



भारत सरकार Government of India

विद्युत मंत्रालय Ministry of Power

उत्तर पूर्वी क्षेत्रीय विद्युत समिति

North Eastern Regional Power Committee

एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

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No. NERPC/SE (O)/PCC/2018/6675-6713

Dated: March 23, 2018

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Managing Director, MSPDCL, Secure Office Bldg. Complex, South Block, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
15. Engineer-in-Chief (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
16. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
17. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
18. ED, NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
19. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
21. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
22. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
23. ED, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
24. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer (NPC), NRPC Complex, Katwaria Sarai, SJSS Marg., New Delhi - 110016

Sub: Minutes of 49th PCC Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 49th PCC Meeting held at Guwahati on the **13th March, 2018** for your kind information and necessary action. The minute is also available on the website of NERPC, www.nerpc.nic.in.

Any comments/observations may kindly be communicated to NERPC Secretariat at the earliest.

Encl: As above

भवदीय / Yours faithfully,

बी. लिंगखोइ

बि. लिंगखोइ / B. Lyngkhoi

निदेशक / Director/ SE

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. GM, NERLDC, Dongtiah, Lower Nongrah, Lapalang, Shillong - 793006
11. Chief Engineer(Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
12. Addl. GM (EED), NTPC Ltd., Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
13. GM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.

वी. लिंगखोडु
निदेशक / Director/ SE

North Eastern Regional Power Committee

MINUTES OF THE 49th PROTECTION COORDINATION

SUB-COMMITTEE MEETING OF NERPC

Date : 13/03/2018 (Tuesday)
Time : 10:00 hrs
Venue : "Hotel Nandan", Guwahati.

The List of Participants in the 49th PCC Meeting is attached at **Annexure - I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 49th PCC meeting. He noted the presence of participants from all the utilities except Arunachal Pradesh, Mizoram, NTPC and OTPC. He expressed strong dis-satisfaction about non-participation of members in the Sub-Committee meetings of NERPC, particularly absence of representatives from PSUs which is unacceptable. He entrusted Director/SE(O&P), NERPC to draw up the fresh list of members of PCC and ensure participation in the future. He stated that a lot of issues have been resolved, so now PCC will be held quarterly, but the sub-group meeting for analyzing the grid incidences should be held every time the incidences cross more than twenty times. He also requested that the report of first phase of protection audit should be completed by 31.03.2018 so that the next course of action can be chalked out. Further he informed that in order to get the maximum output and coordination, the Operation and Protection Circles have been merged into one circle in NERPC under Shri B. Lyngkhoi, Director/SE(O&P).

Thereafter, Member Secretary requested Shri B. Lyngkhoi, Director/SE(O&P) to take up the agenda for discussion. SE(O&P), NERPC informed that PDMS tender is yet to be finalised and meeting of the Tender Preparation Committee would be held very soon.

SE(O&P), NERPC also suggested to the forum that there must be a fixed member and an alternate member from each utilities for attending PCC and OCC Meetings so that the participation can be increased and issues can be addressed more effectively.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 48th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

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

The Sub-committee confirmed the minutes of 48th 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 49th 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	Completed
2	132 kV Haflong - Umranshu Line	Over Current Settings (to be made directional) at Umranshu end need to be reviewed by AEGCL.	AEGCL	By April'18
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	By April'18
4	132 kV Kahilipara - Umtru 1 Line	Earth Fault Relay settings at Kahelipara for Umtru lines to be reviewed by AEGCL.	AEGCL	Completed
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	Completed
6	132 kV Doyang - Mokokchung	Relay Coordination of Mokokchung with downstream substations	DoP Nagaland	Completed

7	132 kV Dimapur (PG) - Dimapur (DoP, Nagaland) 2 Line	Relay Coordination of Dimapur (DoP Nagaland) with downstream substations	DoP Nagaland	Completed
8	133 kV Lekhi - Nirjuli Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	DoP, AP	Status could not be updated due to absence by 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	Under PSDF works By Nov'18
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	Under PSDF works By Nov'18
11	400 kV Killing (Byrnihat) - Silchar Line	DT from Byrnihat before dead time to be rectified by Byrnihat	MePTCL	NR replaced on 20.12.17 but problem still persists. Works will be attended during shut down of Silchar-Byrnihat Line.
12	132 kV Loktak - Ningthoukhong Line	Relay coordination to be done at downstream stations of Ningthoukhong	MSPCL	Completed
13	133 kV Loktak - Ningthoukhong Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc)	MSPCL	Completed
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	Completed

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	Team will visit Monarchak, Rokhia , 79 Tilla(Agartala) and Udaipur Substation and resolve the matter
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	Team will visit Monarchak, Rokhia , 79 Tilla(Agartala) and Udaipur Substation and resolve the matter
17	220kV Balipara-Sonabil	Review of E/F settings at Balipara	NERTS	Completed
18	132kV Khliehriat-Khliehriat I	Activation of DPR	NERTS & MeECL	NERTS end done. MeECL to activate by 21.03.18.
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 TOR operation for more than 1 sec) at Loktak to be reviewed by NHPC	NHPC	Completed
20	400 kV Bongaigaon TPP- Bongaigaon Line	Maloperation 86A relay	NTPC	Status could not be updated due to absence 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	Status could not be updated due to absence by P&ED, MZ
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	Status could not be updated due to absence by P&ED, MZ

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	Status could not be updated due to absence by P&ED
24	133 kV Aizawl - Zungtui Line	Checking of healthiness of Protection System (Relays, Circuit breaker, DC system etc) of downstream substations	P&ED Mizoram	Status could not be updated due to absence by P&ED
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	By Mar'18
26	132 kV Jiribam - Loktak Line	Review of resistive reach of DPR at both ends	POWERGRID	Completed
27	132 kV Aizawl - Jiribam Line	Review of resistive reach of DPR at both ends	POWERGRID	Completed
28	220 kV Salakati - Alipurduar 1 Line	Healthiness of carrier scheme to be tested by POWERGRID.	POWERGRID	Completed
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	Completed
30	400 kV Balipara - Bongaigaon 4 Line	Resistive Reach of DPR at Balipara to be reviewed.	POWERGRID	Completed
31	401 kV Balipara - Bongaigaon 4 Line	Healthiness of Carrier Scheme at both end to be checked by POWERGRID.	POWERGRID	Completed

32	133 kV Haflong - Umranshu Line	Resistive reach of Z-I of DPR at Haflong (PG) to be reviewed by POWERGRID.	POWERGRID	Completed
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	Completed
34	132 kV Haflong - Jiribam Line	Resistive reach of DPR at both ends to be reviewed by POWERGRID.	POWERGRID	Completed
35	132 kV Badarpur - Khliehriat Line	Healthiness of Autorecloser Scheme to be checked at both ends	POWERGRID	Completed
36	132 kV Aizawl - Kumarghat Line	Resistive reach of DPR at both ends to be reviewed by POWERGRID.	POWERGRID	Completed
37	400 kV Bongaigaon - Alipurduar 1 Line	Healthiness of Carrier Scheme at both end to be checked by POWERGRID.	POWERGRID	Completed
38	400 kV Azara - Bongaigaon Line	Resistive reach of DPR (Z-1) at both ends to be reviewed by POWERGRID (Bongaigaon)	POWERGRID & AEGCL	Completed
39	400 kV Azara - Bongaigaon Line	AEGCL(Azara) to keep the fault clearing time within 100 msec.	POWERGRID & AEGCL	Specific case to be sent by NERLDC to POWERGRID and AEGCL. POWERGRID and AEGCL will review the settings.
40	132 kV Lekhi - Nirjuli Line	Relay coordination to be done at Nirjuli & downstream substations of Nirjuli by POWERGRID & DoP,AP.	POWERGRID & DoP,AP	NERTS end complete.
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	Completed.

42	132 kV AGTPP - Kumarghat Line	AR scheme is to be implemented in this line.	POWERGRID & NEEPCO	N/R to be replaced in order to have Check sync at AGTPP.
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	DC system problem rectified.

Deliberation of the sub-Committee:

SE(O&P) thanked the members for the swift action which has resolved most of the issues. He further informed that a team from NERLDC would visit Mizoram (Zuangtui, Kolasib) and Tripura (Rokhia, 79Tilla, Udaipur, Monarchak) to resolve downstream setting issues.

DGM(SO-II), NERLDC also informed the forum that recently a team from NERLDC as a part of FOLD Survey had visited Dimapur (NA) and Kohima (NA) substation and resolved all downstream related settings issues.

DGM(AM), NERTS informed the forum that for issues related to 132 kV Doyang – Mokokchung line mentioned under SI. No. 6 above, review of relay settings at Doyang shall be done by NEEPCO and POWERGRID & DoP, Nagaland shall review the settings at Mokokchung (NA). The matter is to be resolved by March'18. If problem still exists, then a team could visit the Stations at a later stage. The forum agreed to the same.

For issues related to SI. No 9 and 10 above, DGM(SO-II), NERLDC informed the forum that work must be done on priority basis under PSDF considering most critical stations. For Meghalaya, priority has to be given to 400 kV Byrnihat Substation, 132 kV Khleihriat Substation, 132 kV Mendipathar Substation and 132 kV Nongstoin Substation for completion of R&M works under PSDF.

SE(O&P), NERPC also advised all the utilities to involve some personnel during R&M works under PSDF and make best use of opportunity to enhance their knowledge from the commissioning experts of OEM.

The Sub-Committee noted as above.

Action: All utilities.

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

The 48th 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 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 6th 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

Deliberation of the sub-Committee:

Member Secretary enquired about the status of the Audit Report. It was intimated that the First Phase Audit report is in final stage and would be submitted by 31.03.2018. MePTCL informed the forum that the First Phase Audit report and Template settings as per Ramakrishna Task Force Committee is completed and will be submitted to the Convener Audit Protection for approval. MS,NERPC opined that upon his visit to +/-800kV HVDC it was observed that only audit of AC system is possible.

DGM(SO-II), NERLDC suggested forum to arrange a separate meeting to discuss the observations and recommendations of 3rd Party Protection Audit Report before next PCC Meeting for fruitful deliberation in the PCC Meeting.

The Sub-Committee noted as above.

Action: All concerned utilities.

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 7th February, 2018.

Deliberation of the sub-Committee:

AEGCL representative informed that for remaining 6 sub-stations standardization would be completed by May'18. E E (System Protection), MePTCL informed that after

obtaining the ABB software from AEGCL, the standardisation for remaining stations of Mendipathar SS, Killing SS, Stage III PS and Stage IV PS will be completed by 30.04.2018. The forum requested NERLDC to circulate the DR template to all concerned utilities.

SE(O&P),NERPC suggested that during erection works under R&U scheme the commissioning engineers should do the work of DR channel standardization.

The Sub-committee noted as above.

Action: All utilities as above.

A.3 Implementation of SPAR

In 48th 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 31st January, 2018.

Deliberation of the sub-Committee:

DM(E/M), NEEPCO enquired whether there are any specific guidelines regarding activation of A/R for lines connecting two generating stations eg. 132kV Khandong-Kopili D/C. NERLDC informed the forum that as per Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010, 3 ph A/R should be in place for 132 kV lines. EE,SP, MePTCL informed that a feasibility report regarding implementation of A/R in MeECL system would be submitted by Apr'18. The forum decided that availability of A/R facility would be specifically mentioned in the Protection Audit Report. It was also discussed that once installation of Numerical Relays under PSDF scheme is done, the implementation of Auto-reclosing schemes in all the states can be done more effectively.

The Sub-committee noted as above.

Action: All state transmission utilities.

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.*

Deliberation of the sub-Committee:

NERTS informed that all DR/EL records are being provided since major stations are connected through Advanced Fault Analysis System (AFAS). After detailed deliberation the forum decided that auto-downloading of DR/EL at sub-stations would be taken up as separate project after completion of R&U works. For CSGS it was recommended to explore feasibility.

SE(O&P), NERPC, also informed that implementation of PDMS will also help in collection of DR, EL, relay settings and other data.

The Sub-Committee noted as above.

Action: NEEPCO, NTPC, OTPC, NHPC.

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 Incidents in nos.	Grid Disturbance in nos.	Grid Incidents in nos.	Grid Disturbance in nos.	Grid Incidents in nos.	Grid Disturbance 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	Ranganadi	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	Ar. Pradesh	0	5	0	37	0	3
11	Assam	0	4	0	35	0	2
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	Total GI	25	141	14
9	Total GD	29	278	16

Deliberation of the sub-Committee:

NERLDC informed the forum that as per categorization of tripping w.e.f. Dec'17 to Feb'18, maximum no. of tripping occurred due to Protection Co-ordination Issues/Downstream Faults/Improper relay settings, Insulator puncture near Byrnihat area and vegetation issues. The record highlighted the importance of vegetation clearance and proper relay settings.

The forum also requested all utilities to submit undertaking for patrolling of lines carried out to NERLDC/ NERPC with immediate effect.

The Sub-Committee noted as above.

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 48th 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.

Deliberation of the sub-Committee:

DGM(AM),NERTS informed that line differential relay for 132kV PKBari-Kumarghat would be installed at both ends by NERTS. The Sub-Committee decided that TSECL would hand over spare NR at 132kV PKBari to NEEPCO for installation at AGTCCPP for 132 kV AGTCCPP – Kumarghat line.

DGM(SO-II),NERLDC informed that a team from NERLDC would visit Rokhia, 79Tilla, Udaipur, Monarchak to co-ordinate downstream relay settings.

The Sub-Committee noted as above.

Action: TSECL, NERTS.

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	Apr'18
2	132kV Khliehriat-Khliehriat I	O/C, E/F relay auxiliary contacts to be assigned to NR for DR indication.	MePTCL	By 21.03.18
3	132kV Ningthoukong	Checking of healthiness of protection system(CB, relay, DC supply etc.)	MSPCL	Completed
4	132kV Loktak-Ningthoukong	Downstream element relay coordination in conjunction with Loktak	MSPCL&NHPC	Completed
5	132 kV AGTCCPP-Agartala	Over-reach of DPR at AGTCCPP. Setting to be revised after HTLS upgradation.	NEEPCO	Mar'18
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	Mar'18
8	132kV Haflong-Haflong	Check healthiness of E/F relay at Haflong	NERTS	completed
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	Mar'18
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	Mar'18
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	-

Deliberation of the sub-Committee:

** CM, NERTS informed that the original settings were meant for 132kV Rangia-Deothang which has since been LILO'd at 132kV Motonga. The settings have been revised at Rangia by NERTS but corresponding settings at Deothang has not been done. Further he informed that an industrial load at 132kV Motonga has been operating without any protection. The forum requested NERPC to write to NLDC so

that protection at 132kV Motonga is ensured and NERTS is allowed to visit 132kV Motonga and Deothang to make appropriate settings.

The Sub-Committee noted as above.

Action: All utilities as above/NERPC.

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.

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 28th Mar'18. This document will be finalized by 31st Mar'18.

Deliberation of the sub-Committee:

After detailed deliberation the forum requested NERPC to convene a Special Meeting to review all SPS and islanding schemes at the earliest.

The Sub-Committee noted as above.

Action: NERPC.

ADDITIONAL AGENDA ITEM

B.6 TLSA Installation by State Transmission Utilities:

SE(O&P),NERPC informed that NERTS has initiated the installation of TLA for lightning prone transmission lines which is in various stages of completion. The preliminary reports indicate that installation has been very fruitful.

CM, NERTS opined that one of the major pre-requisite for identifying location for installation of TLA is tower top patrolling. The forum thanked NERTS for the pioneering work and requested all remaining utilities to identify the lines or TLA

installation at the earliest. EE System Protection MePTCL, informed that preliminary works before installation of TLA, like measuring tower footing resistance, identifying the lightning prone areas and locating of flash over points etc will be explore jointly with the Transmission Line Maintenance Wing.

The Sub-Committee noted as above.

Action: All transmission utilities.

B.7 Technical presentation in PCCM:

SE(O&P), NERPC stated that as previously discussed technical presentation would be given on important topics once PCC deliberations are completed. It was decided that the 50th PCC would have presentations on (1) Ramakrishna Task Force Recommended settings by NERTS (2) D/R inference and analysis by NERTS

The Sub-Committee noted as above.

Action: NERTS.

B.8 Formation of Committee for periodic review of relay settings of grid elements:

It is very much essential to review the relay settings of elements connected to grid periodically to ensure reliable operation of relays considering the drastic changes occurring in the grid. Also, review of relay settings of upcoming elements is also critical to ensure the safe and secure operation of NER Grid. It is requested to form a committee to review relay settings. Review of relay settings may be done half yearly for elements already connected to grid and review of relay settings of upcoming elements may be done at the earliest.

In 48th PCC Meeting it was decided to form a committee to review the relay settings. The committee will consist of members from NERLDC, NERTS, NERPC and the affected constituents. The forum requested all constituents to send their nomination to the committee by 31st January, 2018.

Deliberation of the sub-Committee:

The members nominated from NERPC, NERLDC and NERTS are as follows:

NERPC: Sh. S. Mukherjee, AEE and Sh S Ranjan, AE

NERLDC: Sh. Jerin Jacob, Engineer and Sh. C.B. Thapa, Engineer

NERTS: Sh. H. Talukdar, Chief Manager and Sh. Pinak Nandi, Sr. Engineer

The Sub-Committee noted as above.

B.9 Voltage Collapse observed in Tripura Power System at 16:11 Hrs on 23rd Sep'17

In the 48th PCC Meeting, NERTS, POWERGRID informed the forum that the PD setting for ICT is 500ms and for line is 2.5s. After detailed deliberation, it was decided that this is to be followed by all utilities at the earliest.

Deliberation of the sub-Committee:

Palatana is requested to intimate the PD timing for both ICTS in the next meeting

The Sub-Committee noted as above.

Action: OTPC

Date & Venue of next OCC meeting

It is proposed to hold the 50th PCC meeting of NERPC on second week of June, 2018. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

Annexure-I

List of Participants in the 49th PCC Meetings held on 13.03.2018

SN	Name & Designation	Organization	Contact No.
1.	Sh. Abhishek Kalita, AM	Assam	08486213068
2.	Sh. Nishanta Baruah, AM	Assam	08473036988
3.	Sh. S. Chandradhaja Singh, DGM, SLDC	Manipur	09862296029
4.	Sh. A. G. Tham, AEE, SLDC	Meghalaya	09774664034
5.	Sh. B. Nikhla, EE, SLDC	Meghalaya	09436314163
6.	Sh. Mhonlumo Kikon, EE (TR), Mokokchung	Nagaland	09436005616
7.	Sh. L.Singson	Nagaland	09436831129
8.	Sh. Rokobeito Iralu	Nagaland	09436832020
9.	Sh. S. Chaudhuri, Sr. Mgr	Tripura	09436503239
10.	Sh. Amaresh Mallick, DGM(SO-II)	NERLDC	09436302220
11.	Sh. Jerin Jacob, Engineer	NERLDC	09402120113
12.	Sh. Chitra Bahadur Thapa, Engr. (SO-II)	NERLDC	08135989964
13.	Sh. Ashim Kr. Sarmah, DM(E/M)	NEEPCO	09435078860
14.	Sh. P. Kanungo, DGM- AM	PGCIL	09436302823
15.	Sh. Pinak Nandi, Sr. Eng.	PGCIL	09436335227
16.	Sh. H. Talukdar, CM	PGCIL	09436335237
17.	Sh. Rodik Hmar, M (E)	NHPC	09402277414
18.	Sh. P.K. Mishra, MS	NERPC	-
19.	Sh. B. Lyngkhoi, Director/S.E (O&P)	NERPC	09436163419
20.	Sh. S. Mukherjee, AD-I/AEE	NERPC	08794277306