to be submitted & Vegetation clearance to be done by POWERGRID.												
2	400 kV Bongaigaon - New Siliguri III	ENICL	**POWERGRID**	**04-10-2016 11:24**	Bongaigaon	DP, ZI, R-Y Ph, 66.38 Kms	Not applicable	Yes	No	-	-	05-10-2016 15:25	No SPS	-
					New Siliguri	Not Furnished	Not applicable	No	No					
	Root Cause	DR indicates R-Y fault without involving ground.Fault current up to 4 kA.												
	Remedial Measures	Patrolling report to be submitted by POWERGRID.												
3	400 kV Bongaigaon - New Siliguri IV	ENICL	**POWERGRID**	**04-10-2016 17:36**	Bongaigaon	DP, ZI, R-E, 68 Kms	Not Furnished	Yes	No	-	-	06-10-2016 18:08	No SPS	-
					New Siliguri	DP, ZI, R-E, 112.2 Kms	Not Furnished	No	No					
	Root Cause	DR indicates R-E fault with fault current around 3kA.AR attempted but fault persisted & converted to R-Y-E. Likely due vegetation fault.												
	Remedial Measures	Patrolling report to be submitted by POWERGRID.												

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
4	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**04-10-2016 12:36**	Khliehriat (PG)	DP, ZI, R-Y-B, 77.49 Kms	Not applicable	No	No	-	-	04-10-2016 12:50	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**04-10-2016 13:29**	Khliehriat (PG)	DP, ZI, R-B Ph, 86.5 Kms	Not applicable	No	No	-	-	04-10-2016 13:41	No SPS	-
					Khliehriat(ME)	Not Furnished	Not applicable	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**04-10-2016 13:54**	Khliehriat (PG)	DP, ZI, R-Y-B, 11.03 Kms	Not applicable	No	No	-	-	04-10-2016 14:47	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.												
5	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**03-10-2016 09:43**	Rangia	Not Furnished	Not applicable	No	No	-	-	03-10-2016 10:55	No SPS	
					Motonga	Earth Fault	Not applicable	No	No					
	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**03-10-2016 18:33**	Rangia	Over current	Not applicable	No	No	-	-	03-10-2016 19:00	No SPS	
					Motonga	Not Furnished	Not applicable	No	No					
	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**04-10-2016 09:45**	Rangia	No tripping	Not applicable	No	No	-	-	04-10-2016 11:00	No SPS	
					Motonga	DP, ZIII, B-E	Not applicable	No	No					
	132 kV Rangia - Motonga	BPC	**AEGCL & BPC**	**04-10-2016 13:34**	Rangia	Not Furnished	Not applicable	No	No	-	-	04-10-2016 15:58	No SPS	
					Motonga	Not Furnished	Not applicable	No	No					
	Root Cause	-												
	Remedial Measures	-												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
6	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	**POWERGRID & MePTCL**	**04-10-2016 12:36**	Khliehriat (PG)	DP, ZI, R-Y-B, 66.38 Kms.	Not applicable	Yes	No	-	-	04-10-2016 12:50	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.												
7	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**04-10-2016 14:31**	Jiribam	DP, ZII, R-E, 139.6 Kms	Not Furnished	Yes	No	-	-	04-10-2016 14:45	No SPS	-
					Aizawl	DP, ZI, R-Y Ph, 25.7 Kms	Not Furnished	Yes	No					
	Root Cause	DR indicates R-Y-E fault with 1.3 kA fault current in both faulty phases at Aizwal end around .8 kA at Jiribam end, fault occurred just after Vb peak, likely fault **due to lightning**												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LAs are to be installed												
8	400 kV Balipara-Biswanath Charali 1V	POWERGRID	**POWERGRID**	**05-10-2016 13:51**	Balipara	DP, ZI, B-E, 37.4 Kms	Not Furnished	Yes	No	-	-	05-10-2016 14:09	No SPS	-
					Biswanath Charali	DP, ZII, B-E, 51.02 Kms	Successful operation	No	No					
	Root Cause	DR indicates B-E fault likely due to vegetation with fault current 3 kA & angle between Vb&Ib around 20 degrees at Balipara end. As informed by POWERGRID, tree from outside corridor fell on to the line caused the tripping.												
	Remedial Measures	Vegetation clearance to be done by POWERGRID and status to be reported to NERPC & NERLDC.												
9	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**05-10-2016 14:02**	Khliehriat (PG)	DP, ZI, B-E, 85.18 Kms	Not applicable	No	No	-	-	05-10-2016 14:18	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.At one of the sub-committee meetings, NERTS had conveyed that the Zone-1 setting was 70 kms. In this case the recorded value is 85 kms. NERTS may clarify												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
10	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**06-10-2016 13:12**	Khliehriat (PG)	DP, ZI, R-Y-B, 114.7 Kms.	Not applicable	No	No	-	-	06-10-2016 13:20	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.At one of the sub-committee meetings, NERTS had conveyed that the Zone-1 setting was 70 kms. In this case the recorded value is 115 kms. NERTS may clarify												
11	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**06-10-2016 12:31**	Khliehriat (PG)	DP, ZI, R-B-E, 123.4 Kms	Not applicable	No	No	-	-	06-10-2016 12:36	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.At one of the sub-committee meetings, NERTS had conveyed that the Zone-1 setting was 70 kms. In this case the recorded value is 123 kms. NERTS may clarify												
12	132 kV Khliehriat (PG) - Khliehriat (ME) I	POWERGRID	**POWERGRID & MePTCL**	**06-10-2016 12:52**	Khliehriat (PG)	DP, ZI, R-Y-B, 70.01 Kms.	Not applicable	No	No	-	-	06-10-2016 13:01	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	132 kV Khliehriat (PG) - Khliehriat (ME) II	MePTCL	**POWERGRID & MePTCL**	**06-10-2016 12:45**	Khliehriat (PG)	DP, ZI, R-Y-B, 111.6 Kms.	Not applicable	No	No	-	-	06-10-2016 12:57	No SPS	-
					Khliehriat(ME)	No tripping	Not applicable	No	No					
	Root Cause	Due to fault in the Meghalaya system.												
	Remedial Measures	MePTCL is to install Numerical relays at their end to avoid tripping of ISTS lines.MePTCL to furnish Substation earthing status to NERLDC & NERPC.At one of the sub-committee meetings, NERTS had conveyed that the Zone-1 setting was 70 kms. In this case the recorded value is 112 kms. NERTS may clarify												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
13	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**06-10-2016 12:29**	Mariani(PG)	Over Voltage	Not applicable	No	No	-	-	06-10-2016 19:16	No SPS	-
					Mokokchung(PG)	Direct Trip received	Not applicable	No	No					
	Root Cause	Over Voltage relay mal-operated.												
	Remedial Measures	Settings of Over Voltage relay to be changed as the IEGC band allows max. steady state Vrms up to 245 kV.												
14	400 kV Balipara-Biswanath Charali II	POWERGRID	**POWERGRID**	**06-10-2016 16:08**	Balipara	Over Voltage	Not applicable	No	No	-	-	06-10-2016 17:45	No SPS	-
					Biswanath Charali	Direct Trip received	Not applicable	No	No					
	Root Cause	From DR,Vr touched around 590 kV for around 60 msec,but in Balipara PMU,this voltage spike not reflected.May be considered as real case of Over Voltage.												
	Remedial Measures	POWERGRID to furnish SOE from BNC for checking suspected filter operations.												
15	132 kV Salakati-Gelephu	POWERGRID	**POWERGRID & BPC**	**08-10-2016 01:25**	Salakati	DP, ZI, B-E, 10.8 Kms	Not Furnished	No	No	Loss of Load: 30	-	08-10-2016 01:32	No SPS	0.0004
					Gelephu	Not Furnished	Not Furnished	No	No					
	Root Cause	Fault in the line as Zone I initiated at Salakati end.												
	Remedial Measures	POWERGRID to furnish DR output of Salakati end of this line to conclude root cause & remedial measures.												
16	400 kV Palatana - Silchar II	NETC	**OTPC & POWERGRID**	**08-10-2016 10:28**	Palatana	DP, ZI, B-E, 176 Kms	Not Furnished	No	No	-	-	08-10-2016 11:39	No SPS	-
					Silchar	DP, ZI, B-E, 55.79 Kms	Successful operation	No	No					
	Root Cause	Fault in the line.Root cause could not be concluded due to unavailabilty of DR outputs from Both ends.												
	Remedial Measures	OTPC&POWERGRID to submit DR outputs of their end to conclude root cause.												

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
17	220 kV BTPS - Salakati I	POWERGRID	**AEGCL & POWERGRID**	**08-10-2016 19:57**	BTPS	Not Furnished	Not Furnished	No	No	-	-	08-10-2016 20:05	No SPS	-
					Salakati	Not Furnished	Not Furnished	No	No					
	Root Cause	Root cause could not be concluded due to unavailabilty of DR outputs&Relay indications from Both ends.												
	Remedial Measures	AEGCL&POWERGRID to submit DR outputs&Relay indications of their end to conclude root cause.												
18	220 kV Birpara - Salakati I	POWERGRID	**POWERGRID**	**09-10-2016 07:36**	Birpara	DP, ZI, R-Y Ph, 32.1 Kms	Not Furnished	No	No	-	-	09-10-2016 08:36	No SPS	-
					Salakati	DP, ZI, R-Y Ph, 120.8 Kms	Not Furnished	No	No					
	Root Cause	Fault in the line.												
	Remedial Measures	DR output of Salakati end of this line to be submitted by POWERGRID												
19	132 kV Haflong(PG) - Jiribam	POWERGRID	**POWERGRID**	**09-10-2016 01:53**	Haflong(PG)	DP, ZI, R-B-E, 78.8 Kms	Not Furnished	Yes	No	-	-	09-10-2016 02:18	No SPS	-
					Jiribam	DP, ZI, R-B-E, 27.96 Kms	Not Furnished	No	No					
	Root Cause	DR indicates R-B-E fault with fault current upto 1 kA in faulty phases at Haflong end, fault started in B-phase when Vb approched peak and later turned to be R-B-E fault when Vr just crossed peak.Likely due to lightning.NERTS may resubmit DR from Jiribam end as DR output provided doesn't belong to this particular event.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LAs are to be installed												
20	132 kV Jiribam - Pailapool	AEGCL	**POWERGRID & AEGCL**	**09-10-2016 02:41**	Jiribam	DP, ZI, R-B -E	Not Furnished	No	No	-	-	09-10-2016 06:23	No SPS	-
					Pailapool	Not Furnished	Not Furnished	No	No					
	Root Cause	Fault in the line.Root cause could not be concluded due to unavailabilty of DR outputs from Both ends.												
	Remedial Measures	AEGCL&POWERGRID to submit DR outputs of their end to conclude root cause.												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
21	132 kV Badarpur - Jiribam	POWERGRID	**POWERGRID**	**09-10-2016 02:44**	Badarpur	Earth Fault	Not applicable	No	No	-	-	09-10-2016 03:06	No SPS	-
					Jiribam	DP, ZI, R-E	Not applicable	No	No					
	Root Cause	DR indicates R-E fault with fault current upto 1.7 kA at Jiribam end and around 1.6 kA at Badapur end.Also angle between Vr & Ir around 71 deg shows the **likelihood of lightning fault.** NERTS may check the relay indication as from DR outputs provided, Z-2 initiated at Jiribam end and fault cleared in 450 msec (Does not tally with Zone-1 as claimed) where at Badarpur,fault cleared in 80 msec (Is E/F relay instantaneous? DR has non-standard channels and digital values non-readable).												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LAs are to be installed												
22	132 kV Haflong(PG) - Jiribam	POWERGRID	**POWERGRID**	**09-10-2016 02:51**	Haflong(PG)	DP, ZII, R-E, 83.11 Kms	Not Furnished	Yes	Yes	-	-	09-10-2016 03:10	No SPS	-
					Jiribam	DP, ZI, R-E, 12.75 Kms	Not Furnished	Yes	Yes					
	Root Cause	DR indicates R-E fault with fault current upto 1.8 kA at Jiribam end and around .8 kA at Haflong end.Also angle between Vr & Ir around 72 deg at Haflong and 52 deg at Jiribam indicates the likelihood of **lightning fault**.												
	Remedial Measures	Vulnerable areas to lightning to be identified, Checking of Tower footing resistances to be done, and if necessary, then Line LAs are to be installed												
23	+/- 800 kV Biswanath Charali-Agra I	POWERGRID	**POWERGRID**	**13-10-2016 01:54**	Biswanath Charali	Problem in valve cooling system at Biswanath Charali end	Not Furnished	No	No	-	-	13-10-2016 02:47	No SPS	-
					Agra		Not Furnished	No	No					
	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**		Biswanath Charali		Not Furnished	No	No			13-10-2016 02:49	No SPS	
					Agra		Not Furnished	No	No					
	Root Cause	Due to problem in valve cooling system at Biswanath Charali end												
	Remedial Measures	Referred to NLDC.												

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
24	400 kV Silchar - Byrnihat	NETC & MePTCL	**POWERGRID & MePTCL**	**13-10-2016 15:00**	Silchar	DP, ZI, R-E, 72.5 kms	Not Furnished	Yes	No	-	-	13-10-2016 15:30	No SPS	-
					Byrnihat	DP, ZI, R-E, 231.8 kms	Not Furnished	No	No					
	Root Cause	R-E fault with fault current 2.6 kA with angle between Vr & Ir around 29 degrees indicate **vegetation fault. Reason for DT received at Silchar could not be concluded due to unavailabilty of DR from Byrnihat.Likely due to over voltage at Byrnihat.**												
	Remedial Measures	MePTCL to provide DR from Byrnihat and check the relay indication as fault location provided with the relay indication is beyond line length(203 Kms).Vegetation clearance to be done by POWERGRID and status to be reported.Patrolling report of the event to be submitted.												
25	132 kV Dimapur - Imphal	POWERGRID	**POWERGRID**	**14-10-2016 12:15**	Dimapur	No tripping	Not applicable	Yes	No	-	-	14-10-2016 12:30	No SPS	-
					Imphal	DP, ZI, R-E, 22.72 kms	Not applicable	Yes	No					
	Root Cause	DR indicates R-E fault with fault current gradually increases up to 1 kA at Imphal end & 0.615 kA at Dimapur end.Also angle between Vr & Ir around 30 deg at Dimapur end and 14 degree indicates high resistive fault likely due to touching of bamboos.AR operated at both ends.												
	Remedial Measures	Vegetation clearance to be done by POWERGRID and status to be reported.												
26	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**	**15-10-2016 11:08**	Biswanath Charali	Problem in valve cooling system at Agra	Not Furnished	No	No	-	-	15-10-2016 12:30	No SPS	-
					Agra		Not Furnished	No	No					
	Root Cause	Due to problem in valve cooling system at Agra end												
	Remedial Measures	Referred to NLDC.												
27	132 kV AGTPP - Kumarghat	POWERGRID	**NEEPCO & POWERGRID**	**15-10-2016 12:43**	AGTPP	DP, ZI, R-E, 149.5 kms	Not applicable	No	No	-	-	15-10-2016 13:00	SPS # 6 operated	-
					Kumarghat	DP, ZI, R-E, 11.2 kms	Not applicable	Yes	No					
	Root Cause	DR from Kumarghat indicates R-E fault with fault current gradually increases up to 1.4 kA.Also angle between Vr & Ir around 15 degrees indicates **high resistive fault likely due to vegetation infringment**.As intimated by POWERGRID, line tripped as a result of tree touching at Loc 320-321 due to miscreant activity.												
	Remedial Measures	NERTS may resubmit DR output of subsequent times to get AR details (A/R not capture in).												

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
28	400 kV Silchar - Byrnihat	NETC & MePTCL	**POWERGRID & MePTCL**	**17-10-2016 11:43**	Silchar	DP, ZI, R-E, 69.21 kms	Not Furnished	Yes	Yes	-	-	17-10-2016 12:08	No SPS	-
					Byrnihat	DP, ZI, R-E, 55.3 kms	Not Furnished	No	No					
	Root Cause	R-E fault with fault current up to 2.21 kA.Fault cleared after 350 msec.Zone I picked up later.POWERGRID may check the relay indication from Silchar end.Like the event on 14th Oct'16,after R-ph trip DT												
	Remedial Measures	MePTCL to provide DR from Byrnihat.Vegetation clearance to be done by POWERGRID and status to be reported.Patrolling report of the event to be submitted.												
29	132 kV Dimapur (PG) - Kohima	POWERGRID & DoP Nagaland	**POWERGRID & DoP,Nagaland**	**17-10-2016 13:11**	Dimapur (PG)	DP, ZI,B-ph	Not applicable	No	No	-	-	17-10-2016 13:19	No SPS	-
					Kohima	No tripping	Not applicable	No	No					
	Root Cause	Likely due to fault in the line as Zone I initiated at Dimapur end.Root cause could not be concluded due to unavailabilty of DR outputs from Dimapur End.												
	Remedial Measures	POWERGRID to submit DR outputs from Dimapur End.												
30	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**18-10-2016 12:05**	Jiribam	DP, R-Y-E, ZI, 131 kms	Not applicable	Yes	Yes	-	-	18-10-2016 17:53	No SPS	-
					Aizawl	DP, Y-E, ZII	Not applicable	Yes	Yes					
	Root Cause	DR indicates Y-E fault which turned in to R-Y fault not involving ground.Fault current gradually increases up to 0.9 kA at Aizwal end and 0.6 kA at Jiribam.Also,angle between Vy & Iy around 23 degrees at Aizwal & 30 degrees at Jiribam confirms **touching of tree. As informed by POWERGRID,fault occured due to touching of tree as a result of miscrient activity at Loc No 373-374.**												
	Remedial Measures	-												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
31	132 kV Aizwal - Kumarghat	POWERGRID	**POWERGRID**	**20-10-2016 12:10**	Aizawl	DP, ZI, R-E	Not applicable	Yes	Yes	-	-	20-10-2016 12:32	No SPS	-
					Kumarghat	DP, ZIII, R-E, 86.4 kms	Not applicable	Yes	Yes					
	132 kV P K Bari - Kumarghat	TSECL	**TSECL & POWERGRID**	**20-10-2016 12:10**	PK Bari	Earth Fault	Not applicable	No	No	-	-	20-10-2016 15:10	No SPS	-
					Kumarghat	No tripping	Not applicable	No	No					
	Root Cause	R-E fault in 132 kV Aizwal - Kumarghat line with fault current gradually increasing 0.564 kA at Kumarghat & 0.419 kA at Aizwal.Angle between Vr&Ir around 19 degrees indicates High resistive fault due to vegetation infringment.Delayed tripping at Kumarghat led to tripping of 132 kV P K Bari - Kumarghat line.												
	Remedial Measures	Patrolling report of the event to be submitted.Vegetation clearance to be done by POWERGRID and status to be reported. Resistive reach setting of DPR to be according to Ramakrishna Task force recommendations.												
32	132 kV Ranganadi - Lekhi	POWERGRID & DoP AP	**NEEPCO & DoP AP**	**21-10-2016 02:02**	Ranganadi	DP, ZI, R-Y-B, 2.19 kms	Not applicable	No	No	-	-	21-10-2016 02:36	No SPS	-
					Lekhi	Not Furnished	Not applicable	No	No					
	Root Cause	DR indicates Y-B fault not involving ground with fault current up to 5.5 kA.And after AR the same fault persisted.As intimated by POWERGRID, tree fell on to line.												
	Remedial Measures	Vegetation clearance to be done by POWERGRID and status to be reported.												
33	132 kV Khliehriat (PG)- Badarpur	POWERGRID	**POWERGRID**	**21-10-2016 12:21**	Khliehriat(PG)	DP, ZI, B-E	Not applicable	No	No	-	-	21-10-2016 12:38	No SPS	-
					Badarpur	DP, ZII, B-E	Not applicable	No	No					
	Root Cause	DR from Both end not received.As intimated by POWERGRID, DR indiactes B-E fault with fault current of 1.005 kA at Badarpur end & 0.795 kA at Khl end.Angle between Vb&Ib around 28 degrees indicate												
	Remedial Measures	Vegetation clearance to be done by POWERGRID and status to be reported.DR from both ends to be submitted.												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
34	220 kV Misa - Mariani(AS)	POWERGRID	**POWERGRID & AEGCL**	**23-10-2016 12:15**	Misa	DP, ZI, B-E, 124.3 kms	Not Furnished	Yes	No	-	-	23-10-2016 12:58	No SPS	-
					Mariani (AS)	DP, ZI, R-Y-B, 36.6 kms	Not Furnished	No	No					
	Root Cause	DR indicates B-E fault with gradually increasing fault current up to 1.2 kA at both ends.Angle between Vb & Ib around 25 degrees at Mariani end indicates chances of high resistive vegetation fault.												
	Remedial Measures	NERTS may resubmit the DR outputs from both ends since the information recorded is not complete(DR from Mariani: recorded likely after AR,DR from Misa:No info. about AR). Patrolling report of the event to be submitted.												
35	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**	**24-10-2016 09:58**	Biswanath Charali	Tripped due to problem in OLTC	Not Furnished	No	No	-	-	24-10-2016 13:40	No SPS	-
					Agra		Not Furnished	No	No					
	Root Cause	-												
	Remedial Measures	-												
36	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**	**24-10-2016 13:41**	Biswanath Charali	**Tripped due to Ground Overcurrent**	Not Furnished	No	No	-	-	24-10-2016 14:02	No SPS	-
					Agra		Not Furnished	No	No					
	Root Cause	-												
	Remedial Measures	-												
37	220 kV Mokokchung-Mokokchung I	POWERGRID	**POWERGRID & DOP, Nagaland**	**25-10-2016 02:59**	Mokokchung(PG)	Not Furnished	Not Furnished	No	No	-	-	25-10-2016 06:57	No SPS	-
					Mokokchung(NA)	Over Voltage	Not Furnished	No	No					
	Root Cause	In submitted DR,analog inputs are missing so the cause of tripping is inconclusive. Also, it has been noticed that 220kV Mariani - Mokokchung lines trip on overvoltage before the IEGC band limit of 245 kV is reached, which is a maloperation. NERTS has not responded inspite of several reminders												
	Remedial Measures	NERTS may resubmit DR and clarify overvoltage tripping.												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
38	220 kV Kopili - Misa II	POWERGRID	**NEEPCO & POWERGRID**	**25-10-2016 11:14**	Kopili	DP, ZI, B-E, 56.04 kms	Not Furnished	No	No	-	-	25-10-2016 11:31	No SPS	-
					Misa	DP, ZI, B-E	Not Furnished	No	No					
	Root Cause	Patrolling report indicates touching of Banana leaves caused tripping. Not conclusive. In faulty phase (B-phase), angle between V & I is around 54 degree and fault current suddenly increasing to a very high value (~1.2 kA) and max. up to 5.3 kA. This is not characteristic of fault due to vegetation.DR indicates AR sucessful from Misa end.												
	Remedial Measures	NEEPCO to submit DR of Kopili end of this line.Vegetation clearance to be done by POWERGRID and status to be reported.												
39	220 kV Mariani(PG)-Mokokchung	**POWERGRID**	**POWERGRID**	**26-10-2016 00:03**	Mariani(PG)	Over Voltage	Not Furnished	No	No	-	-	26-10-2016 07:00	No SPS	-
					Mokokchung(PG)	Not Furnished	Not Furnished	No	No					
	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**27-10-2016 23:19**	Mariani(PG)	Direct Trip received	Not Furnished	No	No	-	-	28-10-2016 13:25	No SPS	-
					Mokokchung(PG)	Over Voltage	Not Furnished	No	No					
	220 kV Mariani(PG)-Mokokchung	POWERGRID	**POWERGRID**	**28-10-2016 23:11**	Mariani(PG)	No tripping	Not Furnished	No	No	-	-	29-10-2016 06:43	No SPS	-
					Mokokchung(PG)	Over Voltage	Not Furnished	Yes	No					
	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**30-10-2016 00:42**	Mariani(PG)	Over Voltage	Not Furnished	No	No	-	-	30-10-2016 11:51	No SPS	-
					Mokokchung(PG	Direct Trip received	Not Furnished	Yes	No					
	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**30-10-2016 23:38**	Mariani(PG)	Direct Trip received	Not Furnished	No	No	-	-	Not yet restored	No SPS	-
					Mokokchung(PG	Over Voltage	Not Furnished	Yes	No					
	Root Cause	Over Voltage relay mal-operated.												
	Remedial Measures	Settings of Over Voltage relay to be changed as the IEGC band allows max. steady state Vrms up to 245 kV.												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
40	132 kV Salakati-Gelephu	POWERGRID	**POWERGRID & BPC**	**26-10-2016 22:14**	Salakati	DP, ZI, B-E, 15.79 kms	Not Furnished	No	No	-	-	26-10-2016 22:47	No SPS	
					Gelephu	Not Furnished	Not Furnished	No	No					
	Root Cause	Fault in the line as Zone I initiated at Salakati end.												
	Remedial Measures	POWERGRID to furnish DR output of Salakati end of this line to conclude root cause & remedial measures.												
41	+/- 800 kV Biswanath Charali-Agra II	POWERGRID	**POWERGRID**	**26-10-2016 21:36**	Biswanath Charali	**AC filter bus protn at BNC**	Not Furnished	No	No	-	-	26-10-2016 22:42	No SPS	-
					Agra		Not Furnished	No	No					
	Root Cause	-												
	Remedial Measures	-												
42	400 kV Balipara-Biswanath Charali 1V	POWERGRID	**POWERGRID**	**27-10-2016 12:49**	Balipara	A/R, B-E	Not Furnished	Yes	No	-	-	Not yet restored	No SPS	-
					Biswanath Charali	DP, B-E, ZI, 17.82 kms	Not Furnished	No	No					
	Root Cause	DR indicates B-E fault with fault current gradually increasing up to 4 kA at Balipara & 3.4 kA at BNC end.Angle between Vb & Ib around 12 degree at initial stage of fault indicates chances of **high resistive vegetation fault.**Likely same case that of tripping of this line on 5th Oct'16.AR at BNC end sucessful.As intimated by POWERGRID,trees from outside corridor likely to have caused the tripping and could not be cleared due to ROW problem.												
	Remedial Measures	NERTS may furnish reason for AR failure at Balipara as this is not concluded from DR.Vegetation clearance to be done by POWERGRID and status to be reported.												
43	400 kV Bongaigaon - New Siliguri III	ENICL	**POWERGRID**	**27-10-2016 11:53**	Bongaigaon	Earth Fault	Not Furnished	Yes	Yes	-	-	27-10-2016 12:07	No SPS	-
					New Siliguri	DP, B-E, ZI, 17.82 kms	Not Furnished	No	No					
	Root Cause	DR indicates R-E fault with fault current of 2.4 kA.Angle between Vr & Ir around 25 degrees indicates fault due to vegetation fault.												
	Remedial Measures	POWERGRID may intimate reason for non operation of DPR & check already furnished relay indications.												

List of Element Tripping during October'16

क्रम सं. / Sl. No.	ट्रिपिंग तत्वका नाम / Name of tripping element	मालिक / Owner	डाटा प्रदान करना है / Data to be furnished by	सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator	नोड का नाम / Name of Node	सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator	ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose	24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)	24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)	लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)	सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards	सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator	एस.पी.एस संचालन के विवरण / Details of SPS Operation	एमयू में कमी/ Loss in MU
44	132 kV Aizwal - Zuangtui	POWERGRID	**POWERGRID & P&ED, Mizoram**	**27-10-2016 18:40**	Aizawl	DP, ZIII, R-Y Phase, Earth Fault	Not Furnished	No	No	-	-	27-10-2016 19:36	No SPS	-
					Zuangtui	Earth Fault	Not Furnished	No	No					
	Root Cause	Likely due to downstream fault.												
	Remedial Measures	POWERGRID to provide DR of Aizwal end for this event. DoP Mizoram to inform status of implementation of settings provided by POWERGRID.Matter discussed in previous PCCMs.												
45	+/- 800 kV Biswanath Charali-Agra I	POWERGRID	**POWERGRID**	**29-10-2016 05:34**	Biswanath Charali	Emergency stop from Agra end	Not Furnished	No	No	-	-	29-10-2016 09:37	No SPS	-
					Agra	Emergency stop due to PLC Filter Capacitor Bank problem	Not Furnished	No	No					
	Root Cause	-												
	Remedial Measures	-												
46	132 kV Dimapur (PG) - Kohima	POWERGRID & DoP Nagaland	**POWERGRID & DoP,Nagaland**	**29-10-2016 13:15**	Dimapur (PG)	DP, ZI, B-E	Not Furnished	No	No	-	-	29-10-2016 13:30	No SPS	-
					Kohima	Not Furnished	Not Furnished	No	No					
	Root Cause	Likely due to fault in the line as Zone I initiated at Dimapur end.Root cause could not be concluded due to unavailabilty of DR outputs from Dimapur End.												
	Remedial Measures	POWERGRID to submit DR outputs from Dimapur End.												
47	132 kV Jiribam - Aizwal	POWERGRID	**POWERGRID**	**30-10-2016 16:24**	Jiribam	DP, ZI, B-E , 51.95 kms	Not Furnished	Yes	Yes	-	-	30-10-2016 16:45	No SPS	-
					Aizawl	DP, ZI, B-E	Not Furnished	Yes	Yes					
	Root Cause	From DR,Fault cleared in 1sec (Z-III timing) at Jiribam end.DR indicates B-E fault with fault current gradually increasing up to 0.92 kA at Aizwal end & 0.36 kA at Jiribam end.Angle between Vb&Ib around 31 degrees indicates fault likely due to vegetation.												
	Remedial Measures	POWERGRID to check relay indication of Jiribam end.Resistive reach setting of DPR to be according to Ramakrishna Task force recommendations.												

List of Element Tripping during October'16														
क्रम सं. / Sl. No.	**ट्रिपिंग तत्वका नाम / Name of tripping element**	**मालिक / Owner**	**डाटा प्रदान करना है / Data to be furnished by**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई घटना के तारिख और समय / Date & Time of Event provided by CR operator**	**नोड का नाम / Name of Node**	**सी.आर. ऑपरेटर के द्वारा प्रदान की गई रिले संकेत / Relay indications provided by CR operator**	**ऑटो रीक्लोजर का ऑपरेशन / Operation of Auto Reclose**	**24 घंटे के भीतर डी.आर. पेश किया (हां / नहीं) / DR output furnished within 24 hours (Y/N)**	**24 घंटे के भीतर ई.एल. पेश किया (हां / नहीं) / EL output furnished within 24 hours (Y/N)**	**लोड और जनरेशन की हानि (मेगावाट में) / Effect (Loss of Load & Generation in MW)**	**सी.ई.ए ग्रिड मापदंड के अनुसार कौन सा श्रेणी/ Category as per CEA Grid Standards**	**सी.आर ऑपरेटर के द्वारा प्रदान की गई दिनांक और रेस्टॉरेशन की समय / Date and time of restoration provided by CR operator**	**एस.पी.एस संचालन के विवरण / Details of SPS Operation**	**एमयू में कमी/ Loss in MU**
48	220 kV Mariani(PG)-Mokokchung (PG) I	POWERGRID	**POWERGRID**	**31-10-2016 22:34**	Mariani(PG)	Direct Trip received	Not Furnished	No	No	-	-	01-11-2016 09:36	No SPS	-
					Mokokchung(PG)	Over Voltage	Not Furnished	Yes	No					
	Root Cause	Over Voltage relay mal-operated.												
	Remedial Measures	Settings of Over Voltage relay to be changed as the IEGC band allows max. steady state Vrms up to 245 kV.												

North Eastern Regional Power Committee

MINUTES OF THE PCC SUBGROUP MEETING

Date : 24/10/2016 (Monday)

Time : 11:00 Hrs

Venue : "NERLDC Conference Hall", Shillong.

The List of Participants in the PCC Subgroup meeting is attached at **Annexure – I**

Shri L. B. Muanthang, Superintending Engineer, NERPC welcomed all the participants to the Committee. He expressed concern about non-participation of several states in PCC forum in spite of several reminders and assurances given by their authorities. He then asked the committee to take up the agenda items for discussion.

1. Pending Data related to third party audit to be submitted

DOP, Arunachal Pradesh, TSECL, AEGCL and AGTPP not yet submitted complete data as per CEA task force format.

- Compilation of data received
- Audit work to be taken up by the subgroup
- Finalize activities that are to be carried during protection audit.

Deliberation in the meeting

Dy. Manager, AEGCL– informed the forum about the difficulty faced in sending data in CEA Task Force format. The remaining data to be sent by the end of Oct16.

The forum noted that DoP, Arunachal Pradesh and TSECL has not yet furnished the data as per CEA Task Force. NEEPCO confirmed that they would send the complete data shortly.

The forum also decided that the Protection audit of Agartala, Surjamaninagar & Udaipur sub-stations of TSECL are required to be taken up urgently. In line with discussions of 44th PCC, DGM SO-II (NERLDC) suggested that nominee from each constituent should be finalized for purpose of conducting the audit.

Accordingly, the forum decided as follows:

For the upcoming protection audit of Agartala, Surjamaninagar & Udaipur sub-stations of TSECL from 7th to 9th November 2016, following members were nominated by the respective constituents:

1) AEGCL- Ashutosh Bhattacharya, Dy. Manager (9435332928)

2) NERTS- Deva Prasad Pal, Sr. Engineer (9435382360)

3) NERPC- Abhijeet Agrawal, AEE (9871266951)

4) NEEPCO- Prosenjit Sen, Sr. Manager (9436167999)

5) OTPC- Smruti Ranjan Das, Manager (9612400784)

6) Tripura- Mrinal Paul, Manager (9436137022)

Dy.Manager (AEGCL) also requested NERPC to write a letter to DGM (Protection), AEGCL for sending representative for protection audit. The forum requested NERPC to write a letter formally to state authorities so that the above nominated representatives are released for this purpose by respective organizations.

The Sub-Group noted as above.

Action: NERPC, AEGCL, TSECL, OTPC, NEEPCO, NERTS

2. Identification of short lines to install line differential protection.

NERLDC informed the forum that for purpose of installation of differential protection on Short lines, the identification exercise has been completed for all Substations of NER Grid. The same has also been mailed by NERLDC to all constituents for review. All constituents were requested to give any comments prior to finalization.

Dy. Manager, AEGCL informed that as per different vendors line differential is preferred for distance less than 5 Km. Line differential is feasible only with OPGW connectivity. It is to be installed along with distance protection in order to maintain selectivity. DGM(SO-II), NERLDC informed that in SRPC line differential is being implemented for line distances less than 35 Km. Sr. Engr (SO-II), NERLDC stated that as per literature, the definition of short line depends upon operational voltage level. For 150-400 kV range lines up to 40 kms, and for >400 kV range lines up to 20 kms length are considered as short line.

Considering non-availability of OGPW links in several short lines, the forum decided that OPGW communication needs to be established wherever necessary in the interest of the Grid. Accordingly identification of lines having OPGW of length 35 km. to be carried out. As the 1st stage, differential protection is to be installed on important short lines like 400 kV BgTPP – Bongaigaon D/C, 132 kV Silchar – Srikona D/C, 132 kV Imphal(PG) – Imphal(MSPCL) D/C etc. The list of lines for implementation will be further discussed in PCC forum.

The Sub-Group noted as above.

3. Preparation of Draft model maintenance procedures that are to be followed by utilities.

Deliberation in the meeting

The forum noted comments of Manager(NERTS) that all utilities have separate maintenance procedures and it may be put upon utility concerned for the maintenance aspect. Several utilities may have restrictions in available manpower for the purpose of maintenance activity.

Sr.Engr, NERLDC suggested that it will be prudent to consider the bare minimum routine activities that needs to be followed by all utilities in a particular periodicity. Since this will serve as a Model Procedure, adoption of the guidelines as per procedure will not be compulsory, but merely serve as the best practices to be adopted.

NERTS and AEGCL have already submitted their maintenance manual to NERLDC.

SE(P), NERPC suggested that PGCIL, NERLDC and AEGCL together will prepare the guidelines for common minimum maintenance procedure for transmission systems for all utilities. All constituents are requested to give their suggestions and feedback to them. Once the guidelines are ready it will be scrutinized and approved in next PCC meeting. Sh. H. Talukdar, PGCIL, Sh. Jerin Jacob (Eng.NERLDC)/Rahul Chakrabarti, (Sr. Engr, NERLDC) and Sh. Ashutosh Bhattacharjee, DM, AEGCL are nominated to draft the guideline within 30th November 2016. The nominated members can call on utilities whenever needed.

The Sub-Group noted as above.

Action: AEGCL, NERLDC & NERTS.

4. Calculation of Relay Setting as per recommendation of V. Ramakrishna task Force.

Deliberation in the meeting

The relay settings details as formulated by NERTS in line with recommendations of V.Ramakrishna Task Force on Power system contingencies, had been circulated to all constituents for comments by NERLDC.

Manager (AM), NERTS explained to the forum the relay settings as per the document. After thorough discussion, it was agreed that the same can be implemented at the earliest for uniformity in protection systems.

The forum also noted recommendations by Manager (NERTS) / D.M. (AEGCL) that high-set is preferably disabled in relays (ref. 6.3 of PGCIL relay setting recommendations).

DGM(SO-II), NERLDC suggested to place the same before PCC forum to take up implementation. The forum agreed.

The Sub-Group noted as above. Action: All Constituents.

5. Review of Zone II & Zone III setting.

Deliberation in the meeting

The matter has already been discussed and Zone-II / Zone-III setting changes are to be done as per Relay setting calculations of POWERGRID in line with V.Ramakrishna Task force report.

The Sub-Group noted as above.

6. Draft Manual for protection systems.

Deliberation in the meeting

Manager(AM), NERTS informed that draft manual for protection system already exist. The recommendations of V. Ramakrishna Task Force Report is to be used by the utilities for all purposes. Sr. Engr, NERLDC stated that CBIP has brought out an updated manual as of 2016 that contains detailed guidelines for Transmission line protection. The forum decided that the constituents may refer to it as guidelines for Protection systems for transmission. NERLDC will circulate the copy of the CBIP Protection Manual to all the constituents.

The Sub-Group noted as above.

Action: All Constituents.

7. Review of relay settings- Substation wise(including downstream state substation).

Deliberation in the meeting

DGM(SO-II), NERLDC informed that due to ill-coordination in relay settings between State systems and ISTS, frequent tripping of elements are happening. Most of the Grid disturbances in NER Grid are due to this.

P&E Dept., Mizoram and DoP, Nagaland will have to co-ordinate their relay settings with ISTS systems and implement as has been suggested by NERTS. He also requested SE(P), NERPC to write a letter to respective constituent in this regard.

The Sub-Group noted as above.

Action: NERPC

8. Details of PSS installed and activated in all Hydro stations.

Deliberation in the meeting

DGM(SO-II), NERLDC requested all power stations to provide details where PSS is installed. He also requested them to activate existing PSS after tuning and inform the same through mail.

Manager, NEEPCO informed that all hydro station of NEEPCO has PSS installed and activated. He will send mail along with details to NERLDC.

Manager, NHPC also informed that he will send detail about Loktak hydro station in mail.

The forum noted that enabling of PSS in July'16 by Doyang HEP (NEEPCO) and tuning of this PSS helped in damping out inter-plant oscillations in NER Grid. NERLDC requested NEEPCO to furnish details of Tuned frequency range etc. of existing PSS.

The Sub-Committee noted as above.

Action: NEEPCO, NHPC, All state utilities.

8. Review of Recommendations of Empowered Committee for Analysis of GD-V and GD-IV in NER.

Deliberation in the meeting

- DGM(SO-II), NERLDC indicated that TSECL had intimated to NERLDC that SPAR (Single Phase Auto Reclosure) is not available in 132 kV AGTPP – Agartala D/C lines, which was resulting in multiple tripping of this line on transient fault.

  Sr.Manager, NEEPCO confirmed that at AGTPP, their end CB is single phase.

  NERTS to take up for changing of A/R scheme to SPAR.

  It was decided that utilities should identify those transmission lines which have no SPAR scheme for implementation of the same.

  It was noted that most of trippings of transmission lines in NER Grid occur either on account of lightning strikes or due to vegetation infringement problem. It was decided that all utilities will identify the lightning prone areas and conduct check of high tower footing resistance in transmission lines in these areas. Since tripping of line on lightning occurs due to Arcing, to prevent that it is required to either maintain low value of tower footing resistance or go for installation of lightning arrester for the particular towers having consistent high footing resistance.

  It was noted that except for Arunachal Pradesh, Assam, Mizoram & Nagaland, other constituents are not submitting UFR reports to NERPC/NERLDC on regular basis. It is reiterated that the same to be submitted at the earliest. Even for the Grid Disturbance of Category-V in NER on 16th April 2016, reports of UFR operation were received only from Assam, Tripura and Mizoram. In absence of requisite information, analysis of Grid Disturbances are often inconclusive.

  NERPC/NERLDC requested all constituents to furnish the data of UFR operation on regular basis.

  It was also noted that while self-certification of UFRs have been done by utilities, periodic inspection of installed UFRs are to be carried out for checking healthiness

- For purpose of information regarding furnishing of communication outage during Grid disturbance of Category-V in NER, NERLDC had circulated a format as finalized by NLDC. However, no information had been received.

  NERLDC would once again mail all utilities for the requisite information. AEGCL/ MePTCL agreed to furnish the relevant data.

The Sub-Committee noted as above.

Action: NERPC, NEEPCO, PGCIL, AEGCL, MePTCL, TSECL, other state utilities.

10. **Analysis of GD, GI and element tripping in the month of Sep' 16.**

Deliberation in the meeting

The sub-committee analysed the Grid Disturbances, Grid Incidences, Element tripping and Unit trippings of NER Grid for the month of September'16. Details as per Annexure.

During the tripping analysis, NERPC/NERLDC observed that participants are attending the meeting without complete information, which is hindering the process of analysis. NERLDC is communicating to all constituents of NER the Weekly Event reports for information of utilities as well as for furnishing the requisite information for analysis of the events. EE(P), NERPC requested all constituents to come prepared to meetings of tripping analysis, as well furnish all information on time to NERLDC/ NERPC.

There were numerous tripping of 132 kV Balipara – Khupi line, even after vegetation clearance works were completed by NEEPCO after availing shutdown of this line. Sr. Manager(NEEPCO) also informed that getting information from Doyang HEP was difficult, which is hindering process of analysis of trippings from Doyang HEP. NERPC may take up separately with NEEPCO for resolving these issues.

The Sub- Committee noted as above.

The meeting ended with thanks to the Chair.

****

Annexure-I

List of Participants in the PCC Sub Committee meeting held on 24/10/2016

SNo	Name & Designation	Organization	Contact No.
1.	Sh. Amaresh Mallick, DGM (SO-II)	NERLDC	09436302720
2.	Sh. Rahul Chakrabarti, Sr. Engr (SO-II)	NERLDC	09402507543
3.	Sh. Subhash Kumar, Engineer (SO-II)	NERLDC	09485185844
4.	Sh. N. R. Paul, AGM SO-I)	NERLDC	09436302723
5.	Sh. Ankit Jain, Sr. Engr. (SO-I)	NERLDC	09436335381
6.	Sh. Nadeem Altaf, Sr.Engr (SO-I)	NERLDC	09436335373
7.	Sh. H. Talukdar, Chief Manager, AM	PGCIL	09436335237
8.	Sh. Mukut Nath, AGM	AEGCL	08761028185
9.	Sh. Ashutosh Bhattacharya, D. M.	AEGCL	09435332928
10.	Sh. Joypal Roy, Sr. Manager (E)	NEEPCO	09435577726
11.	Sh. B. Nikhla, EE, SP	MePTCL	09436314163
12.	Sh. A.G. Thom, AEE, MRT	MePTCL	09774664034
13.	Sh. Jaydeep Das, Sr. Executive	OTPC	08731081454
14.	Sh. R.C. Singh, Mgr (E)	NHPC	09436894889
15.	Sh. L. B. Muanthang, SE	NERPC	09436731488
16.	Sh. P. N. Sarkar, EE	NERPC	09830027523
17.	Sh. S. Imam, AEE	NERPC	07421806242
18.	Sh. Abhijit Agrawal, AEE	NERPC	09871266951