

# North Eastern Regional Power Committee

## Agenda For

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

Time of meeting : 10:00 Hrs.

Date of meeting : 13<sup>th</sup> February, 2018 (Tuesday)

Venue : "Hotel Nandan", Guwahati.

#### **A. CONFIRMATION OF MINUTES**

#### **CONFIRMATION OF MINUTES OF 48<sup>th</sup> MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.**

The minutes of 48<sup>th</sup> meeting of Operation Sub-committee held on 17<sup>th</sup> January, 2018 at Guwahati were circulated vide letter No. NERPC/SE/PCC/2018/2565-589 dated 31<sup>st</sup> January, 2018.

*The Sub-committee may confirm the minutes of 48<sup>th</sup> PCCM of NERPC as no comments/observations were received from the constituents.*

#### **ITEMS FOR DISCUSSION**

#### **1. FOLLOW UP OF REMEDIAL ACTIONS:**

The suggested measures as per 48th PCC:

Sl. No	Name of element	Actions to be taken	Concerned Utilities	Latest Status (As per 49 <sup>th</sup> PCC Meeting)
1	220 kV AGBPP - Mariani (AEGCL) 1 Line & 220 kV Mariani (AEGCL) - Misa 1 Line	Review of Relay settings of DPR and other relays of 220 kV Mariani - Samaguri at Mariani end.	AEGCL	
2	132 kV Haflong - Umranshu Line	Over Current Settings (to be made directional) at Umranshu end need to be reviewed by AEGCL.	AEGCL	
3	134 kV Haflong - Umranshu Line	Healthiness of Protection System as well as DPR settings at Umranshu for 132 kV Haflong - Umranshu Line to be checked.	AEGCL	
4	132 kV Kahilipara - Umtru 1 Line	Earth Fault Relay settings at Kahelipara for Umtru lines to be reviewed by AEGCL.	AEGCL	

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5	220 kV Samaguri - Sarusajai 2 Line	Resistive reach of DPR at Samaguri and Sarusajai for 220 kV Samaguri - Sarusajai 2 Line to be reviewed by AEGCL.	AEGCL	
6	132 kV Doyang - Mokokchung	Relay Coordination of Mokokchung with downstream substations	DoP Nagaland	
7	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	Relay Coordination of Dimapur (DoP Nagaland) with downstream substations	DoP Nagaland	
8	133 kV Lekhi - Nirjuli Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	DoP,AP	
9	132 kV Agia - Medipathar I line and 132 kV Mawngap - Nongstoin I line	Healthiness of Protection System at Nongstoin for 132 kV Mawngap - Nongstoin Line to be done by MePTCL.	MePTCL	
10	133 kV Agia - Medipathar I line and 132 kV Mawngap - Nongstoin I line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	MePTCL	
11	400 kV Killing (Byrnihat) - Silchar Line	DT from Byrnihat before dead time to be rectified by Byrnihat	MePTCL	
12	132 kV Loktak - Ningthoukhong Line	Relay coordination to be done at downstream stations of Ningthoukhong	MSPCL	
13	133 kV Loktak - Ningthoukhong Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc)	MSPCL	

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14	Disturbance on 09.11.17 due to opening of 220 kV Kopili - Misa 1 Line	Problem in Latching Mechanism of Misa line CB at Kopili to be attended at the earliest	NEEPCO	
15	132 kV Monarchak - Udaipur Line , 132 kV Rokhia - Agartala I line & 132 kV Monarchak - Rokhia Line	Review of relay Settings at Monarchak, Rokhia, 79-Tilla & Udaipur	NEEPCO & TSECL	
16	133 kV Monarchak - Udaipur Line , 132 kV Rokhia - Agartala I line & 132 kV Monarchak - Rokhia Line	Relay co-ordination of downstream substations of Monarchak are to be done with Monarchak	NEEPCO & TSECL	
17	220kV Balipara-Sonabil	Review of E/F settings at Balipara	NERTS	
18	132kV Khliehriat-Khliehriat II	Activation of DPR	NERTS & MeECL	
19	132 kV Jiribam - Loktak 2 Line	DPR settings(Z-III initiation, SOTF/TOR trip need to be investigated as CB indication shows closed status prior to <b>TOR operation</b> for more than 1 sec) at Loktak to be reviewed by NHPC	NHPC	
20	400 kV Bongaigaon TPP- Bongaigaon Line	Maloperation 86A relay	NTPC	
21	132 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line	Relay Coordination to be done at Kolasib & downstream substations of Kolasib by P&ED Mizoram.	P & ED Mizoram	
22	133 kV Kolasib-Badarpur line & 132 kV Kolasib-Aizwal line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	P & ED Mizoram	

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23	132 kV Aizawl - Zungtui Line	Relay coordination of downstream substations of Aizawl is to be done by P&ED Mizoram in consultation with POWERGRID.	P&ED Mizoram	
24	133 kV Aizawl - Zungtui Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	P&ED Mizoram	
25	220 kV AGBPP - Mariani (AEGCL) 1 Line & 220 kV Mariani (AEGCL) - Misa 1 Line	Review of Settings of Earth Fault relays of 220 kV AGBPP - Mariani (AEGCL) Line at Mariani(AS) ( Directionality of Earth fault Relay at Mariani to be checked).	POWERGRID	
26	132 kV Jiribam - Loktak Line	Review of resistive reach of DPR at both ends	POWERGRID	
27	132 kV Aizawl - Jiribam Line	Review of resistive reach of DPR at both ends	POWERGRID	
28	220 kV Salakati - Alipurduar 1 Line	Healthiness of carrier scheme to be tested by POWERGRID.	POWERGRID	
29	132 kV Badarpur - Kumarghat 1 Line	Operation of Power Swing at Kumarghat is to be investigated by POWERGRID as all zones shall be blocked in 132 kV voltage level for 2 sec.	POWERGRID	
30	400 kV Balipara - Bongaigaon 4 Line	Resistive Reach of DPR at Balipara to be reviewed.	POWERGRID	
31	401 kV Balipara - Bongaigaon 4 Line	Healthiness of Carrier Scheme at both end to be checked by POWERGRID.	POWERGRID	
32	133 kV Haflong - Umranshu Line	Resistive reach of Z-I of DPR at Haflong(PG) to be reviewed by POWERGRID.	POWERGRID	
33	220 kV Dimapur - Misa 1 Line	Resistive reach of DPR at both ends to be reviewed by POWERGRID to reduce the fault clearing time.	POWERGRID	

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34	132 kV Haflong - Jiribam Line	Resistive reach of DPR at both ends to be reviewed by POWERGRID.	POWERGRID	
35	132 kV Badarpur - Khliehriat Line	Healthiness of Autorecloser Scheme to be checked at both ends	POWERGRID	
36	132 kV Aizawl - Kumarghat Line	Resistive reach of DPR at both ends to be reviewed by POWERGRID.	POWERGRID	
37	400 kV Bongaigaon - Alipurduar 1 Line	Healthiness of Carrier Scheme at both end to be checked by POWERGRID.	POWERGRID	
38	400 kV Azara - Bongaigaon Line	Resistive reach of DPR (Z-1) at both ends to be reviewed by POWERGRID (Bongaigaon)	POWERGRID & AEGCL	
39	401 kV Azara - Bongaigaon Line	& AEGCL(Azara) to keep the fault clearing time within 100 msec.	POWERGRID & AEGCL	
40	132 kV Lekhi - Nirjuli Line	Relay coordination to be done at Nirjuli & downstream substations of Nirjuli by POWERGRID & DoP,AP.	POWERGRID & DoP,AP	
41	400 kV Killing (Byrnihat) - Silchar 1 Line	Resistive reach of DPR (Z-1) at both ends to be reviewed by POWERGRID (Silchar) & MePTCL(Byrnihat) to keep the fault clearing time within 100 msec.	POWERGRID & MePTCL	
42	132 kV AGTPP - Kumarghat Line	AR scheme is to be implemented in this line.	POWERGRID & NEEPCO	
43	134 kV Monarchak - Udaipur Line , 132 kV Rokhia - Agartala I line & 132 kV Monarchak - Rokhia Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	TSECL	

***Concerned utilities may please intimate the latest status.***

**A. OLD ITEMS**

**A.1 Third Party Protection audit of NER Sub-Stations**

The 48<sup>th</sup> PCC Forum decided that Report of 1st Phase of 3rd Party Protection Audit of NER Substations has to be completed by the Committee formed during Subgroup Meeting held on 06.12.17 by 31.01.18, only after which the 2nd Phase of 3rd Party Protection Audit shall be started. DGM, NERLDC informed the Forum that the report shall comprise of both recommendations as well as action plans. Corrective actions that are taken by Power Utilities against observations of audit team may be monitored in the PCC Meeting.

The Forum discussed the audit procedures followed for +/- 800 kV Biswanath Chariali HVDC Station as it is different from other substations. NERLDC expressed that the DC protection part is complex and would need more than 1 day to audit the entire Substation.

Member Secretary, NERPC requested POWERGRID to find out the audit procedures of other HVDC stations outside NER like +/- 500 kV Rihand – Dadri, +/- 500 kV Talcher – Kolar HVDC Station etc, which can be practiced in NER as well.

Member Secretary informed the forum that proposal has been sent recently for obtaining Protection Database Management System(PDMS) from PSDF. PDMS will comprise of mainly 2 parts: i) Collection of data from all stations of NER and ii) Collection of Settings. This will make

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the auditing practice easier as unavailability of Data and Settings is one of the common issue that has been observed during 1st phase of 3rd Party Protection Audit.

Also, NERLDC informed the forum that as per draft “Reliability Standard for Protection System”, periodic protection audit has to be conducted once in year for critical substation and once in four years other substations. Subgroup had discussed to find out the list of critical substations in the Meeting held on 6<sup>th</sup> December, 2017. After detailed deliberation, forum finalized the **critical substations of NER** and are as follows:

- a. **POWERGRID: 400/220/33 kV Balipara, 400/132 kV Biswanath Chariali, 400/220/33 kV Bongaigaon, 400/220/33 kV Misa, 400/132/33 kV Silchar, 220/132 kV Dimapur, 220 kV Mariani (PG), 220/132 kV Salakati**
- b. **NEEPCO: 400/132 kV Ranganadi, 220/132 kV AGBPP**
- c. **OTPC: 400/132 kV Palatana**
- d. **NTPC: 400/220 kV BgTPP**
- e. **AEGCL: 400/220 kV Azara, 220/132/66/33 kV Agia, 220/132/33 kV BTPS, 220/132/66/33 kV Mariani, 220/132/33 kV Samaguri, 220/132/33 kV Sarusajai, 220/132 kV Sonabil**

- f. MePTCL: 400/220/132 kV Byrnihat (Killing)
- g. TSECL: 132/33/11 kV Agartala (79 Tilla), 132/33 kV Surajmani Nagar

*Members may please discuss*

### **A.2 Standardization of Disturbance Recorder Channels:**

AEGCL informed the forum that they have implemented the standardization of DR channel in all lines connected to other utilities . AEGCL will intimate the updated status through mail.

MePTCL informed the forum that they have standardized DR channels for Micom relay. They are facing problem for ABB relay and referred to NERTS, POWERGRID for help. The Forum requested POWERGRID to assist on this matter.

NERLDC requested all power utilities to provide DR output (DAT and CFG file) of all the transmission elements for verification.

The forum decided that standardization of DR channels has to be done by all utilities by 7<sup>th</sup> February, 2018.

*Members may please discuss*

### **A.3 Implementation of SPAR**

In 48<sup>th</sup> PCCM, NTPC informed the forum that they are having problem with implementation of the scheme due to coordination issue between differential and distance protection. POWERGRID informed that they will take up the issue.

NERLDC suggested to the forum that Single Phase/Three Phase Auto-reclosing scheme as applicable considering breaker mechanism has to be implemented in all the lines to ensure reliability. For Single pole breaker, Single Phase Auto reclosing scheme has to be enabled for maintaining synchronism through other healthy phases. Also, priority scheme is to be ensured in one and half breaker scheme.

The committee requested all constituent to furnish the status report of SPAR implementation to NERPC and NERLDC latest by 31<sup>st</sup> January, 2018.

*Members may please discuss.*

<b>B. NEW ITEMS</b>
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### **AGENDA ITEMS FROM NERLDC**

#### **B.1 Auto-Downloading of DR and EL output**

As per section 5.2(r) of IEGC, all the Users/STU/SLDC and CTU shall send information including disturbance recorder/ sequential event recorder output to RLDC

within 24 Hours for purpose of analysis of any grid disturbance/event. No Users/STU/SLDC and CTU shall block any data/information required by the RLDC and RPC for maintaining reliability and security of the grid and for analysis of an event.

It has been observed that due to less storage capacity of Disturbance Recorder and Event Logger output, many important events cannot be analyzed to conclude the root cause and suggest remedial measures accordingly.

The absence of DR and EL files causes problems for post disturbance analysis and identification of protection issues such as fault in line, fault beyond line, relay mal-operation, relay settings issue and so on. Also, DR and EL output files are not furnished on time by concerned utilities leading to delay in analysis and taking action of remedial measures on time.

It is suggested to facilitate **Auto downloading** feature of DR and EL output in all Substations/Generating Stations so that all the DR and EL output are not erased out and can also be obtained immediately after an event for analysis.

Also, due to improper naming of DR output files, it is difficult to identify the lines for which DR output is submitted. The DR output must be standardized and contain *DR file name , date and time of tripping , Name of the Substation and Name of the feeder tripped.*

**Members may please discuss.**

## **B.2 Analysis & Discussion on Events, Grid Incidences, Grid Disturbances which occurred in NER Grid w.e.f 1st December 2017 - 28th February 2018.**

The following numbers of Grid Disturbances (GD) & Grid Incidents (GI) occurred during the period **w.e.f 1st December 2017 - 28th February 2018:-**

Sl. No.	Control Area	Grid Incident s in nos.	Grid Disturbanc e in nos.	Grid Incident s in nos.	Grid Disturbanc e in nos.	Grid Incident s in nos.	Grid Disturbanc e in nos.
		Dec'17 to Feb'18	Dec'17 to Feb	Jan'17 to Dec'17	Jan'17 to Dec'17	Jan'18 to Feb'18	Jan'18 to Feb'18
1	Palatana	3	0	25	5	2	0
2	AGBPP	3	0	18	0	2	0
3	AGTPP	8	0	40	14	4	0
4	Ranganad	1	0	1	0	0	0
5	Kopili	6	0	13	1	3	0
6	Khandong	0	0	14	2	0	0
7	Doyang	0	0	9	5	0	0
8	Loktak	0	0	2	5	0	0
9	BgTPP	4	0	20	0	3	0
10	Arunachal Pradesh	0	5	0	37	0	3
11	Assam	0	4	0	35	0	2



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12	Manipur	0	2	0	40	0	0
13	Meghalaya	0	0	0	32	0	0
14	Mizoram	0	11	0	34	0	3
15	Nagaland	0	7	0	81	0	5
16	Tripura	0	5	0	56	0	3

Sl. No.	Category of GD/GI	Grid Disturbance in nos.		
		Dec'17 to Feb'18	Jan'17 to Dec'17	Jan'18 to Feb'18
1	GI-I	8	65	4
2	GI-II	17	76	10
3	GD 1	28	269	16
4	GD 2	0	6	0
5	GD 3	1	2	0
6	GD 4	0	1	0
7	GD 5	0	0	0
8	<b>Total GI</b>	<b>25</b>	<b>141</b>	<b>14</b>
9	<b>Total GD</b>	<b>29</b>	<b>278</b>	<b>16</b>

*This is for information to the members.*

### **B.3 Disturbance in Tripura System**

As discussed in previous PCC meeting there have been a number of disturbances in Tripura system. However no fruitful resolution was achieved due to non-participation by TSECL. Brief recommendations of 48<sup>th</sup> PCC are as follows:

- Non-directional E/M relays for O/C, E/F at PKBari to be made directional
- Installation of Numerical relay at 132kV PKBari
- Installation of Line differential relay for 132kV PKBari - Kumarghat

These are to be addressed immediately.

Further Kumarghat blackout happened on 04.02.18. This could not be analysed in the Sub-group meeting on 06.03.18 due to absence of DR/EL outputs from Tripura.

*Members may please discuss.*

**B.4 Actions recommended by Sub-group:**

The Sub-group in its meeting held on 06.03.18 recommended the following actions:

Sl. No	Name of element	Actions to be taken	Concerned Utilities	Latest Status
1	132kV Haflong-Umrangsho	Checking of healthiness of protection system(CB, relay, DC supply etc.) at Umrangsho	AEGCL	
2	132kV Khliehriat-Khliehriat	O/C, E/F relay auxiliary contacts to be assigned to NR for DR indication.	MeECL	
3	132kV Ningthoukong	Checking of healthiness of protection system(CB, relay, DC supply etc.)	MSPCL	
4	132kV Loktak-Ningthoukong	Downstream element relay coordination in conjunction with Loktak	MSPCL&NHPC	
5	132 kV AGTCCPP-Agartala	Over-reach of DPR at AGTCCPP. Setting to be revised after HTLS upgradation.	NEEPCO	
6	132 kV Rangia - Motonga	Checking of relay settings at Rangia	NERTS	
7	400kV Balipara-BNC I&II	POR settings to be disabled. Till SVC is in service Z-I to be kept at 80%	NERTS	
8	132kV Haflong-Haflong	Check healthiness of E/F relay at Haflong	NERTS	
9	220/132kV Dimapur ICT-1	Backup O/C, E/F settings to be reviewed such that it operates before Z-III at Misa	NERTS	
10	220kV Dimapur-Misa -2	Z-III protection timing to be reviewed such that it operates after operation of backup of ICT at Dimapur	NERTS	
11	132kV Palatana-Udaipur	NR to be time synchronized at Palatana	OTPC	
12	132kV Bus Bar at Palatana	Healthiness/operation of bus bar protection need to be reviewed	OTPC	

***Members may please discuss.***

**B.5 Finalization of SPS and Islanding Scheme document of NER:**

System Protection Schemes (SPS) and Islanding Schemes are important for system reliability and secure system operation. Various SPS schemes & Islanding Schemes are in place at intra/inter regional level. However with system strengthening/modification, these schemes have been revised many times. It is very important to have record of correct scheme to validate the various SPS & Islanding scheme operations happening in grid.

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All India SPS document is being updated by NLDC. Updated SPS document of NER is to be sent to NLDC.

For updating the SPS document of NER, it is requested to all concerned power utilities to furnish the updated SPS schematics & write up of schemes in your system.

Also, Power Utilities of NER are requested to send comment and suggestion for this document by 28<sup>th</sup> Mar'18. This document will be finalized by 31<sup>st</sup> Mar'18.

***Members may please discuss.***

Any other item:

**Date and Venue of next PCC**

It is proposed to hold the 50<sup>th</sup> PCC meeting of NERPC on second week of July, 2018. The date & exact venue will be intimated in due course.

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