

North Eastern Regional Power Committee

MINUTES OF THE 37th PROTECTION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 10/09/2015 (Thursday)
Time : 10:00 hrs
Venue : "Hotel Nandan", Guwahati.

The List of Participants in the 37th PCC Meeting is attached at **Annexure - I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 37st PCC meeting. In the meeting all the participants are present except Tripura, he appreciated all the constituent member for their active participation in the meeting. He informed the forum that all the agenda items of 15th TCC & RPC meeting were approved. He requested members to participate in the meeting for fruitful deliberation.

Thereafter, Member Secretary, NERPC requested Shri B. Lyngkhai, Director/SE(O) to take up the Agenda items.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 36th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

The minutes of 36th meeting of Protection Sub-committee held on 06th August, 2015 at Guwahati were circulated vide letter No. NERPC/SE (O)/PCC/2015/4520-4555 dated 28th August, 2015.

The Sub-Committee confirmed the minutes of 36th PCCM of NERPC as no observations or comments were received from the constituents

ITEMS FOR DISCUSSION

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 36th PCC meeting, Sr. Manager, NEEPCO informed that M/s Alstom has given the tentative dates of 25th & 26th August, 2015 to visit the site and requested DOP, Arunachal Pradesh to give the consent since the dates have intimated to them well in advance.

EE, SLDC, Arunachal Pradesh agreed to the proposal and requested NEEPCO to confirm the dates in advance for necessary action.

Deliberation of the sub-Committee

NEEPCO informed that retrofitting of relay is required and within six months new relay will be installed. PGCIL agreed the proposal of forum to extend all help for programming of relay for implementation of 3 phase auto reclose scheme of this line.

The sub-committee noted as above.

Action: NEEPCO,PGCIL & Ar. Pradesh

A.2 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 132 kV 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

After detailed deliberation in the 36th PCC meeting, it was agreed that joint inspection comprising of POWERGRID, NEEPCO and AEGCL will be carried out soon for carrier inter-trip signal between Khandong – Umrangso – Halflong line.

Deliberation of the sub-Committee

DGM (AM), NERTS informed that joint visit was meant for checking of PLCC Link between Khandong – Umrangso and Umrangso – Haflong. However, so far as implementation of 3-phase AR is concerned, AEGCL will take care of the same for

their part. He requested Assam to intimate the suitable date and concerned officer at the earliest so that PGCIL can send the concerned representative so as to complete the work.

After detailed deliberation, it was agreed that joint inspection comprising of POWERGRID, NEEPCO and AEGCL will be carried out soon for checking of carrier inter-trip signal between Khandong – Umrangso – Halflong line

The sub-committee noted as above.

Action: POWERGRID, NEEPCO & Assam

A.3 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 30th July 2012 and in Northern, Eastern & North-Eastern Region on 31st July 2012, thorough Third Party protection audit needs to be carried out periodically along with independent audit of Fault Recording Instruments.

The status as intimated by NERLDC during the 37th PCC meeting is as given below:

<i>Status of submission of data related to Third Party Protection Audit</i>			
<i>Name of Constituent</i>	<i>As per format of Task Force</i>	<i>As per format of NERPC</i>	<i>Remarks</i>
<i>DoP, Ar. Pradesh</i>	<i>Not submitted</i>	<i>Not submitted</i>	<i>By 16.09.2015</i>
<i>AEGCL</i>	<i>Yes (only checklist submitted)</i>	<i>Not submitted</i>	<i>By 16.09.2015</i>
<i>MSPCL</i>	<i>Submitted</i>	<i>Submitted</i>	<i>Details of Protection as per Task Force Format not submitted</i>
<i>MePTCL</i>	<i>Not submitted</i>	<i>Submitted</i>	<i>By 16.09.2015</i>
<i>P&E Dept. Mizoram</i>	<i>submitted</i>	<i>Submitted</i>	
<i>DoP, Nagaland</i>	<i>Yes (Kohima, Wokha, Meluri, Kiphire, Dimapur, Mokokchung)</i>	<i>Yes (Kohima, Wokha, Meluri, Kiphire, Dimapur, Mokokchung)</i>	
<i>TSECL</i>	<i>Not submitted</i>	<i>Not submitted</i>	<i>By 16.09.2015</i>

POWERGRID	<i>submitted</i>	<i>Submitted</i>	
NEEPCO	<i>Yes (AGBPP, RHEP, Kopili & Khandong)</i>	<i>Yes (RHEP, Khandong & Kopili)</i>	<i>By 16.09.2015</i>
NTPC	<i>Submitted</i>	<i>Not submitted</i>	<i>By 16.09.2015</i>
NHPC	<i>Not submitted</i>	<i>Not submitted</i>	<i>By 16.09.2015</i>
OTPC	<i>Submitted</i>	<i>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 16.09.15 positively**.

The Sub-committee noted as above.

Action: All remaining utilities as above.

A.4 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 37th PCC meeting is attached at **Annexure – A.4**.

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.

Action: All 7 NER States.

A.5 Furnishing Protection Details of Transmission Lines, Transformers, Reactors and Bus Bars:

The status as intimated by NERLDC during the 36th PCCM and the updated status during the 37th PCCM is as 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	By 31.09.15
2	NEEPCO	Submitted	Submitted	Submitted	Submitted	Submitted	Details of Khupi & Doyang By 31.09.15
3	NTPC	Not submitted	Not submitted	Not Applicable	Not submitted	Not submitted	By 31.09.15

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 **31.09.15 positively**. All constituents agreed.

The Sub-committee noted as above.

Action: All remaining utilities as above.

A.6 Installation of PLCC Panel and Commissioning of SPAR in Loktak – Ningthoukhong 132kV Feeder (MSPCL):

NHPC informed that keeping in view of Power Evacuation, Loktak – Ningthoukhong 132 kV Feeder (MSPCL) is very essential feeder for Loktak Power Station. Since No PLCC Panel has been installed in this feeder, therefore no SPAR (Single Pole Auto Reclosure) has been installed. It is well known that maximum nature of fault occurred in the feeders are temporary in nature.

In order to increase the reliability of this feeder, MSPCL is requested to install PLCC Panels at the both ends so that necessary SPAR can be commissioned.

Deliberation in the Meeting:

MSPCL informed that provision for installation of PLCC panels is included in R&M and within 30/11/2015 commissioning of PLCC panels will take place.

The Sub-committee noted as above.

Action: MSPCL.

A.7 Implementation of 3-Ph Auto Reclosure in 132 kV Loktak-Jiribam, (PG):

NERTS informed that the CB of Jiribam Sub Station for Loktak Feeder is Gang Operated and so, only 3-Phase Auto Reclosure can be adopted. At present, at Loktak End, NHPC has implemented 1-Phase AR Scheme which needs to be changed to 3-Phase Mode.

Deliberation in the Meeting:

NHPC requested that OEM is to be called for relay configuration and testing so that smooth implementation can be carried out.

DGM (AM), NERTS stated that the same work has been carried out by them in many locations and the same will be implemented by themselves.

NHPC stated that they would revert back on the offer very soon.

The Sub-committee noted as above.

Action: NHPC & NERTS, POWERGRID.

A.8 Tripping of 132 kV Khliehriat- Khliehriat # I & II lines due to Meghalaya downstream faults 132 kV Khliehriat- Khandong # I circuit also tripping on O/C & E/F tripping (as reported by NERLDC).

NERTS informed that as per the DRs of Khliehriat SS no undesired delay is persisting at Khliehriat (PG) SS, moreover no tripping observed in other Khliehriat (PG) connected lines like 132 kV Khliehriat- Khandong 3 I, 132 kV Khliehriat-Badarpur. During last visit by Manager (AM) POWERGRID on 11.06.2015 to Khandong- Badarpur HEP, P442 (Distance protection) relay is having E/F settings of PSM: 0.2, TMS: 0.15, with the settings the relay is operating with in 200 to 300 ms time for Zone-2 fault (Zone-2 time delay is 500 ms) leading to frequent tripping of 132 kV Khliehriat- Khandong #I ckt at Khandong HEP only. Accordingly, the setting was revised to PSM: 0.2, TMS: 0.2 and the feeder did not trip in next Meghalaya downstream fault. But, similar trippings are taking place again in the same line.

Deliberation in the Meeting:

DGM (AM) suggested keeping the setting of Relays at Khliehriat (PG) at minimum for Khliehriat # 1 & 2 Line so that Meghalaya system isolates immediately during any disturbance in downstream. This arrangement is necessary till Meghalaya makes their protection and switchgear fully functional for downstream elements.

Meghalaya representative informed that relay setting has been changed by them on 07.08.2015 and subsequently O/C and E/F and DP Z-1 was implemented by them on 09.08.2015 & 10.08.2015 respectively.

The Sub-committee requested Meghalaya to co-ordinate with POWERGRID so that settings made by them should be in line with POWERGRID end.

The Sub-committee noted as above.

Action: Meghalaya & NERTS, POWERGRID.

A.9 Frequent tripping of 132 kV Ranganadi- Lekhi, 132 kV Lekhi- Nirjuli lines on O/C & E/F observed and POWERGRID section of line no infringement observed still feeders are tripping regularly.

NERTS, POWERGRID informed that in order to avoid system interruption they extended help as and when possible to patrol DOP, Arunachal Pradesh line section and infringement observed, the same was communicated to NERPC vide e-mail dt: 14.07.2015. Further, it was also observed that, no distance protection is installed in the lines and only O/C & E/F protection is installed to protect the lines. Whereas for 132 kV lines shall have 1 No Numerical distance protection and 1 No Back up protection. This is leading to frequent tripping of feeders and loss of load to Nirjuli area in Arunachal Pradesh.

Deliberation in the Meeting:

EE SLDC Ar. Pradesh informed 132 kV Ranganadi - Lekhi – Nirjuli – Gohpur line loading is maximum due to Assam load at Gohpur end. So curtailment of Ar. Pradesh load, which is around 35 MW is not possible. Assam informed that commissioning of Bishwanath Chariali – Pavoi is in progress and once the above line is completed, loading problem will be addressed. Forum requested Ar. Pradesh to install Numerical Relay as soon as possible.

The Sub-committee suggested that joint inspection by AEGCL, DOP, Ar. Pradesh and NERTS, POWERGRID has to be carried out between 20.09.2015 to 30.09.2015 and status should be intimated in the next PCC meeting.

The Sub-committee noted as above.

Action: Ar. Pradesh, Assam & NERTS, POWERGRID.

A.10 Non Operation of SPS-I while tripping of Palatana Module I

During the month of August, 2015 there were total 4 nos of Tripping of Palatana Module I Generation. Details of these events are as follows:

SN	Name of Units	Date & time of Tripping	Details of SPS
1	Palatana GTG I	01-08-15 17:59	SPS not operated
	Palatana STG I	01-08-15 17:59	
2	Palatana GTG I	11-08-15 02:55	SPS not operated
	Palatana STG I	11-08-15 02:55	
3	Palatana GTG I	19-08-15 23:02	SPS not operated
	Palatana STG I	19-08-15 23:02	
4	Palatana GTG I	28-08-15 07:41	SPS not operated
	Palatana STG I	28-08-15 07:41	

OTPC & NERTS POWERGRID is requested to furnish details regarding non-operation of SPS- I.

Deliberation in the Meeting:

OTPC & NERTS informed that the problem has been addressed and the scheme is functioning w.e.f. 28/08/2015 onwards.

The Sub-committee noted as above.

A.11 Grid Disturbances during August, 2015:

The following numbers of Grid Disturbances (GD) occurred during the period w.e.f 1st August to 31st August, 2015:

SI No	Control Area	Grid Disturbance in nos.	
		1 st August, 2015 to 31 st August, 2015	1 st January, 2015 to 31 st August, 2015
1	Palatana	1	6
2	AGBPP	0	1
3	AGTPP	1	6
4	Ranganadi	0	4
5	Kopili	1	2
6	Khandong	1	2
7	Doyang	2	5
8	Loktak	3	9
9	Arunachal Pradesh	13	58
10	Assam	11	56

11	Manipur	6	47
12	Meghalaya	5	34
13	Mizoram	1	10
14	Nagaland	4	24
15	Tripura	2	7

SI No	Category of GD	Grid Disturbance in nos.	
		1 st August, 2015 to 31 st August, 2015	1 st January, 2015 to 31 st August, 2015
1	GD 1	31	151
2	GD 2	0	3
3	GD 3	1	1
4	GD 4	0	0
5	GD 5	0	1
	Total	32	156

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.

Deliberation in the Meeting:

The Sub-committee requested NERLDC to indicate the list of over current tripping separately.

The Sub-committee noted as above.

Action: NERLDC.

A.12 Root cause analysis of tripping during August, 2015:

A. System Isolation on 08.08.15

The Southern part of NER Grid was connected to rest of NER Grid through vital links of 400 kV Silchar – Azara – Bongaigaon S/C and 400 kV Silchar – Byrnihat – Bongaigaon S/C and 132 kV Kopili – Khandong I & II lines and 132 kV Dimapur – Imphal line.

At 0019 Hr on 08/08/15, 400 kV Silchar- Azara (**Silchar – DP, B-E, Z-2, 350.5 km, Azara – DP, Y-E, Z-1, 64.2 km**) and 400 kV Silchar- Byrnihat (**Silchar – DP, B-E, Z-2, 239.2 km, Byrnihat – DP, B-E, Z-1, 16.18 km**) tripped. Due to the tripping of above two 400 kV lines, the power evacuation from southern part of NER grid shifted to 132 kV Khandong – Kopili D/C and 132 kV Dimapur - Imphal lines. At that time, Meghalaya was injecting around 100 MW to the grid at Khliehriat (PG) due to high generation at Leshka HPP. Due to high evacuation of power from

southern part of the grid, both 132 kV Kopili - Khandong D/C and 132 kV Dimapur - Imphal lines tripped on over current.

Load loss: 375 MW

Generation Loss: 863 MW

Category as per CEA Standards: GD-III

Analysis of events:

After tripping of 400 kV Silchar-Azara, 400 kV Silchar- Byrnihat, SPS-3 related to reduction of generation from Palatana to 200 MW should have operated, but the SPS was not in service. After tripping of 132 kV Khandong – Kopili D/C and 132 kV Dimapur - Imphal lines southern part of NER grid comprising of Tripura, Mizoram, Manipur, South Assam, AGTPP, Loktak and Palatana system was isolated from rest of the main grid.

The frequency of the isolated system shoot upto 53.4 Hz (as reported by TSECL) resulting immediate tripping of STG II of Palatana, AGTPP and Tripura generation. Subsequently, during the black starting of AGTPP units, Palatana GTG II tripped causing frequency dip to 47 Hz of the isolated system and isolated system collapsed due to load –generation mismatch at 0031 Hrs on 08/08/15. After tripping of GTG II of Palatana SPS- 1 & 2 operated.

As reported by TSECL, there was UFR based load shedding to the tune of around 20 MW in 3 feeders at around 00:23 Hrs, as frequency was declining in the isolated part of NER Grid.

From the relay flags from Silchar, it is seen that fault locations of 400 kV Silchar-Azara line & 400 kV Silchar- Byrnihat line are different. However the relay flags from Azara & Byrnihat, fault locations of 400 kV Silchar-Azara line & 400 kV Silchar- Byrnihat line may be same.

From DR received from Silchar (PG) for 400 kV Silchar- Azara line, maximum current observed in B-phase is 0.74 kA and similar current is observed in neutral also. Fault clearing time is 330 ms.

From DR received from Silchar (PG) for 400 kV Silchar- Byrnihat line, maximum current observed in B-phase is 1.06 kA and 1.16 kA current is observed in neutral. Fault clearing time is 548 ms.

From DR received from Khandong for 132 kV Khandong- Kopili I & II lines, maximum current is observed as 806 A.

Patrolling Report from NETC not yet received.

Deliberation in the Meeting:

OTPC informed that SPS-3 has operated and load reduction to 200MW was commenced in few msec.

After detailed deliberation, the Sub-committee decided that NERLDC, NERPC & NERTS, POWERGRID should form a sub-group to analyze the grid incidences which affect the generating stations especially every month and remedial action required is to be informed in the next PCC meeting for further deliberation.

After detailed deliberation, the Sub-committee decided that sub-group comprising of representatives from NERLDC, NERPC & NERTS, POWERGRID should be formed to analyze the grid events for which generation loss/ load loss occurred and system got depleted condition. The following are the representatives of these organizations:-

1. NERLDC : Amaresh Mallick/Rahul Chakraborty/Momai Dey
2. NERPC : B Lyngkhohi/Srijit Mukherjee/Shashav Ranjan
3. NERTS, POWERGRID : Prashant Kanungo/Madhavan/Supriyo Paul

The committee will find out the root cause of the grid event & suggest remedial action and these will be placed in next PCC meeting for further deliberation. Meeting of this committee will take place every month (at least one week before preparation of agenda of next PCC meeting). All power utilities are requested to furnish relay flags, DR output & EL output etc. for analysis of these grid events.

The Sub-committee noted as above.

Action: NERLDC, NERPC & NERTS, POWERGRID.

B. Disturbance in Meghalaya System.

- i. **At 0858 Hrs on 10.08.15**, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - Not furnished & Khliehriat (MePTCL)- No tripping** and Line 2: **Khliehriat (PG) - Not furnished & Khliehriat (MePTCL)- No tripping**) tripped. There was also tripping of Leshka Units.

Load loss: 58 MW in Meghalaya

Generation Loss: 67 MW in Meghalaya (Leshka)

ii. At 1000 Hrs on 15.08.15, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - DP, ZII, R-Y-E & Khliehriat (MePTCL)- No tripping** and Line 2: **Khliehriat (PG) - DP, ZIII, R-B-E & Khliehriat (MePTCL)- No tripping**) tripped. There was also tripping of Leshka Units.

Load loss: 60 MW in Meghalaya

Generation Loss: 121 MW in Meghalaya (Leshka)

iii. At 1157 Hrs on 19.08.15, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - DP, ZIII, Y-E & Khliehriat (MePTCL)- No tripping** and Line 2: **Khliehriat (PG) - DP, ZIII, Y-E & Khliehriat (MePTCL)- No tripping**) tripped. There was also tripping of Leshka Units.

Load loss: 52 MW in Meghalaya

Generation Loss: 121 MW in Meghalaya (Leshka)

iv. At 0708 Hrs on 23.08.15, 132 kV Khliehriat (PG) - Khliehriat (MePTCL) I & II lines (Line 1: **Khliehriat (PG) - DP, ZIII, Y-E & Khliehriat (MePTCL)- No tripping** and Line 2: **Khliehriat (PG) - DP, ZIII, Y-E & Khliehriat (MePTCL)- No tripping**) tripped. There was also tripping of Leshka Units.

Load loss: 64 MW in Meghalaya

Generation Loss: 121 MW in Meghalaya (Leshka)

Category as per CEA Standards: GD-I

Analysis of events:

In most of the cases, due to tripping of 132 kV Khliehriat (PG)- Khliehriat (MePTCL) D/C lines power supply to Khliehriat & Lumshong area of Meghalaya was interrupted. It is suspected that there may be uncleared fault in Meghalaya system or delayed fault clearance. There was also tripping of Leshka machines. Relay flag details and DR output at both ends of above elements required for proper analysis of the events.

As discussed in 36th PCCM of NERPC, MePTCL is requested to inform the status of the meeting regarding earthing problem and the status of recommendation given by POWERGRID. It is also to be informed that letter regarding furnishing of details of event is being sent by NERLDC on weekly basis but no information is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

C. Disturbance in Manipur system:

- a. At **0924 Hrs on 01.08.15**, 132 kV Imphal (PG)- Imphal (MSPCL) II line (**Imphal (PG)- No Tripping & Imphal (MSPCL)- Overcurrent**) tripped.

Load loss: 25 MW in Manipur. 132 kV Imphal(PG)- Imphal(MA) I was under continuous shutdown since 0818 Hrs of 11.07.15. Due to tripping of these elements power supply to Capital area of Manipur interrupted.

Load loss: 30 MW in Manipur.

- b. At **1019 Hrs on 03.08.15**, due to tripping of 132 kV Loktak- Ningthoukhong line (**Loktak – Not furnished & Ningthoukhong – Earth fault**) & 132 kV Ningthoukhong - Imphal (PG) line (**Ningthoukhong – Earth Fault & Imphal (PG) – Not furnished**), power supply to Ningthoukhong area of Manipur interrupted.

Load loss: 21 MW in Manipur.

- c. At **1649 Hrs on 03.08.15**, due to tripping 132 kV Ningthoukhong - Imphal (PG) line (**Ningthoukhong – Not furnished & Imphal (PG) – Earth Fault**), power supply to Ningthoukhong area of Manipur interrupted. 132 kV Loktak- Ningthoukhong line was not restored after tripping at 1019 Hrs on 03.08.15.

Load loss: 22 MW in Manipur.

- d. At **0808 Hrs on 24.08.15**, due to tripping 132 kV Loktak- Ningthoukhong line (**Loktak – Over current & Ningthoukhong – Not furnished**), power supply to Ningthoukhong area of Manipur interrupted. 132 kV Ningthoukhong- Imphal (PG) line was open since 1247 Hrs of 14.08.15.

Load loss: 58 MW in Manipur.

- e. At **1030 Hrs on 26.08.15**, due to tripping 132 kV Loktak- Ningthoukhong line (**Loktak – No tripping & Ningthoukhong – Over current**), power supply to Ningthoukhong area of Manipur interrupted. 132 kV Ningthoukhong- Imphal (PG) line was open since 1247 Hrs of 14.08.15.

Load loss: 29 MW in Manipur.

Category as per CEA Standards: GD-I

Analysis of events:

The relay setting of 132 kV Imphal(PG)- Imphal (MSPCL) D/C at Imphal (MSPCL) & 132 kV Loktak- Ningthoukhong line at Ningthoukhong (MSPCL) is to be checked. It is also to be checked whether these tripping are due to vegetation problem. DR output at both ends of above elements required for proper analysis of the events. FIR in line Clause No. 5.9 of IEGC (Event Information) is to be sent by MSPCL.

As discussed in 36th PCCM of NERPC, proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. No patrolling report is being received. It is also to be informed that letter regarding furnishing of details of event is being sent by NERLDC on weekly basis but no information is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

D. Disturbance in Capital Area of Arunachal Pradesh and Gohpur area of Assam

a. **At 1825 Hrs on 11.08.15**, 132 kV Ranganadi- Lekhi (**Ranganadi- No tripping & Lekhi- Over current**) line tripped. Due to tripping of this element, Lekhi & 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: 94 MW in Arunachal Pradesh & Assam

b. **At 0505 Hrs on 15.08.15**, 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: 33 MW in Arunachal Pradesh & Assam

c. **At 0906 Hrs on 25.08.15**, 132 kV Ranganadi- Lekhi (**Ranganadi- DP, ZI, R-E& Lekhi- Not furnished**) line tripped. Due to tripping of this element, Lekhi & 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: 65 MW in Arunachal Pradesh & Assam

d. **At 1135 Hrs on 26.08.15**, 132 kV Gohpur- Nirjuli (**Gohpur- No Tripping & Nirjuli- DP, ZI, R-Y-E**) line tripped. Due to tripping of this element, Gohpur area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Load loss: 26 MW in Assam

e. **At 0140 Hrs on 27.08.15**, 132 kV Ranganadi- Lekhi (**Ranganadi- No tripping & Lekhi- Earth fault**) line tripped. Due to tripping of this element, Lekhi & 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

- f. **At 1227 Hrs on 28.08.15**, 132 kV Ranganadi- Lekhi (**Ranganadi- No tripping & Lekhi- Overcurrent**) line tripped. Due to tripping of this element, Lekhi & 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: 92 MW in Arunachal Pradesh & Assam

- g. **At 1840 Hrs on 28.08.15**, 132 kV Ranganadi- Lekhi (**Ranganadi- No tripping & Lekhi- Earth Fault**) line tripped. Due to tripping of this element, Lekhi & 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: 52 MW in Arunachal Pradesh & Assam

Category as per CEA Standards: GD-I

Analysis of Events:

Relay settings of 132 kV Ranganadi- Lekhi – Nirjuli line at both ends are to be checked. It is also to be checked whether these tripping are due to vegetation problem. DR output at both ends of above elements required for proper analysis of the events. FIR in line Clause No. 5.9 of IEGC (Event Information) is to be sent by AEGCL, DoP, Arunachal Pradesh & POWERGRID.

AEGCL & DoP, Arunachal Pradesh, is requested to furnish the status of Relay setting checking as discussed in 36th PCCM of NERPC. As discussed in 36th PCCM of NERPC, proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. No patrolling report is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

E. Disturbance in Nagaland system:

- a. **At 1139 Hrs on 14.08.15**, 132 kV Dimapur(PG)- Kohima (**Dimapur(PG)- DP, ZI, R-E & Kohima- Not furnished**) line tripped. Due to tripping of this element,

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

Load loss: 7 MW in Nagaland

- b. At 1345 Hrs on 19.08.15, 132 kV Dimapur(PG)- Kohima (**Dimapur(PG)- Earth fault & Kohima- No tripping**) line tripped. Due to tripping of this element, Capital area of Nagaland separated from rest of NER Grid and subsequently collapsed due to no source in this area.

Load loss: 8 MW in Nagaland

Category as per CEA Standards: GD-I

Analysis of Events:

It is to be checked whether these tripping are due to vegetation problem. Relay flag details at Kohima end and DR output at both ends of above elements required for proper analysis of the events. FIR in line Clause No. 5.9 of IEGC (Event Information) is to be sent by DoP, Nagaland & POWERGRID.

As discussed in 36th PCCM of NERPC, proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. No patrolling report is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

F. Tripping of Doyang Generation:

- a. At 1100 Hrs on 22.08.15, 132 kV Dimapur(PG) - Doyang I & II (**Line 1: Dimapur (PG) – Earth fault & Doyang- No tripping and Line 2: Dimapur (PG) – Earth fault & Doyang- No tripping**) and 132 kV Doyang – Mokokchung (Nagaland) (**Doyang – Not Furnished & Mokokchung (Nagaland)- Not furnished**) lines tripped. Doyang Unit 3 also tripped.

Load loss: 3 MW in Nagaland

Generation Loss: 21 MW in Doyang

- b. At 1108 Hrs on 27.08.15, 132 kV Dimapur(PG) - Doyang II (**Dimapur (PG) – No tripping & Doyang- Back-up earth fault**) and 132 kV Doyang – Mokokchung (Nagaland) (**Doyang – Overcurrent & Mokokchung (Nagaland)- No tripping**)

lines tripped. Doyang Unit 1, 2 & 3 also tripped. 132 kV Dimapur (PG) - Doyang I was under shutdown w.e.f 0955 Hrs of 27.08.15.

Load loss: 20 MW in Nagaland

Generation Loss: 64 MW in Doyang

Category as per CEA Standards: GD-I

Analysis of Events:

Due to tripping of all outgoing feeders from Doyang, there was Black out in Doyang Power Station. And due to tripping of 132kV Doyang- Mokokchung (Nagaland) line, power supply to Mokokchung area of Nagaland interrupted. It is also to be checked whether these tripping are due to vegetation problem. DR output at both ends of above elements required for proper analysis of the events. DR has been received from Dimapur(PG) for the event on 22.08.15. FIR in line Clause No. 5.9 of IEGC (Event Information) is to be sent by NEEPCO & POWERGRID.

As discussed in 36th PCCM of NERPC, proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. No patrolling report is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

G. Tripping of Loktak Generation:

At 1156 Hrs on 02.08.15, 132 kV Loktak- Imphal (PG) (**Loktak- Earth fault & Imphal- No tripping**), 132 kV Loktak- Ningthoukhong (**Loktak- DP, ZI, Y-E & Ningthoukhong- Not furnished**) lines tripped. 132 kV Loktak-Jiribam was open since 0546 Hrs of 31.07.15. Loktak Unit 1, 2 & 3 also tripped on overspeed protection.

Generation Loss: 101 MW in Loktak

Category as per CEA Standards: GD-I

Analysis of Events:

Due to tripping of all the outgoing feeders from Loktak, all the running units of Loktak tripped due to loss of evacuation path. It is to be checked whether these tripping are due to vegetation problem. DR output at Imphal (PG) & Ningthoukhong required for proper analysis of the events. FIR in line Clause No. 5.9 of IEGC (Event Information) is to be sent by NEEPCO & POWERGRID.

As discussed in 36th PCCM of NERPC, proper patrolling are to be done after tripping any elements and patrolling reports are to be submitted by the concerned utility to NERLDC & NERPC. No patrolling report is being received.

Deliberation in the Meeting:

Please refer decision in Item A.12 .A.

During deliberation DGM (AM), informed that analysis of tripping is to be made forehand not during PCC Meeting. Further, focus is to be given on Analysis to find out corrective measures so that reoccurrence does not happen. The implementation of corrective measures suggested to be monitored during PCC Meeting for system improvement.

A.13 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 of 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.14 Up-gradation of 220/132kV Salakati Sub-station from Conventional to SAS on completion of 25 years age and Capitalization during Tariff Block (2014-2019)

220/132kV Salakati Sub Station was commissioned in the year 1987 and thus, completed 28 years which is 3 years more than the age of Substation. At present, the condition of various equipments / items like LTAC, DCDB, Battery Banks, Power & Control Cable, CT, CVT, Isolator, Bus Post Insulators, String insulators, C&R Panels etc. have deteriorated considerably and requires replacement for further extension of Substation life. Meanwhile, only obsolete ABCBs are replaced with SF6CBs.

In view of above, it is proposed to replace all the above mentioned obsolete equipments/items and up-grade the Substation from conventional to SAS on completion of 25 Years under PoC Mechanism. The tentative expenditure will be around Rs 10.00 Crores.

Deliberation in the Meeting:

All the members agreed to the proposal and requested POWERGRID to take up the issue in the next NERPC meeting for approval.

A.15 Up-gradation of 132kV Haflong, 132kV Jiribam, 132kV Kumarghat and 132kV Aizawl Sub-station on completion of 25 years age and Capitalization during Tariff Block (2014-2019)

The up-gradation of Haflong, Jiribam, Kumarghat and Aizawl sub stations on completion of 25 Years from AIS to GIS/Hybrid with Double Bus Bar Arrangement, Bus Bar Protection and LBB Scheme in SAS configuration to enhance reliability / continuity of power supply has already been approved in 15th NERPC Meeting at Guwahati on 21st August 2015.

Accordingly, a committee of POWERGRID representatives from Region and Corporate Engineering & AM Department visited Aizawl Sub Station to explore the possibility of up-gradation from AIS to GIS/Hybrid without interruption of power flow during up-gradation works. After detailed study it is found that conversion to GIS will be preferable to Hybrid under following consideration:

- (a) Up-gradation to GIS will have minimum outage compared to Hybrid. In case of GIS outage will be only during changeover of primary connection. However, in case of Hybrid, the outage will be during installation as well as changeover of Primary and secondary connection.
- (b) Up-gradation to GIS will generate more space for future expansion which is non-existing in case of Hybrid. Further, due to space saving in case of GIS one transformer 132/33kV can be installed additionally for dedicated station supply.

Hence, it is proposed to up-grade the above stations from AIS to GIS in line with the approval during 15th NERPC Meeting. The tentative cost for Up-gradation will be Rs. 20.00 – Rs. 22.00 Crores for each station.

Deliberation in the Meeting:

All the members noted and requested POWERGRID to inform RPC members during next TCC/NERPC Meeting.

A.16 Exemption of Telemetry & Speech for commissioning of Pasighat-Roing-Teju-Namsai – Provisional Clearance:

It may be noted that construction works of Passighat--Roing-Teju-Namsai(1) is going on through POWERGRID. Telemetry data of the same is not possible until Passighat-Along-Daporizo-Ziro(A) or Namsai-Rupai-Tinsukia(B) communication link is made

available there with provision of optical/plcc which is presently not available. Also GPRS connectivity is not OK at these locations.

Hence it is proposed for provisional permission of commissioning of the above substations without Telemetry data (provisional clearance for 1.5 year or connecting comm-link line readiness whichever is earlier). However, voice connectivity will be provided through Mobile phone while commissioning itself.

Deliberation in the Meeting:

The Sub-committee requested NERTS, POWERGRID to take up the matter in the next UCC NERPC meeting for approval.

Date and Venue of next PCC

It is proposed to hold the 38th PCC meeting of NERPC in the first week of October, 2015. The exact venue will be intimated in due course.

The meeting ended with thanks to the chair

Annexure-I**List of Participants in the 37th PCC Meetings held on 10/09/2015**

SN	Name & Designation	Organization	Contact No.
1.	Sh. Nangkong Perme, EE, SLDC	Ar. Pradesh	09436288643
2.	Sh. G.K. Bhuyan, AGM, AEGCL	Assam	09854015601
3.	Sh. Sanajaoba Singh, Manager, MSPCL	Manipur	09856792770
4.	Sh. G. Tapan Kumar Sharma, Manager	Manipur	08974138850
5.	Sh. S. Saha. AE (SP)	Meghalaya	09436112798
6.	Sh. A.G. Tham, AE (SP)	Meghalaya	09774664034
7.	Sh. C.C. Lalrimawia, SDO, MRT	Mizoram	09436155551
8.	Sh. Zoramdina, AE (SLDC)	Mizoram	08415901755
9.	Sh. A. Jakhalu, EE(TRANS)	Nagaland	09436002696
	No Representative	Tripura	
10.	Sh. A. Mallick, DGM (SO-II)	NERLDC	09436302720
11.	Sh. Suranjan Sarkar, Sr. Manager	NEEPCO	08974009294
12.	Sh. Joypal Roy, Sr. Manager	NEEPCO	09435577726
13.	Sh. Tanya Taji, Sr. Manager	NEEPCO	09436042053
14.	Sh. Shaibal Ranjan Dan, DGM(O)	NTPC	09435325440
15.	Md. Sajid Akhter, Manager	NHPC	09436678603
16.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
17.	Sh. T. Karmakar, Asst. Manager (E)	OTPC	09435239314
18.	Sh. P.K. Mishra, MS	NERPC	09968380242
19.	Sh. B.Lyngkholi, Director/S.E (O)	NERPC	09436163419
20.	Sh. S. Mukherjee, AEE	NERPC	08794277306
21.	Sh. Shaishav Ranjan, A.E	NERPC	08794276168

Annexure – A.4

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	69.19	NIT has already been called/published
	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	32.43	32.13	NIT is in progress and will be called/published soon
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	35.51	35.51	NIT is in progress and will be called/published soon