

**MINUTES OF THE 35<sup>th</sup> PROTECTION COORDINATION**

**SUB-COMMITTEE MEETING OF NERPC**

**Date** : 14/07/2015 (Tuesday)  
**Time** : 10:00 hrs  
**Venue** : "Hotel Pragati Manor", Guwahati.

The List of Participants in the 35<sup>th</sup> PCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 35<sup>th</sup> PCC meeting. He expressed concerned about less number of participants from the constituents and stated that due to the absence of members many issues could not be resolved. He further mentioned that protection Sub-committee is also one of the most vital meeting and constituents should also take it seriously. He once again requested all the members to actively participate in the meeting so that old pending agenda should be resolved and not be repeated again and again.

Thereafter, Member Secretary requested Sh. B. Lyngkhai, Director/SE(O) to take up the agenda items for discussion.

**A. CONFIRMATION OF MINUTES**

**CONFIRMATION OF MINUTES OF 34<sup>th</sup> MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.**

The minutes of 34<sup>th</sup> meeting of Protection Sub-committee held on 16<sup>th</sup> June, 2015 at Guwahati were circulated vide letter No. NERPC/SE (O)/PCC/2015/4520-4555 dated 26<sup>th</sup> June, 2015.

***The Sub-Committee confirmed the minutes of 34<sup>th</sup> PCCM of NERPC as no observations or comments were received from the constituents***

ITEMS FOR DISCUSSION
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**A.1 Implementation of 3-Phase Auto Reclosure scheme of Radially fed 132kV Lines associated with Ranganadi HEP:**

At present, the power flows to Nirjuli, Gohpur and Ziro radially fed from Ranganadi HEP and any transient fault in line causes undesirable outages. Hence, to avoid outages during transient fault it is essential to implement 3- Phase Dead Line charging of following 132kV Lines.

- a) 132kV Ranganadi – Nirjuli Line (Dead Line Charging at RHEP)
- b) 132kV Nirjuli – Gohpur Line (Dead Line Charging at Nirjuli)
- c) 132kV Ranganadi – Ziro Line (Dead Line Charging at RHEP)

During 34<sup>th</sup> PCC meeting, EE, SLDC, Ar. Pradesh requested NEEPCO to intimate their plan atleast one week in advance so that necessary action can be taken by them.

The sub-committee requested NEEPCO to take up the matter with M/S Alstom immediately to finalize the implementation program and intimate Ar. Pradesh in advance for necessary Shut Down. Further, NERPC will monitor the status of action taken by NEEPCO on weekly basis to expedite the implementation of long pending Auto Reclose Scheme.

NERLDC also informed that the 3-phase auto reclose scheme of 132 kV Gohpur – Nirjuli line implemented by NERTS, POWERGRID. DGM (AM), NERTS informed that he will look into the matter and intimate the status accordingly.

**Deliberation of the sub-Committee**

***The sub-committee once again requested NEEPCO to take up the matter with M/S Alstom immediately to finalize the implementation program and intimate Ar. Pradesh in advance for necessary Shut Down. Further, NERPC will monitor the status of action taken by NEEPCO on weekly basis to expedite the implementation of long pending Auto Reclose Scheme before the next PCC meeting.***

**Action: NEEPCO**

**A.2 Implementation of the recommendations of the Protection Audit:**

As per Sl. no 9.1.1 & 9.1.4 of Report on Enquiry Committee on Grid Disturbance in Northern Region on 30<sup>th</sup> July 2012 and in Northern, Eastern & North-Eastern Region on 31<sup>st</sup> July 2012, thorough Third Party protection audit needs to be carried out periodically along with independent audit of Fault Recording Instruments.

In the 32<sup>nd</sup> PCCM, all the constituents were requested to furnish the data as per check list of Task force in **Annexure A.2(II)** and the data as per format of NERPC in **Annexure A.2(I)** for future reference.

<b>Status of submission of data related to Third Party Protection Audit</b>			
<b>Name of Constituent</b>	<b>As per format of Task Force</b>	<b>As per format of NERPC</b>	<b>Remarks</b>
<b>DoP, Ar. Pradesh</b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b>AEGCL</b>	<i>Yes (only checklist submitted)</i>	<i>Not submitted</i>	<i>Details of Protection not submitted</i>
<b>MSPCL</b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b>MePTCL</b>	<i>Not submitted</i>	<i>Yes (Khliehriat, Mawphlang, EPIP I, Mawlai, NEHU, NEIGRIHMS, Ronkhon, Sohra, EPIP II, Lumshnong, Nangalbibra, Nongstoin &amp; Umiam)</i>	<i>Leshka, Umiam Stg I, Umiam Stg II, Umiam Stg III, Umiam Stg IV, Umtru not submitted. Private owned S/S not submitted.</i>
<b>P&amp;E Dept. Mizoram</b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b>DoP, Nagaland</b>	<i>submitted</i>	<i>Yes (Kohima, Wokha, Meluri, Kiphire, Dimapur, Mokokchung)</i>	
<b>TSECL</b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b>POWERGRID</b>	<i>submitted</i>	<i>submitted</i>	
<b>NEEPCO</b>	<i>Not submitted</i>	<i>Yes (Khandong &amp; Kopili)</i>	<i>Ranganadi, Doyang, AGBPP, AGTPP not submitted</i>

<b><i>NTPC</i></b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b><i>NHPC</i></b>	<i>Not submitted</i>	<i>Not submitted</i>	
<b><i>OTPC</i></b>	<i>Yes</i>	<i>Not submitted</i>	

After detailed deliberation, the Sub-committee had decided that those who have not submitted the data as per format of Task Force in Annexure A.2 (II) & also, as per the format of NERPC in Annexure A.2 (i) for 3rd Party Protection Audit are requested to furnish these data **by 24.07.15 positively**.

***The Sub-committee noted as above.***

***Action: All remaining utilities as above.***

### **A.3 Standardization of Disturbance Recorder Channels:**

Disturbance Recorders on Transmission elements are necessary for post disturbance analysis, and identification & rectification of any protection mal-operation. As per CBIP's manual on Protection of Generators, GT, Transformers and Networks, it is recommended to have minimum 8(eight) analog signals and 16(sixteen) binary signals per bay or circuit. Also, it should have a minimum of 5 sec of total recording time, minimum pre-fault recording time of 100 msec and minimum post-fault recording time of 1000 msec.

During 34<sup>th</sup> PCC meeting, DGM (AM), NERTS informed that standardization for transformers & reactors are being finalized by their Corporate Centre for the whole country, the report would be circulated as soon as it is received from them. He also informed that suggestion by GM, NERLDC for NER States have already been communicated by them. He stated that the final report is expected by 30<sup>th</sup> June, 2015 and the same will be intimated to NERPC/NERLDC accordingly.

### **Deliberation of the sub-Committee**

DGM (AM), NERTS informed that standardization for transformers & reactors have already been submitted to NERPC/NERLDC.

The Sub-committee requested NERPC/NERLDC to circulate the above standardization to all constituents of NER for giving comments and suggestion by

24.07.15. NERLDC have sent this document to all constituents of NER for giving comments and suggestion by **24.07.15**.

***The Sub-committee noted as above.***

***Action: NERPC/ All Transmission Utilities of NER***

**A.4     Reporting of failure of equipment/towers of transmission lines to Standing Committee of Experts:**

CEA vide letter dated 04.02.2015 has intimated that as per Section 73 of Electricity Act 2003, CEA is to carry out investigation of failure of substations/generating stations and failure of transmission line towers. Accordingly two Standing Committees have been constituted taking representation from academic institutes, Research Institutes like CPRI and utility to investigate the cause of failures:

- (a) Standing Committee of Experts to investigate the failure of Transmission line towers of 220 kV and above voltage level of Power utilities.
- (b) Standing Committee of Experts to investigate the failure of Equipments of 220 kV and above substations/Generating stations of power utilities.

The format for reporting the first hand information about the failure of equipment in substations/generating stations and failure of transmission line towers are attached at earlier minutes.

During 34<sup>th</sup> PCC meeting, SE(O) informed that NERPC had written to Director (T), Meghalaya but the reply is still awaited.

**Deliberation in the Meeting:**

***The Sub-committee requested NERPC to take up the matter with Me. PTCL once again.***

***Action: NERPC***

**A.5     Status of R&M Implementation of NER from PSDF:**

The Sub-committee requested all the constituents to intimate the status of progress to NERPC regularly so that the same could be intimated to CERC.

**Deliberation in the Meeting:**

The Status as intimated during 35<sup>th</sup> PCC meeting is attached at **Annexure – A.5**.

*The Sub-committee requested all constituents to complete the proactive actions like taking Board's approval, floating of NITs, selection of bidders etc., as directed by the Hon'ble CERC.*

*The Sub-committee members requested also NERPC to participate in PSDF meetings along with constituent members to assist them in clarification of various queries raised in the meetings.*

**Action: All 7 NER States.**

**A.6 Furnishing Protection Details of Transmission Lines, Transformers, Reactors and Bus Bars:**

During 34<sup>th</sup> PCC meeting, SE(O) informed that as NERPC had written to all concerned constituents as per directive of the Sub-committee and the reply is awaited.

Meanwhile NERLDC has prepared the list in tabular format as decided during 34<sup>th</sup> PCC meeting and the status of pending data to be submitted by the concerned constituents are given below:

Status of submission of data related to Protection Systems as per CEA regulations							
Sl No	Name of Constituent	Transmission Line	Transformers	Reactor	Bus-Bar & LBB	Bus Coupler	Remarks
1	DoP, Arunachal Pradesh	Not submitted	Not submitted	Not Applicable	Not submitted	Not submitted	
2	AEGCL	Submitted	Submitted	Submitted	Not submitted	Not submitted	Jawahar Nagar & BTPS
3	MSPCL	Submitted	Submitted	Not Applicable	Submitted	Submitted	
4	MePTCL	Submitted	Submitted	Submitted	Submitted	Submitted	
5	P&E Deptt, Mizoram	Submitted	Submitted	Not Applicable	Submitted	Submitted	
6	DoP, Nagaland	Submitted	Submitted	Not Applicable	Submitted	Submitted	
7	TSECL	Submitted	Submitted	Not Applicable	Submitted	Submitted	

8	<b>POWERGRID</b>	Submitted	Submitted	Submitted	Submitted	<b>Not Submitted</b>	Misa, Dimapur, Salakati & Silchar
9	<b>NEEPCO</b>	Submitted (AGBPP, AGTPP, Ranganadi, Doyang, Kopili)	Submitted (AGBPP, AGTPP, Ranganadi, Kopili)	Submitted (Ranganadi)	Submitted (AGBPP, Ranganadi,, AGTPP, Kopili)	Submitted (AGBPP, Ranganadi,, AGTPP, Kopili)	<b>Details of Khandong, Kopili STG-II &amp; Doyang not submitted</b>
10	<b>NTPC</b>	<b>Not submitted</b>	<b>Not submitted</b>	Not Applicable	<b>Not submitted</b>	<b>Not submitted</b>	
11	<b>NHPC</b>	Submitted	Submitted	Not Applicable	Submitted	Submitted	
12	<b>OTPC</b>	<b>Not submitted</b>	<b>Not submitted</b>	<b>Not submitted</b>	<b>Not submitted</b>	<b>Not Submitted</b>	

**Deliberation in the Meeting:**

After detailed deliberation, the Sub-committee had decided that those who have not submitted the data related to Protection System as per CEA regulations are requested to furnish these data by **24.07.15 psotively**. All constituents agreed.

***The Sub-committee noted as above.***

***Action: All remaining utilities as above.***

Members also opined that apart from Transmission System Protection Philosophy, there should be Distribution System Protection Philosophy & Generation System Protection Philosophy. Protection System as per philosophy should be implemented in all these levels. It is seen that due to improper relay setting in Distribution System, critical transmission line tripped resulting wide spread disturbance. Members requested NERPC to take up the issue in the next TCC/RPC meetings.

***The sub-committee noted as above.***

***Action: NERPC***

**A.7 Frequent Tripping of 33kV System of DoP, Ar. Pradesh at Nirjuli and Ziro:**

The frequent tripping of 33kV system of DoP, Ar. Pradesh is matter of concern. The issue was discussed in 9th, 10th, 11th and 12th TCC meetings. The present status of tripping of 33kV Feeders at Nirjuli and Ziro Sub Station is as below:

**(a) Tripping 33kV Feeders at Ziro**

SN	Feeder	Jan'10 – Jul'13		Aug'13 - July'15	
		Nos.	Nos. / Month	Nos.	Nos. / Month
1	Kurung- Kamey	813	18.90	387	16.12
2	Old Ziro Feeder	462	10.75	254	10.58
3	Kimin Feeder	1296	30.13	827	34.45
	<b>Total</b>	<b>2571</b>	<b>59.79</b>	<b>1468</b>	<b>61.16</b>

**(b) Tripping 33kV Feeders at Nirjuli**

SN	Feeder	Jan'10 – Jul'13		Aug'13 - July'15	
		Nos.	Nos. / Month	Nos.	Nos. / Month
1	AP – 1	267	6.20	77	3.20
2	AP – 2	613	14.25	129	5.37
3	AP – 4	84	1.95	196	8.16
	<b>Total</b>	<b>964</b>	<b>22.41</b>	<b>402</b>	<b>16.75</b>

Arunachal Pradesh is requested to take necessary action on priority to reduce no. of faults in 33kV feeders owned by DoP, Govt. of Arunachal Pradesh to avoid further failure of transformers/equipments at Nirjuli and Ziro Sub Stations.

**Deliberation in the Meeting:**

*After detailed deliberation, it was found that there was no improvement on number of trippings as indicated above, the sub-committee requested NERPC to refer the above issue to next TCC/RPC meetings.*

**Action: NERPC**

**A.8 Grid Disturbances during May, 2015:**

The following numbers of Grid Disturbances (GD) occurred during the period w.e.f 1<sup>st</sup> June to 30<sup>th</sup> June, 2015:



SI No	Control Area	Grid Disturbance in nos.	
		1 <sup>st</sup> June, 2015 to 30 <sup>th</sup> June, 2015	1 <sup>st</sup> January, 2015 to 30 <sup>th</sup> June, 2015
1	Palatana	0	5
2	AGBPP	0	1
3	AGTPP	0	4
4	Ranganadi	1	4
5	Kopili	0	1
6	Khandong	0	1
7	Doyang	0	2
8	Loktak	0	4
9	Arunachal Pradesh	12	34
10	Assam	13	38
11	Manipur	3	37
12	Meghalaya	15	24
13	Mizoram	2	7
14	Nagaland	1	14
15	Tripura	0	3

SI No	Category of GD	Grid Disturbance in nos.	
		1 <sup>st</sup> June, 2015 to 30 <sup>th</sup> June, 2015	1 <sup>st</sup> January, 2015 to 30 <sup>th</sup> June, 2015
1	GD 1	36	120
2	GD 2	0	3
3	GD 3	0	0
4	GD 4	0	0
5	GD 5	0	1
	<b>Total</b>	<b>36</b>	<b>125</b>

**Deliberation in the Meeting:**

*This is for information to the members. Remedial actions to be taken by the concerned power utilities of NER to avoid such disturbances in future.*

**A.9 Root Cause analysis of Grid Disturbances:**

**i. Repeated tripping of 132 kV Khliehriat (PG) – Khliehriat (MePTCL) I & II lines resulting numerous grid disturbances in Meghalaya System**

During the month of June, 2015, there were 17 nos. Grid Disturbances in Khliehriat (including Lumshnong) area of Meghalaya.

w.e.f 08.06.15 to 30.06.15, there were 4 nos. events involving tripping of 132 kV Khliehriat (PG) – Khliehriat (MePTCL) I & II lines, resulting in 7 nos. Grid Disturbances.

- a. **At 0221 Hrs on 13.06.15**, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - DP, ZIII, R-Y-B & Khliehriat (MePTCL)- Not furnished** and Line 2: **Khliehriat (PG) - DP, ZIII, R-Y-B & Khliehriat (MePTCL)- Not furnished**) tripped. Due to tripping of these elements, there was loss of load in Khliehriat (including Lumshnong) area of Meghalaya and generation loss in Leshka HEP.

**Load loss:** 44 MW in Meghalaya

**Generation Loss:** 122 MW in Meghalaya (Leshka)

- b. **At 1308 Hrs on 18.06.15**, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines tripped (Line 1: **Khliehriat (PG) - DP, ZIII, R-Y-B & Khliehriat (MePTCL) - Not furnished** and Line 2: **Khliehriat (PG) - Not furnished & Khliehriat (MePTCL) - Not furnished**) tripped. Due to tripping of these elements, there was loss of load in Khliehriat (including Lumshnong) area of Meghalaya and generation loss in Leshka HEP.

**Load loss:** 79 MW in Meghalaya

**Generation Loss:** 126 MW in Meghalaya (Leshka)

- c. **At 0214 Hrs on 20.06.15**, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines tripped (Line 1: **Khliehriat (PG) - DP, ZIII, R-Y-B & Khliehriat (MePTCL)- Not furnished** and Line 2: **Khliehriat (PG) - DP, ZIII, R-Y-B & Khliehriat (MePTCL) - Not furnished**) tripped. Due to tripping of these elements, there was loss of load in Khliehriat (including Lumshnong) area of Meghalaya and generation loss in Leshka HEP. 132 kV Khandong – Khliehriat (PG) I also tripped (Khandong – Not furnished & Khliehriat(PG) – Earth Fault).

**Load loss:** 40 MW in Meghalaya

**Generation Loss:** 126 MW in Meghalaya (Leshka)

- d. **At 0048 Hrs on 21.06.15**, 132 kV Lumshnong – Khliehriat (MePTCL) line tripped (**Lumshong - Not furnished & Khliehriat (MePTCL) - Distance Protection**). Due to tripping of this element, Lumshnong area of Meghalaya

separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 16 MW in Meghalaya

- e. **At 2112 Hrs on 22.06.15**, 132 kV Lumshnong – Panchgram (AEGCL) line tripped (**Lumshong - Earth Fault & Panchgram (AEGCL) - Not furnished**). Due to tripping of this element, Lumshnong area of Meghalaya separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 7 MW in Meghalaya

- f. **At 1749 Hrs on 26.06.15**, 132 kV Lumshnong – Panchgram (AEGCL) line tripped (**Lumshong- Earth Fault & Panchgram (AEGCL)- Not furnished**). Due to tripping of this element, Lumshnong area of Meghalaya separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 14 MW in Meghalaya

- g. **At 1918 Hrs on 26.06.15**, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - DP, ZIII, R-B-E & Khliehriat (MePTCL) - No tripping** and Line 2: **Khliehriat (PG) - DP, ZIII, R-B-E & Khliehriat (MePTCL)- No tripping**) tripped. Due to tripping of these elements, there was loss of load in Khliehriat (including Lumshnong) area of Meghalaya and generation loss in Leshka HEP.

**Load loss:** 52 MW in Meghalaya

**Generation Loss:** 126 MW in Meghalaya (Leshka)

**Category as per CEA Standards: GD-I (for events from Sl. i to vii)**

#### **Analysis of events:**

Due to tripping of these elements, power supply to Khliehriat or Lumshong area of Meghalaya was interrupted repeatedly. It is suspected that there may be uncleared fault in Meghalaya system or delayed fault clearance. As a result, several transmission lines tripped. In most of the cases, Leshka machines tripped.

DR output at both ends of above elements required for proper analysis of the events.

**Deliberation in the Meeting:**

The Sub-committee expressed concerned about the frequent tripping of 132 kV Khliehriat(PG) – Khliehriat (ME) I & II lines at Khliehriat of Meghalaya. This had been discussed number of times & highlighted to them, but there was no results. The Sub-committee requested NERPC to conduct a special meeting at the earliest comprising representatives from Me. PTCL, Me. PGCL, Me. PDCL, NERPC, NERLDC, NERTS, POWERGRID to resolve the issue for safe, secure & reliable operation of the grid.

***The Sub-committee noted as above.***

***Action: NERPC, Meghalaya***

**ii. Disturbance in Manipur system:**

- a. At 1027 Hrs on 24.06.15, due to tripping of 132 kV Loktak- Ningthoukhong line (Loktak - DP, ZI, R-B-E & Ningthoukhong - Not furnished) & 132 kV Ningthoukhong - Imphal (PG) line (Ningthoukhong - Not furnished & Imphal (PG) – No tripping), power supply to Ningthoukhong area of Manipur interrupted.

**Load loss:** 63 MW in Manipur.

**Category as per CEA Standards:** GD-I

**Analysis of events:**

It is suspected that there may be persistence fault in MSPCL system. DR output at both ends of above elements required for proper analysis of the events.

**Deliberation in the Meeting:**

Manipur representative informed that the above tripping had occurred during R&M works and while shifting the load from one feeder to another, the CT ratio which has the carrying capacity of only 60MW was overloaded and tripped.

It was requested to MSPCL to furnish relay flag details, DR output & EL output to NERLDC & NERPC in case of tripping of their elements for proper analysis of the events.

***The Sub-committee noted as above.***

iii. Disturbance in Arunachal Pradesh and Gohpur area of Assam

- a. At 0501 Hrs on 02.06.15, 400 kV Balipara - Ranganadi I (**Balipara (PG) – Over voltage & Ranganadi (NEEPCO) – Direct trip received**) line tripped and at 0502 Hrs on 02.06.15, 400 kV Balipara - Ranganadi II (**Balipara (PG) – Not furnished & Ranganadi (NEEPCO) – Not furnished**) line tripped. Due to tripping of these elements, power supply to Ziro & Capital area of Arunachal Pradesh and Gohpur area of Assam interrupted. There was also generation loss in Ranganadi HEP.

**Load loss:** 54 MW in Arunachal Pradesh & Assam

**Generation Loss:** 117 MW at Ranganadi (NEEPCO)

**Deliberation in the Meeting:**

DGM (SO-II), NERLDC informed that DR from Ranganadi HEP was not sent by them. He requested NEEPCO to send at the earliest so that analyzes can be carried out by them. NEEPCO agreed.

*The Sub-committee noted as above.*

- b. At 2353 Hrs on 04.06.15, 132 kV Lekhi- Nirjuli (**Lekhi- Earth fault & Nirjuli- No tripping**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 48 MW in Arunachal Pradesh & Assam

- c. At 1045 Hrs on 05.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Not furnished & Nirjuli - Earth fault**) and 132 kV Gohpur - Nirjuli (**Gohpur - Not furnished & Nirjuli - Not furnished**) lines tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 30 MW in Arunachal Pradesh & Assam

- d. At 1305 Hrs on 10.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Not furnished & Nirjuli - Not Furnished**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 25 MW in Arunachal Pradesh & Assam

- e. At 0547 Hrs on 13.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Not furnished & Nirjuli - No tripping**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 32 MW in Arunachal Pradesh & Assam

- f. At 1527 Hrs on 15.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Over Current & Nirjuli - No tripping**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 38 MW in Arunachal Pradesh & Assam

- g. At 1058 Hrs on 18.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Over Current & Nirjuli - No tripping**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 19 MW in Arunachal Pradesh & Assam

- h. At 1048 Hrs on 20.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Earth fault & Nirjuli - Not furnished**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 56 MW in Arunachal Pradesh & Assam

- i. At 1112 Hrs on 20.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Earth fault & Nirjuli - Not furnished**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 39 MW in Arunachal Pradesh & Assam

j. At 1112 Hrs on 20.06.15, 132 kV Lekhi - Nirjuli (**Lekhi - Earth fault & Nirjuli - Not furnished**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 39 MW in Arunachal Pradesh & Assam

k. At 0420 Hrs on 27.06.15, 132 kV Lekhi- Nirjuli (**Lekhi - Earth fault & Nirjuli - Not furnished**) line tripped. Due to tripping of this element, Nirjuli area of Arunachal Pradesh and Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 45 MW in Arunachal Pradesh & Assam

**Category as per CEA Standards: GD-I**

**Analysis of Events:**

Relay settings of 132 kV Lekhi – Nirjuli line at both ends are to be checked. It is also to be checked whether these tripping are due to vegetation problem.

**Category as per CEA Standards: GD-I**

**Deliberation in the Meeting:**

DGM (AM), NERTS informed that T-connection at Lekhi was converted to LILO w.e.f. 29.04.2015 and trippings should have been reduced.

Further, DGM AM informed that it is suspected that numerous tripping of 132 kV Lekhi – Nirjuli line was occurred due to vegetation problem. NERTS, POWERGRID informed that they had taken photographs of growth of vegetation nearby this line near Lekhi. It was also suggested to check Over Current & Earth Fault setting at both ends. Tripping details of downstream elements of Lekhi sub-station are to be furnished by DOP, AP. It was also suggested that proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC.

***The Sub-committee noted as above.***

***Action: DoP, Ar. Pradesh***

**iv. Disturbance in AGTPP, Palatana and Tripura power system**

Since no representative from Tripura was present, the 34th PCC Sub-committee suggested to discuss the issue related to trippings in AGTPP, Palatana and Tripura power systems in the 110th OCC meeting.

Due to presence of no representatives in 33rd PCC meeting also, trippings related to AGTPP and Tripura system could not be discussed. The 33rd PCC sub-committee had requested NERPC to take up the matter with AGTPP, NEEPCO & TSECL to find out the reason of above tripping so that the same can be taken up in the 34th PCC meeting. But, the same could not be discussed again in 34th PCCM due to no representative of TSECL being present in the meeting.

**a. At 1526 Hrs on 29.05.15**, due to tripping of 132 kV Agartala – Dhalabil line, 132 kV Baramura – Jirania line, 132 kV AGTPP - Agartala I line (**AGTPP - DP, Z-III, R-E & Agartala - No tripping**) & 132 kV AGTPP - Agartala II line (**AGTPP-DP, Z-III, R-E & Agartala - No tripping**), power supply to Tripura system was interrupted and all running units of AGTPP tripped (**No information from AGTPP regarding unit tripping**). 132 kV Palatana - Surajmani Nagar line & 132 kV Palatana – Udaipur line also tripped, Due to tripping of 132 kV Palatana - Surajmani Nagar line & 132 kV Palatana – Udaipur line, Palatana Module II tripped (**Due to tripping of Gas Booster Compressor**). Tripping of Palatana machines triggered SPS I at Silchar with load relief of 70 MW at South Assam.

**Generation loss:** 469 MW [Palatana = 335 MW, AGTPP = 76 MW]

**Load Loss:** 70 MW in Tripura

**Category as per CEA Standards: GD-II**

**Analysis of Events:**

Due to tripping of all outgoing feeders of AGTPP, all the running units of AGTPP tripped. Due to tripping of 132 kV Palatana – Udaipur line and 132 kV Palatana – Surjamaninagar line, auxiliary system of Palatana Module II failed and subsequently Gas Booster Compressor (GBC) of Palatana Module II tripped.

In this event on 29-May-2015, the 400/132 kV, 125 MVA ICT at Palatana was out of service. Since supply to Auxiliaries of Palatana units are taken from 132 kV Grid of Tripura, outage of 132 kV Palatana – Udaipur S/C and 132 kV Palatana –



Surjamaninagar S/C led to failure of supply to Auxiliary system of Palatana units and hence tripping of Palatana units. If another 400/132 kV ICT at Palatana were in place, this type of incident could have been averted. This transformer would also ensure enhanced reliability of supply and also satisfied the N-1 contingency criteria as specified in CEA's Manual on Transmission Planning Criteria, Jan'13.

As an alternative arrangement, in such cases, if UATs at Palatana are of sufficient capacity, the Auxiliary supply failure would not have occurred. OTPC, Palatana may explore the provision of enhancement of UAT to sufficient capacity.

DR output at both ends required for proper analysis of the events.

**Deliberation in the Meeting:**

Sr. Manager, TSECL during the 111st OCC meeting stated that he will take up the matter with concern division and inform the status to NERLDC/NERPC at the earliest.

Similarly, DGM, OTPC also endorsed the view of TSECL.

***The Sub-committee requested TSECL & OTPC to inform the root cause of tripping and also to submit the DR Report to NERLDC at the earliest. TSECL & OTPC agreed.***

***Action: TSECL & OTPC.***

**b. At 0247 Hrs on 22.04.15, 132 kV AGTPP- Agartala I (AGTPP- Tripped on voltage jerk & Agartala- No tripping), 132 kV AGTPP- Agartala II (AGTPP- Tripped on voltage jerk & Agartala- No tripping) & 132 kV AGTPP- Kumarghat (AGTPP- Tripped on voltage jerk & Kumarghat- No tripping).**

**Generation loss: 80 MW in AGTPP.**

**c. At 0014 Hrs on 24.04.15, 132 kV AGTPP- Agartala I (AGTPP- DP,Z-II, R-Y-B & Agartala- No tripping), 132 kV AGTPP- Agartala II (AGTPP- DP,Z-II, R-Y-B & Agartala- No tripping) & 132 kV AGTPP- Kumarghat (AGTPP- DP,Z-II, R-Y-B & Kumarghat- No tripping).**

**Generation loss: 59 MW in AGTPP.**

**Category as per CEA Standards: GD-I**

**Analysis of events:**

Due to tripping of all outgoing feeders from AGTPP, all the running units of AGTPP tripped. It is requested to furnish DR outputs at both ends for above event for further analysis.

DR has been received from Kumarghat for tripping of 132 kV AGTPP- Kumarghat line on 24.04.15 at 0014 Hrs.

**Deliberation in the Meeting:**

Sr. Manager, TSECL during the 111st OCC meeting stated that he will take up the matter with concern division and inform the status to NERLDC/NERPC at the earliest.

Similarly, Sr. Manager, NEEPCO also endorsed the view of TSECL.

***The Sub-committee requested TSECL & NEEPCO to inform the root cause of tripping and also to submit the DR Report to NERLDC at the earliest. TSECL & NEEPCO agreed.***

***Action: TSECL & NEEPCO.***

**A.10 Tripping of inter-regional lines of NER-ER:**

During the period w.e.f April to June, 2015, there were 49 nos. of tripping of inter-regional lines of NER-ER. Due to these tripping of inter-regional Lines, reliability of NER Grid was reduced & there was near miss grid disturbances. The matter is very serious & required detailed deliberation.

Details of tripping of inter-regional Lines are provided in **Annexure –A.10.**

**Deliberation in the Meeting:**

DGM (AM), NERTS stated that he will take up the matter and will inform the status to NERLDC/NERPC at the earliest.

Regarding other lines, the matter has to be taken up with ERPC/ERLDC since the lines pertaining to Eastern Region.

***The Sub-committee noted as above.***

***Action: NERLDC & NERPC.***

**A.11 Implementation of activities decided in joint meeting among NERLDC, NERPC & constituents of NER on 29.12.14**

A meeting was held at NERLDC between NERPC, NERLDC and constituents of NER as per directive of Hon'ble CERC in response to Petition No. 113/MP/2014 on 29.12.14.

The constituents of NER agreed upon the following:

- a. Testing of all existing relays and schemes within 2 months by all constituents to assess the healthiness of existing protective relays
- b. Review of relay settings based on history of tripping and non-availability of Distance Protection Relays would be done.
- c. Attempts would be made to avoid any tripping on account of vegetation growth, which is frequent in NER
- d. Single Phase / Three phase Auto Reclose Scheme of transmission lines of voltage level 132 kV and above under List of Important Grid Elements of NER are to be adopted, wherever available. The status of implementation will be monitored in monthly OCC/PCC meetings.

It is requested to power utilities of NER to intimate the latest status of the above activities.

Many of tripping of transmission & distribution lines occurred due to vegetation problem. Tripping of transmission & distribution lines can be reduced if bush/jungle cutting done regularly. It was observed that number of tripping of transmission & distribution lines increases during the period of monsoon.

**Deliberation in the Meeting:**

It was requested to all the constituents to send monthly status report of the activities decided during joint meeting among NERLDC, NERPC & constituents of NER on 29.12.14. It was suggested that proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. It was requested to all transmission utilities of NER for furnishing monthly report on trimming of trees.

***The Sub-committee once again requested all the constituents to carry out the above suggestions as decided earlier for safety of the grid.***

***Action: All Power Utilities.***

**A.11 List of critical sub-stations in NER:**

During 34<sup>th</sup> PCC meeting, SE(O) informed that CEA held the 1st meeting of the grid committee on 22.05.2015 under Chairmanship of Member (GO&D), CEA and it was decided that NERPC has to prepare a list of 15 critical sub-stations of 132 kV voltage level and above in consultation with NERLDC and forward the same to CEA and NLDC (POSOCO) immediately. He requested NERLDC to help NERPC in finalization of above critical sub-stations. NERLDC agreed.

The list of 15 critical sub-stations in NER based on severity was prepared by NERPC in consultation with NERLDC and the same is as below:

SN	Name of Sub-Station	Owner of Sub-Station	State	Voltage Level in kV
1	Bongaigaon-Salakati	POWERGRID	Assam	400/220/132
2	Balipara	POWERGRID	Assam	400/220/132
3	Misa	POWERGRID	Assam	400/220
4	Silchar	POWERGRID	Assam	400/132
5	Azara	AEGCL	Assam	400/220/132
6	Byrnihat	MePTCL	Meghalaya	400/220/132
7	Sarusajai	AEGCL	Assam	220/132/33
8	Ranganadi	NEEPCO	Ar. Pradesh	400/132
9	Yurembam	MSPCL	Manipur	132/33
10	Ningthoukhong	MSPCL	Manipur	132/33
11	Khliehriat	MePTCL	Meghalaya	132/33
12	Dimapur	DoP, Nagaland	Nagaland	132/66
13	Lekhi	DoP, Ar. Pradesh	Ar. Pradesh	132/33
14	Zuangtui	Mizoram	Mizoram	132/33
15	Agartala	TSECL	Tripura	132/33

**Deliberation in the Meeting:**

Members opined that some of the list mentioned above has to be modified considering the criticality & severity of the stations.

***After detailed deliberation, the Sub-committee modified the list of stations as below:***

SN	Name of Sub-Station	Owner of Sub-Station	State	Voltage Level in kV
1	Bongaigaon-Salakati	POWERGRID	Assam	400/220/132
2	Balipara	POWERGRID	Assam	400/220/132
3	Pallatana	OTPC	Tripura	400/132
4	Misa	POWERGRID	Assam	400/220
5	Azara	AEGCL	Assam	400/220/132
6	Byrnihat	MePTCL	Meghalaya	400/220/132
7	Sarusajai	AEGCL	Assam	220/132/33
8	Ranganadi	NEEPCO	Ar. Pradesh	400/132

9	Yurembam	MSPCL	Manipur	132/33
10	Khliehriat	MePTCL	Meghalaya	132/33
11	79 Tilla, Agartala	TSECL	Tripura	132/33
12	Silchar	POWERGRID	Assam	400/132
13	Samaguri	AEGCL	Assam	220/132/33
14	Lekhi	DoP, Ar. Pradesh	Ar. Pradesh	132/33
15	Dimapur	DoP, Nagaland	Nagaland	132/66

**Additional Agenda:**

**A.3 Implementation of 3-phase Auto Reclosure Scheme in all lines associated with Khandong and Kopili HEP:**

For reliable operation of Power system it is required to implement 3-Phase Auto Reclosure Scheme in all the 132kV lines associated with Kopili and Khandong HEP of NEEPCO. The lists of such lines are:

- a) 132kV Khandong – Umrangso - Halflong
- b) 132kV Kopili – Khandong #1

**Deliberation of the Sub-Committee**

After detailed deliberation, it was agreed that joint inspection comprising of POWERGRID, NEEPCO and Assam will be carried out on 03.08.2015 and to complete the implementation of above scheme in 132kV Khandong – Umrangso – Halflong line.

***The Sub-committee noted as above.***

***Action: Assam, POWERGRID & NEEPCO***

**Date and Venue of next PCC**

It is proposed to hold the 36<sup>th</sup> PCC meeting of NERPC in the first week of August, 2015. The exact venue will be intimated in due course.

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**Annexure-I****List of Participants in the 35<sup>th</sup> PCC Meetings held on 14/07/2015**

SN	Name & Designation	Organization	Contact No.
	<b>No Representatives</b>	<b>Ar. Pradesh</b>	
1.	Sh. P. Saha, Dy. Manager	Assam	09435561717
2.	Sh. H. Kakoti, AGM (Comn. Div)	Assam	09864110407
3.	Sh. Arup K. Sinha, Asst. Manager	Assam	09706881736
4.	Sh. G.K. Bhuyan, AGM, Protection	Assam	09854015601
5.	Sh. Navajit Patir, Dy. Manager, SLDC	Assam	09707380294
6.	Sh. K.M. Singh, Manager	Manipur	09436022380
7.	Sh. P. Yaiphaba, Manager	Manipur	08774088766
8.	Sh. H.F. Shangpliang, EE (SP)	Meghalaya	09863315562
9.	Sh. B. Narry, AEE	Meghalaya	09089000911
10.	Sh. Thanglawra, EE (MRT)	Mizoram	09862537214
11.	Sh. Lalduhawma, EE, SLDC	Mizoram	09436144113
	<b>No Representatives</b>	<b>Nagaland</b>	
	<b>No Representatives</b>	<b>Tripura</b>	
12.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
13.	Sh. A. Mallick, DGM (SO-II)	NERLDC	09436302720
14.	Sh. Rahul Chakrabarti, Sr. Engineer	NERLDC	09402507543
15.	Sh. R. Sutradhar, DGM	NERLDC	09436302714
16.	Sh. Joypal Roy, Sr. Manager (E/M)	NEEPCO	09435577726
17.	Sh. J. Bhattacharyya, AGM (O&M)	NTPC	09435720036
	<b>No Representatives</b>	<b>ENICL</b>	
18.	Sh. S. Medhi, Dy. Manager (E)	NHPC	09435534564
	<b>No Representatives</b>	<b>OTPC</b>	
19.	Sh. P.K. Mishra, MS	NERPC	09968380242
20.	Sh. B. Lyngkhoi, Director/S.E (O)	NERPC	09436163419
21.	Sh. S.M. Jha, E.E	NERPC	08731845175
22.	Sh. S. Mukherjee, AEE	NERPC	08794277306
23.	Sh. Shaishav Ranjan, A.E	NERPC	08794276168

## Annexure – A.5

Rs. In Crore.

State	Name of Entity	Status	Funding Sought by Entity	Quantum of funding approved by Appraisal Committee (AC)	Quantum of funding approved by Monitoring Committee (MC)	Remarks/Actions taken by the States
Ar. Pradesh	DoP, AP	DPR submitted to CEA/NLDC- under examination of CEA – now it will be taken up in next meeting of the techno-economic sub-group	33.45	-	-	-
Assam	AEGCL	Scheme already approved by Monitoring Committee – MoP sanctioned awaited	382.48	299.37	299.37	NIT has already been called/published
Manipur	MSPCL	DPR submitted to CEA/NLDC- under examination of CEA – now it will be taken up in next meeting of the techno-economic sub-group	66.58	-	-	-
Meghalaya	Me. PTCL	Scheme already approved by Appraisal Committee & approval by Monitoring Committee is awaited	102.8	69.19 and recommended to MC	-	NIT is in progress and will be called/published soon
	Me. PGCL	DPR submitted to CEA/NLDC- under examination of CEA – now it will be taken up in next meeting of the techno-economic sub-group	48.16	-	-	-
Mizoram	DoP, Mizoram	Revised DPR submitted to CEA/NLDC- under examination of CEA – now it will be taken up in next meeting of the techno-economic sub-group	31.38	-	-	-
Nagaland	DoP, Nagaland	Scheme already approved by Monitoring Committee – MoP sanctioned awaited	39.96	39.96	39.96	NIT is in progress and will be called/published soon
Tripura	TSECL	Revised DPR submitted to CEA/NLDC- under examination of CEA – now it will be taken up in next meeting of the techno-economic sub-group	34.26			

## Annexure-A.10

Details of Tripping of Inter-Regional Lines of NER-ER during April- June, 2015				
S. No.	Name of Transmission Line	Tripping Date and Time	Brief Reason/Relay Indication	Restoration Date and Time
1	400 kV Bongaigaon - New Siliguri II	4/4/2015 19:49	Bongaigaon- DP, ZI, B-E & New Siliguri- Not Furnished	4/6/2015 20:58
2	400 kV Bongaigaon - New Siliguri III	4/4/2015 20:38	Bongaigaon- DP, ZI, B-E & New Siliguri- Not Furnished	4/4/2015 21:05
3	400 kV Bongaigaon - New Siliguri IV	4/4/2015 21:50	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP, ZI, Y-E	4/4/2015 22:22
4	400 kV Bongaigaon - New Siliguri III	4/8/2015 11:57	Bongaigaon- DP, ZI, B-E & New Siliguri- No tripping	4/8/2015 12:27
5	400 kV Bongaigaon - New Siliguri III	4/8/2015 18:00	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP,ZI, Y-E	4/8/2015 18:10
6	400 kV Bongaigaon - New Siliguri IV	4/8/2015 18:00	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP, Z2, R-Y-E	4/9/2015 13:15
7	400 kV Bongaigaon - New Siliguri III	4/10/2015 13:01	Bongaigaon- DP, ZI, B-E & New Siliguri- DP, ZI, B-E	4/10/2015 17:32
8	400 kV Bongaigaon - New Siliguri III	4/16/2015 9:51	Bongaigaon- DP, ZI, B-E & New Siliguri- DP, ZI, B-E	4/17/2015 18:28
9	400 kV Bongaigaon - New Siliguri IV	4/17/2015 23:02	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP, ZI, R-Y-E	4/18/2015 12:32
10	400 kV Bongaigaon - New Siliguri III	4/22/2015 12:23	Bongaigaon- Direct trip received & New Siliguri- Overvoltage	4/22/2015 13:04
11	400 kV Bongaigaon - New Siliguri IV	5/2/2015 4:41	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP, ZI, Y-E	5/2/2015 5:19
12	400 kV Bongaigaon - New Siliguri IV	5/4/2015 11:55	Bongaigaon- DP, ZI, B-E & New Siliguri- Not Furnished	5/4/2015 18:01
13	400 kV Bongaigaon - New Siliguri III	5/4/2015 16:42	Bongaigaon- Over Voltage & New Siliguri- Direct Trip	5/4/2015 20:14
14	400 kV Bongaigaon - New Siliguri III	5/5/2015 9:10	Bongaigaon- Direct Trip Received & New Siliguri- Over Voltage	5/7/2015 11:31
15	220 kV Birpara - Salakati II	5/7/2015 4:40	Birpara- DP, ZI, B-E & Salakati- DP, ZI, B-E	5/7/2015 5:51
16	220 kV Birpara - Salakati I	5/7/2015 18:52	Birpara- DP, ZII, R-E & Salakati- DP, ZI, R-E	5/7/2015 19:55
17	220 kV Birpara - Salakati II	5/7/2015 18:52	Birpara- DP, ZII, R-E & Salakati- DP, ZI, R-E	5/7/2015 20:06
18	400 kV Bongaigaon - New Siliguri III	5/7/2015 18:40	Bongaigaon- Direct Trip Received & New Siliguri- Over Voltage	5/7/2015 19:36
19	400 kV Bongaigaon - New Siliguri III	5/8/2015 17:09	Bongaigaon- Direct Trip Received & New Siliguri- Over Voltage	5/11/2015 10:58
20	220 kV Birpara - Salakati I	5/14/2015 23:29	Birpara- No tripping & Salakati- DP, ZI, R-E	5/15/2015 0:12
21	220 kV Birpara - Salakati II	5/14/2015 23:29	Birpara- DP, ZI, R-E & Salakati- DP, ZI, R-E	5/15/2015 0:27
22	400 kV Bongaigaon - New Siliguri III	5/18/2015 12:59	Bongaigaon- DP, ZI, R-E & New Siliguri- DP, ZI, R-E	5/18/2015 16:17
23	400 kV Bongaigaon - New Siliguri III	5/19/2015 14:11	Bongaigaon- DP, ZI, R-E & New Siliguri- DP, ZI, R-E	5/19/2015 19:41
24	400 kV Bongaigaon - New Siliguri III	5/20/2015 8:32	Bongaigaon- DP, ZI, R-E & New Siliguri- DP, ZI, R-E	5/23/2015 20:58
25	400 kV Bongaigaon - New Siliguri IV	5/20/2015 13:16	Bongaigaon- DP, ZIII, B-E & New Siliguri- Not Furnished	5/20/2015 13:54
26	220 kV Birpara - Salakati II	5/23/2015 19:59	Birpara- DP, ZI, B-E & Salakati- DP, ZII, B-E	5/23/2015 20:48
27	400 kV Bongaigaon - New Siliguri IV	5/23/2015 20:30	Bongaigaon- DP, ZI, Y-E & New Siliguri- DP, ZI, Y-E	5/24/2015 11:15



## Annexure-A.10

Details of Tripping of Inter-Regional Lines of NER-ER during April- June, 2015				
S. No.	Name of Transmission Line	Tripping Date and Time	Brief Reason/Relay Indication	Restoration Date and Time
28	400 kV Bongaigaon - New Siliguri III	5/23/2015 21:38	Bongaigaon- DP, ZII, Y-E & New Siliguri- Not Furnished	5/23/2015 23:33
29	220 kV Birpara - Salakati I	5/24/2015 8:18	Birpara- Not Furnished & Salakati- DP, ZI, R-E	5/24/2015 9:03
30	400 kV Bongaigaon - New Siliguri III	5/26/2015 3:28	Bongaigaon- Direct Trip received & New Siliguri- Over Voltage	5/31/2015 9:27
31	220 kV Birpara - Salakati I	5/30/2015 9:18	Birpara- Not Furnished & Salakati- DP, ZII, R-Y-E	5/30/2015 11:23
32	220 kV Birpara - Salakati II	5/30/2015 9:18	Birpara- Not Furnished & Salakati- DP, ZII, R-Y-E	5/30/2015 11:35
33	400 kV Bongaigaon - New Siliguri IV	6/1/2015 21:44	Bongaigaon: DP, ZI, Y-E & New Siliguri: DP, ZI, Y-E	6/1/2015 22:13
34	220 kV Birpara - Salakati I	6/4/2015 2:44	Birpara: Earth Fault, R-ph & Salakati: Earth Fault, R-ph	6/4/2015 13:09
35	220 kV Birpara - Salakati II	6/4/2015 2:44	Birpara: Earth Fault, Y-ph & Salakati: Earth Fault, Y-ph	6/4/2015 13:20
36	220 kV Birpara - Salakati I	6/7/2015 0:13	Birpara: DP, ZI, R-E & Salakati: DP, ZI, R-E	6/7/2015 0:57
37	220 kV Birpara - Salakati II	6/7/2015 0:13	Birpara: DP, ZI, R-E & Salakati: DP, ZI, R-E	6/7/2015 0:58
38	400 kV Bongaigaon - New Siliguri IV	6/7/2015 1:29	Bongaigaon: DP, ZI, Y-E & New Siliguri: Not Furnished	
39	220 kV Birpara - Salakati I	6/7/2015 7:00	Birpara: DP, ZI, B-E & Salakati: No tripping	6/7/2015 9:12
40	220 kV Birpara - Salakati II	6/7/2015 22:25	Birpara: DP, ZI, R-E & Salakati: DP, ZI, R-E	6/7/2015 22:53
41	400 kV Bongaigaon - New Siliguri IV	6/8/2015 1:29	Bongaigaon: Not Furnished & New Siliguri: DP, ZI, Y-E	6/12/2015 9:46
42	220 kV Birpara - Salakati I	6/9/2015 3:35	Birpara: DP, ZI, Y-E & Salakati: DP, ZI, Y-E	6/9/2015 4:14
43	220 kV Birpara - Salakati II	6/9/2015 3:35	Birpara: DP, ZI, Y-E & Salakati: DP, ZI, Y-E	6/9/2015 4:15
44	400 kV Bongaigaon - New Siliguri II	6/9/2015 22:20	Bongaigaon: Not Furnished & New Siliguri: DP, ZI, R-E	6/9/2015 22:59
45	220 kV Birpara - Salakati I	6/9/2015 22:38	Birpara: Not Furnished & Salakati: DP, ZI, R-E	6/9/2015 23:13
46	220 kV Birpara - Salakati II	6/9/2015 22:38	Birpara: Not Furnished & Salakati: DP, ZI, R-E	6/9/2015 23:44
47	220 kV Birpara - Salakati I	6/12/2015 23:25	Birpara: Not Furnished & Salakati: DP, ZI, R-Y-B	6/13/2015 0:07
48	220 kV Birpara - Salakati II	6/12/2015 23:25	Birpara: Not Furnished & Salakati: DP, ZI, Y-B-E	6/13/2015 14:05
49	400 kV Bongaigaon - New Siliguri III	6/26/2015 12:21	Bongaigaon: DP, ZI, B-E & New Siliguri: DP, ZII, B-E	6/26/2015 14:27