

# North Eastern Regional Power Committee

## Agenda For

### 40<sup>th</sup> PCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 17<sup>th</sup> December, 2015 (Thursday)

Venue : "Hotel Nandan", Guwahati.

#### A. CONFIRMATION OF MINUTES

##### CONFIRMATION OF MINUTES OF 39<sup>th</sup> MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

The minutes of 39<sup>th</sup> meeting of Protection Sub-committee held on 23<sup>rd</sup> November, 2015 at Tawang were circulated vide letter No. NERPC/SE (O)/PCC/2015/4520-4555 dated 9<sup>th</sup> December, 2015.

*No comments/observations were received from the constituents, the Sub-committee may kindly confirm the minutes of 39<sup>th</sup> PCCM of NERPC.*

#### ITEMS FOR DISCUSSION

##### A.1 Implementation of 3-Phase Auto Reclosure Scheme of Radially fed 132kV Lines connected to Ranganadi HEP:

At present, the power flows to Nirjuli, Gohpur and Ziro radially 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 39<sup>th</sup> PCC meeting, POWERGRID stated that they will extend help to incorporate 3-phase dead-line charging at RHEP end in EPAC Relay. For this NEEPCO will arrange for S/D with due consent of Arunachal Pradesh and intimate POWERGRID in advance. Meanwhile NEEPCO informed that new relay for Nirjuli & Ziro Line has been ordered and expected delivery is November, 2015 and the new relay will be installed by NEEPCO at RHEP by December 2015.

*NEEPCO/Ar. Pradesh/NERTS may kindly intimate the status.*

**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 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

During 39<sup>th</sup> PCC meeting, the Sub-committee directed that joint inspection comprising of NERTS, NEEPCO & AEGCL should be carried out in the first week of December, 2015 for completion of carrier inter-trip signal between Khandong – Umrangso – Halflong line. Also, relay portion of the work regarding implementation of 3-phase AR scheme and PLCC has to be carried out by AEGCL.

***NEEPCO, NERTS & Assam may kindly intimate the status.***

**A.3 Implementation of the recommendations of the Protection Audit:**

As per SI. 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.

The status as intimated by NERLDC during 39<sup>th</sup> PCC meeting is given below:

<b><i>Status of submission of data related to Third Party Protection Audit</i></b>			
<b><i>Name of Constituent</i></b>	<b><i>As per format of Task Force</i></b>	<b><i>As per format of NERPC</i></b>	<b><i>Remarks</i></b>
<b><i>DoP, Ar. Pradesh</i></b>	<b><i>Not submitted</i></b>	<b><i>Submitted</i></b>	<b><i>By 23.12.2015</i></b>
<b><i>AEGCL</i></b>	<b><i>Yes (only checklist submitted)</i></b>	<b><i>Not submitted</i></b>	<b><i>By 30.11.2015</i></b>
<b><i>P&amp;E Dept. Mizoram</i></b>	<b><i>Not Submitted</i></b>	<b><i>Submitted</i></b>	<b><i>No representative</i></b>
<b><i>DoP, Nagaland</i></b>	<b><i>Submitted</i></b>	<b><i>Submitted</i></b>	<b><i>-Do-</i></b>
<b><i>TSECL</i></b>	<b><i>Not submitted</i></b>	<b><i>Submitted</i></b>	<b><i>By 30.11.2015</i></b>
<b><i>NEEPCO</i></b>	<b><i>AGTPP Not submitted</i></b>	<b><i>AGTPP,AGBPP Not submitted</i></b>	<b><i>By 30.11.2015</i></b>

<i>NHPC</i>	<i>Not submitted</i>	<i>Submitted</i>	<i>By 30.11.2015</i>
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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 23.12.15 positively**.

***Constituents/NERLDC may kindly intimate the status.***

**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.

Latest available status is enclosed at **Annexure - A.4**.

***As decided in the 39<sup>th</sup> PCC meeting, the status will be reviewed in Quarterly basis.***

***Constituents may kindly intimate the status.***

**A.5 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.

During 39<sup>th</sup> PCC meeting, MSPCL informed that it would not be possible to complete the R&M works within 30/11/2015 and would intimate revised schedule later on.

***MSPCL may kindly intimate the status.***

**A.6 Implementation of 3-Ph Auto Reclosure in 132 kV Loktak-Jiribam, (PG):**

NERTS informed that on every tripping of 132 kV Loktak-Jiribam (PG) line Auto Reclosure is successful from Loktak end but, at Jiribam (PG) end the CB is of gang (3 pole) operated. Accordingly, NHPC may implement 3-Ph Auto Reclosure with check sync at Loktak end with 1.40 sec dead time and Jiribam (PG) end dead line charging with 0.80 sec dead time.

During 39<sup>th</sup> PCC meeting, NHPC agreed to POWERGRID's offer. POWERGRID informed that work would be completed by 25.11.2015 as agreed in the meeting.

***NHPC/POWERGRID may kindly intimate the current status.***

**A.7 Grid Incidences during November, 2015:**

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

SI No	Control Area	Grid Disturbance in nos.	
		1 <sup>st</sup> November, 2015 to 30 <sup>th</sup> November, 2015	1 <sup>st</sup> January, 2015 to 30 <sup>th</sup> November, 2015
1	Palatana	0	7
2	AGBPP	0	1
3	AGTPP	0	8
4	Ranganadi	0	4
5	Kopili	0	2
6	Khandong	0	3
7	Doyang	0	5
8	Loktak	0	10
9	Arunachal Pradesh	1	74
10	Assam	3	76
11	Manipur	3	64
12	Meghalaya	1	52
13	Mizoram	0	14
14	Nagaland	0	33
15	Tripura	1	9

SI No	Category of GD	Grid Disturbance in nos.	
		1 <sup>st</sup> November, 2015 to 30 <sup>th</sup> November, 2015	1 <sup>st</sup> January, 2015 to 30 <sup>th</sup> November, 2015
1	GD 1	9	228
2	GD 2	0	3
3	GD 3	0	1
4	GD 4	0	1
5	GD 5	0	1
	<b>Total</b>	<b>9</b>	<b>234</b>

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

**A.8 Root cause analysis of tripping in Southern Part of NER on 08.08.2015 and 24.09.2015 & Remedial Measures:**

**Remedial Measures suggested by sub group members at the meeting held at NERPC on 29.09.15**

The autoreclose schemes at Azara (AEGCL) and Byrnihat (MePTCL) are to be checked at the earliest so as to prevent tripping of 400 kV Silchar – Azara and 400 kV Silchar – Byrnihat lines in case of transient fault.

It was decided that till restoration of Autoreclosure at Azara and Byrnihat ends of 400 kV Silchar – Azara and 400 kV Silchar – Byrnihat lines, the Autoreclosure at Silchar ends are to be kept in non-Auto mode so that tripping signal to SPS-3 related to generation reduction of Palatana upon tripping of 400 kV Silchar – Byrnihat and 400 kV Silchar – Azara lines is generated in case of such events.

**During 39<sup>th</sup> PCC meeting, it was informed that Auto-reclosures at Azara and Byrnihat has already been implemented by POWERGRID.**

It was decided that tower footing resistance of 400 kV Silchar – Azara and 400 kV Silchar – Byrnihat lines are to be brought within permissible limits at around 10 towers on either side close to location of faults and Tower top patrolling around 10 towers on either side close to the location of faults are to be carried out.

**During 39<sup>th</sup> PCC meeting, POWERGRID informed that tower top patrolling has been carried out and some flash over spot was identified. Regarding tower footing resistance, the process is on and the status will be intimated in due course.**

From the relay flags received from Azara for 400 kV Silchar – Azara line, it was seen that fault was shown on a different phase than Silchar or Byrnihat ends. This indicates a possibility of relay configuration problem at Azara end, which is to be checked in joint inspection with AEGCL and NERTS.

**During 39<sup>th</sup> PCC meeting, AEGCL & POWERGRID assured that the work will be completed by 30.11.2015.**

The islanding scheme of AGTPP with Tripura system is to be reviewed so as to ensure successful islanding in such cases of isolation in NER Grid.

During 38<sup>th</sup> PCC meeting, the Sub-Committee decided that in addition to the recommendations of the sub-group the following should be implemented ASAP:

1. Modification to SPS-1 at Palatana: Unit-I and II to be put in AND logic so that SPS-1 would operate.

**During 39<sup>th</sup> PCC meeting, OTPC informed that the work has already been completed.**

2. 400 kV Silchar-P.K.Bari D/C lines (charged at 132 kV) to be added to Islanding Scheme-2 for UFR based load shedding at 48.8 Hz.

**During 39<sup>th</sup> PCC meeting, POWERGRID informed that above scheme has been implemented.**

***Action: POWERGRID & TSECL.***

**Root Cause Analysis & Remedial Measures by sub group members at the meeting held at NERPC on 18.11.15 regarding Non-Tripping of Azara-Bongaigoan as raised by AEGCL:**

**Cause:** As per information given by POWERGRID, the incidences above are due to high arcing faults.

**Remedial Measures:**

- a. Explore to increase the resistive reach of Z-2 and Z-3.
- b. DEF characteristics should be IDMT in place of definite time with 1100msec opening time at maximum fault level
- c. Further, Z-3 setting should be 1000msec and necessary co-ordination is required for associated lines.
- d. NERPC Secretariat may extend help wherever necessary Administrative coordination is required for clearance of faults.

***The Sub-committee requested NERPC to invite AEGCL during the monthly Sub-committee meeting to discuss about various grid incidences being held every month by NERPC along with above issues of Assam.***

***Action: NERPC.***

**A.9 Protection System in Tripura, OTPC & POWERGRID System for reliable power supply to Bangladesh:**

It is understood that Tripura is going to sell power to Bangladesh through 132 kV Surjamaninagar (TSECL) – Comilla (Bangladesh) D/C lines from December, 2015.

In view of the above, TSECL, OTPC & POWERGRID are requested to provide the status of protection system in their respective substations for providing reliable power supply to Bangladesh.

**During 39<sup>th</sup> PCC meeting, TSECL informed that POWERGRID will take care of all protection system pertaining to above lines.**

**Action: POWERGRID & TSECL.**

**A.10 Finalization of operational protocols for operation of line for supply of power to Bangladesh:**

It is anticipated that power supply to Bangladesh from Surjamaninagar sub-station of Tripura will commence from middle of December, 2015. The power will be transmitted through international line jointly owned by India (India portion) & Bangladesh (for Bangladesh portion).

Before commencement of power supply it is essential that the following operational protocols are finalized:

**Real time operation –**

1. Issuance of code for charging of the line after tripping due to some fault.
2. Routing of proposals for shutdown both planned & emergency and issuance of code for the purpose opening & closing after return of shutdown
3. Co-ordination for dealing with any overdrawal issue
4. Co-ordination for contingency situations.
5. Restoration after grid disturbance and related co-ordination etc. etc

During 39<sup>th</sup> PCC meeting it was decided that:

- a. Code for charging to be given by NLDC India.
- b. Proposals for planned shutdown to be routed through OCC forum of RPC to NLDC India and code to be given by NLDC India.
- c. Overdrawal issue to be dealt by Tripura.
- d. For item 4 & 5 procedures to be drawn up after detailed study of existing ones of ER - Bangladesh power transfer.

NERLDC requested TSECL to assist quick restoration of power supply to Comilla (South), Bangladesh in case of grid disturbance.

GM, NERLDC concluded that any other modalities would be worked out by NERLDC considering ER Bangladesh procedure.

**Action: NERLDC & TSECL.**

**A.11 Root cause analysis of tripping during November, 2015:**

**A. Disturbance in Meghalaya System:**

- a. **At 1308 Hrs on 20.11.15**, due to tripping of 132 kV Agia- Nangalbibra (Agia- DP, ZI, R-Y-E and Nangalbibra- **No tripping**) power supply to Nangalbibra area of Meghalaya interrupted.

**Load loss:** 35 MW in Meghalaya  
**Category as per CEA Standards:** GD-I

**Analysis of events:**

*MePTCL and AEGCL may elaborate.*

**B. Disturbance in Manipur System.**

a. At **0647 Hrs on 09.11.15**, due to tripping of 132 kV Imphal (PG)- Imphal (MSPCL) I & II lines (**Line 1: Imphal (PG)- Earth Fault & Imphal (MSPCL)- Not Furnished and Line 2: Imphal (PG)- Earth Fault & Imphal (MSPCL)- Not Furnished**) power supply to Capital area of Manipur interrupted.

**Load loss:** 61 MW in Manipur.

b. At **1608 Hrs on 12.11.15**, due to tripping of 132 kV Imphal (PG)- Imphal (MSPCL) I & II lines (**Line 1: Imphal (PG)- No tripping & Imphal (MSPCL)- Not Furnished and Line 2: Imphal (PG)- Earth Fault & Imphal (MSPCL)- Not Furnished**) power supply to Capital area of Manipur interrupted.

**Load loss:** 39 MW in Manipur.

c. At **2151 Hrs on 23.11.15**, due to tripping of 132 kV Loktak – Ningthoukhong (**Loktak- No tripping and Ningthoukhong- Overcurrent**) line power supply to Ningthoukhong area of Manipur interrupted. 132 kV Imphal(PG)-Ningthoukhong line & 132 kV Kakching - Kongba line was kept open for system constraint.

**Load loss:** 38 MW in Manipur.

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

**Analysis of events:**

*MSPCL, NHPC & NERTS, POWERGRID may elaborate.*

**C. Disturbance in Arunachal Pradesh system:**

a. At **0907 Hrs on 24.11.15**, 132 kV Balipara – Khupi (Balipara- DP, ZI, R-Y-E and Khupi- Not furnished) line tripped. Due to tripping of this element, Khupi area of Arunachal Pradesh separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 24 MW in Arunachal Pradesh

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

**Analysis of Events:**

*DoP, Arunachal Pradesh & NERTS, POWERGRID may elaborate.*

**D. Disturbance in Assam system:**

- a. **At 0519 Hrs 19.11.15**, 132 kV Silchar- Dullavcherra (**Silchar- DP, ZI, R-E and Dullavcherra- No tripping**) line tripped. Due to tripping of this element, Dullavcherra area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 10 MW in Assam

- b. **At 1342 Hrs 19.11.15**, 132 kV Silchar- Dullavcherra (**Silchar- No tripping and Dullavcherra- DP, ZI, B-E**) line tripped. Due to tripping of this element, Dullavcherra area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 13 MW in Assam

- c. **At 0329 Hrs 24.11.15**, 132 kV Silchar- Dullavcherra (**Silchar- No tripping and Dullavcherra- DP, ZI, B-E**) line tripped. Due to tripping of this element, Dullavcherra area of Assam separated from rest of NER Grid and subsequently collapsed due to no source in this area.

**Load loss:** 12 MW in Assam

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

*AEGCL & NERTS, POWERGRID may elaborate.*

**E. Disturbance in Tripura system:**

- a. **At 1037 Hrs 20.11.15**, 132 kV Silchar- PK Bari I & II (**Line 1: Silchar- DP, ZIII, R-Y-E and PK Bari- No tripping & Line 2: Silchar- DP, ZIII, R-Y-E and PK Bari- No tripping**) and 132 kV PK Bari – Kumarghat (**PK Bari- Earth Fault and Kumarghat- No tripping**) line tripped. Due to tripping of these elements, PK Bari area of Tripura separated from rest of NER Grid and subsequently collapsed due to no source in this area. (132 kV P.K Bari - Ambasa, 132 kV Kamlpur-Ambasa & 132 kV Dhalabil - Agarthala lines kept open for system requirement & 132 kV Silchar-Dullavcherra line was not restored after tripping)

**Load loss:** 26 MW in Tripura

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

*TSECL & NERTS, POWERGRID may elaborate.*

**A.12 Protection Details of Transmission Lines, Transformers, Reactors and Bus Bars:**

NERLDC has collected the protection details of Transmission Lines, Transformer, Reactors and Bus Bar from all the utilities of North Eastern Region.

**Protection System Database has been prepared based on information furnished by power utilities of NER.**

**Power utilities of NER are requested to check & validate the same.**

**Any other item:**

**Date and Venue of next PCC**

It is proposed to hold the 41<sup>st</sup> PCC meeting of NERPC on second week of January, 2016. The exact venue will be intimated in due course.

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