¼âäÀ¦ã ÔâÀ‡ãäÀ Government of India
ãÌâ²ã¦ã ¼ã¨ããÊã¾ã Ministry of Power
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North Eastern Regional Power Committee
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Meghalaya State Housing Finance Co-Operative Society Ltd. Building
¶ããäØãä¾ã ãÖÊÔã, ãÍãÊãäØã – 793003
Nongrim Hills, Shillong – 793003.

ISO 9001:2008

Ph. No: 0364 - 2520034
Fax No: 0364 - 2520030

No. NERPC/OP/PCC/2013/***3231-58*** Date: 24th May, 2013

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
3. Director(Transmission), Me.PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
4. CGM, (LDC), SLDC Complex, AEGCL, Kahelipara, Guwahati-781 019
5. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
7. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
8. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Chief Engineer (P), Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
10. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
11. General Manager, TSECL, Agartala – 799 001
12. ED (O&M), NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
13. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
14. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
15. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
16. GM (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
17. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
18. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
19. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066

Sub: Minutes of the 9th PCC Meeting held on 10th May, 2013 at Guwahati.

The Minutes of the 9th PCC Meeting of NERPC held on 10.05.2013 at “Hotel Grand Starline”, Guwahati is enclosed for favour of kind information and necessary action please**.**

The minutes is also available on the website of NERPC **www.nerpc.nic.in**

Encl: As above

¼ãÌãªã¾ã / Yours faithfully,

बी. लिंगखोई

(ºãä. ãÊãäŒãäƒ /B. Lyngkhoi)
,ãÃããàã¥ã ,ãä¼ã¾ãä¦ãä / Superintending Engineer (O)

Copy to:

1. Chief Engineer, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. Chief Engineer, APGCL, Bijuli Bhavan, Guwahati - 781001
3. Chief Engineer, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road,Shillong – 793 001
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. Chief Engineer(Elect), Loktak HEP,Vidyut Vihar, Kom Keirap, Manipur- 795124
11. DGM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.

North Eastern Regional Power Committee

MINUTES OF THE 9th PROTECTION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date: 10.05.2013 (Friday)

Time: 10:30 hrs

Venue: "Hotel Grand Starline," Guwahati.

The List of Participants in the 9th PCC Meeting is attached at **Annexure – I**

Shri S. K. Ray Mohapatra, Member Secretary I/C, NERPC welcomed all the participants to the 9th PCC meeting. Further, he briefed about the discussion in the 84th OCC meeting to the participants in the PCC meeting. He stated that Protection Audit has been completed in February, 2013. He also informed that as desired by MoP and CEA, the DPR for rectification of various deficiencies in substations / generating station has to be prepared by the constituent states and to be submitted to NERPC. During NPC meeting held at New Delhi, it was informed that for execution of work, funding arrangement is being planned by MoP and hence constituent states of the region should not miss the opportunity. The proposed islanding schemes of different regions were also discussed during NPC meeting. The increase in hydro generation due to early monsoon, reduction in demand and likely addition of generation from the GBPP of OTPC at Pallatana, restriction of power flow in ER-NER corridor, at the same time frequent tripping of Silchar – Byrnihat 400kV line, Palatana – Silchar 400kV line, tripping of reactor at Palatana end and overvoltage problem, all together, are matter of concern. Improvement required in the existing protection system should be deliberated. He requested all members for active participation during discussion in the meeting as protection system plays a vital role in security and safety of the grid.

Thereafter, Member Secretary I/C requested Shri B. Lyngkhoi, SE (O), NERPC to take up the agenda items for discussion.

SE(O), NERPC informed that healthiness of protection system is very important for safe and reliable operation of the grid. Further he stated that the DPR should be submitted at the earliest to take the advantage of funding from Ministry of Power for carrying out upgradation work in constituent states of the region.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 8th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

SE (O), informed that the minutes of the 8th meeting of the PCC held on 10th April, 2013 at Guwahati were circulated vide letter No. NERPC/OP/PCC/2013/4789-815 dated 25th April, 2013.

No comments or observations were received from any of the constituents, the minutes of 8th PCC meeting was confirmed.

ITEMS FOR DISCUSSION

B. FOLLOW UP ACTION

B.1. Independent third party audit of protection system

The Chairperson, CEA vide his D.O letter No. 7/AI/GD/GM/2012/397-407, addressed to Hon'ble Chairperson, NERPC had requested for completion of independent third party audit of protection system and to ensure operationalisation of Under Frequency Relay (UFR) and df/dt relay based automatic load shedding within one month. In response to above letter NERPC vide letter No. NERPC/OP/OCC/2012/5687-702 had circulated extract of CEA & CERC regulation and some formats, with typical example (which can be downloaded from NERPC website), to help in collecting various information. No. of groups need to be formed to carry out the protection audit. The action plan needs to be discussed so that the work can be completed as early as possible.

However, the self-certification (by STUs / CTU) in respect of operationalisation of Under Frequency Relay (UFR) and df/dt relay based automatic load shedding may please be submitted in the prescribed format to NERPC and CEA at the earliest.

During 79th OCC meeting, SE (Comml), NERPC informed that as recommended by Enquiry Committee, the third party independent audit for the Protection systems in NER is to be completed as early as possible and presently Ministry of Power and CEA are also monitoring the progress in various regions it very closely. Therefore, for the benefit of the NER, the upgradation of protection system is very much required for smooth and reliable operation of grid and action should be initiated at the earliest. Further, he informed that third party independent audit of Protection systems for Northern region has already been completed by PGCIL in association with CPRI and other regions have also started their action plan. He informed that in NER there are about 135 Nos. of substations/ generating stations of 132kV and above voltage class and also proposed to carryout protection audit for all these substations / generating stations as 132kV system forms the backbone of NER unlike other regions. Since arrangement of funds is the major constraint in NE region, small groups /teams have to be formed taking representation from NER constituents. The committee decided to form teams comprising of four (4) members from different state utilities/owner, PGCIL/NEEPCO/NHPC and NERPC/NERLDC. NERPC will co-ordinate the audit and prepare the further course of action in consultation with NERLDC and POWERGRID. The nominated member of NERPC/NERLDC will be the co-ordinator of each group.

NERPC, in consultation with POWERGRID and NERLDC, had prepared the detailed plan for carrying out the audit of protection system of all 132 kV and above voltage class substations/generating stations in NER. All the constituents were requested to nominate their representatives for the audit and the proposed dates were to be finalized during OCC/PCC meeting. NERPC vide letter dated 26th and 30th November, 2012 had requested PGCIL and other constituents to provide logistic support inform of road transport and stay at various places in NER.

During the 82nd OCC meeting, MS I/C, NERPC informed that as per the planning out of nine (9) routes identified the audit of protection system pertaining to route no. 1, 4, 6, 7 and 8 have been completed and presently audit in respect of route no. 2 and 5 is going on which will be completed by 11th February, 2013. These routes

cover most of the 400/220/132kV Sub-Stations and Generating stations in Ar. Pradesh, Assam, Manipur, Mizoram, Nagaland and Tripura. The audit of rest of two (2) routes (route no. 3 and 9) will commence from 11th February, 2013. Further, he stated that as on date protection audit in respect of about 100 substations / generating stations has been completed and rest of the work is likely to be completed by February, 2013.

During the 83rd OCC and 7th PCC meeting, MS I/C, NERPC briefed the members about the deficiencies observed in some of the audited sub-stations and highlighted the inadequacy of diagnostic tools in most of the stations. The formats of reports were also highlighted to the members for perusal.

GM, NERLDC suggested that shortage of man-power may also be highlighted in the reports as round the clock manning of sub-stations is very important for effective and efficient management of the systems.

MS I/C requested all the constituents to extend their help to compile the audit report of their Sub-stations/Generating Stations. He stated that the report is to be finalized and is likely to be submitted by March 2013.

The protection audit of the region has been completed and deficiency of audited substations / generating stations has been brought out. The deficiencies need to be rectified at the earliest to ensure safe secure operation of the grid. CEA vide letter dated 25-03-2013 has advised NERPC to discuss the matter with STUs and generating companies of the region for preparation of DPR, cost estimate and action plan for implementation etc. for rectification of deficiencies. The format prepared by PGCIL (received from GM, CEA) for preparation of cost estimate was forwarded in advance to all constituents through mail dated 01-4-2013.

During the 84th OCC and 8th PCC meeting, MS (I/C) informed that the audit of protection system in respect of substations / generating stations of 132kV and above voltage class in the region was completed in the month of February 2013.The report highlighting the deficiencies of audited substations / generating stations in NER system along with recommendations and implementation plan was to be submitted by March 2013. Findings of the auditing teams were mailed to all constituent states. He also informed that as desired by MoP & CEA, the constituent

states have to prepare and submit the DPR for rectification of various deficiencies in substations / generating station. For execution of the work, funding arrangement is being planned by MoP and hence constituent states of the region should not miss the opportunity. The format prepared by PGCIL (received from GM, CEA) for preparation of cost estimate was forwarded in advance to all constituents through mail dated 01-4-2013.

The committee discussed in detail the findings (highlighting various deficiencies in the NER system) and the recommendations of the protection audit team. The committee also reviewed the format for DPR and requested POWERGRID to simplify the format as it is very complicated. POWERGRID was also requested to assist constituent states of the region in preparation of DPR so that same can be submitted in time as it would be difficult on their part to prepare DPR in absence of cost data pertaining to various equipment/ relays/ materials etc.

It was decided that constituent states (7) of the region would provide the required inputs to PGCIL in respect of each substation / generating stations of 132kV and above voltage class taking into account following broad areas.

- Modification in switching Scheme
- Replacement of existing EM/Static relays by numerical relays / Bay Control and Protection Units (BC&PUs) & Substation Automation System (SAS) and providing TSE, DR & EL
- Replacement of old obsolete equipment (CB, Surge Arrester, Isolators, Earthing switches, CTs, PTs/CVTs) and material
- Establishment of reliable communication link and Providing carrier intertrip facility
- Improvement in DC system and providing DG set
- Improving existing Earthing system
- Providing required Fire Fighting system/ arrangement for transformers / reactors
- Providing Modern diagnostic tools.
- Any other improvement required

All constituents agreed to co-ordinate with POWERGRID and submit the DPR at the earliest.

CTU and Central sector generating companies have to prepare their DPR separately.

Deliberation of the Committee

MS I/C, NERPC informed the house that during the NPC meeting held on 15th April, 2013 at CEA, New Delhi, the third party protection audit and submission of DPRs prepared by state constituents for renovation & upgradation of protection systems including replacement of old switchgears etc. in all existing substations / generating stations of 132kV and above voltage class was discussed in detail. He requested all constituents to complete their DPR at the earliest and submit the same to NERPC Secretariat. The matter was also deliberated at length during 85th OCC meeting held on 9th May, 2013.

During discussion it was brought to the notice of the committee that in NER, number of substations of 132kV level is operating with Single Bus (SB) schemes and the possibility of converting SB scheme into MT scheme should be explored and associated cost may be included in the DPR under preparation. SE, Mizoram informed that 5 Nos. of sub-stations of 132kV level are operating with Single bus (SB) schemes and there is space constraint for implementation of Main and Transfer (MT) bus scheme. Therefore, a site visit by sub-station design experts may be planned for exploring the possibility of implementation of MT Scheme. Tripura and Meghalaya also raised the similar issue.

MS I/C, NERPC stated that the possibility of adoption of GIS / Hybrid technology may be explored to address the space constraint.

Further, the committee requested POWERGRID and NEEPCO to depute their design engineers, if possible, to assist state constituents on this matter.

Meghalaya and Assam informed that DPR is under preparation and it will be submitted soon. The committee requested all other constituents to submit DPR to NERPC in time.

The Sub-committee noted as above.

B.2. Major Grid Disturbances during November, 2012 to April, 2013:

There was no major grid disturbance during April, 2013 and there were three major grid disturbances during November, 2012 to February, 2013. Two during December, 2012 (i.e. 14.12.2012 & 29.12.2012) and one in January, 2013 (i.e. 20.01.2013).

During 7th PCC, NERLDC and POWERGRID was requested to deliberate on following points for each incidence in detail:

(a) Sequence of operation including tripping of lines / generators
(b) Areas affected and quantum of load
(c) Operation / mal operation of various relays associated with transmission lines and Various generators
(d) Cause of such incidence
(e) Sequence of restoration operation and time taken to restore the normalcy

NERLDC gave the presentation on the detail occurrences of the grid disturbances. The incidences were discussed in detail and the committee felt that more tripping details are required for complete investigation. The committee requested POWERGRID and State utilities to look into the matter of above grid disturbances and prepare a report covering details of trippings, sequence of operation and probable cause of such trippings etc. so that the committee can deliberate further on above disturbances. POWERGRID and Assam agreed to collect the complete details and submit their report in next PCC meeting.

POWERGRID had compiled all the disturbances and same needs to be discussed further in the next meeting. The detail is enclosed at **Annexure- B.2**. It was proposed to form a small group comprising representatives from NERPC, NERLDC, Powergrid, Assam, Meghalaya and Tripura to study important grid incidences/ disturbances.

The Sub-committee noted as above.

B.3. Z-3 Protection settings in respect of transmission lines

In the aftermath of twin major grid disturbances in NEW grid on 30th & 31st July, 2012, the Zone-3 protection settings of different transmission lines (132 kV & above) assumed high importance and loadability of transmission lines based on Zone-3 settings need to be reviewed on urgent basis. In view of above all constituents are

requested to furnish the existing Zone-3 protection settings (at both ends) of 132kV and above voltage class lines.

During 5th PCC meeting, the sub-committee decided that the Z-3 setting should be done properly to differentiate between load encroachment and Z-3 fault. Committee decided to discuss further in detail after getting information from various utilities.

During 6th PCC meeting, philosophy adopted by POWERGRID for settings of different zones including Z-3 settings was circulated.

During 7th PCC, the committee requested POWERGRID to give a sample calculation based on their philosophy for better understanding of various settings. POWERGRID agreed to give a sample calculation in the next PCC meeting.

During 8th PCC meeting, POWERGRID has submitted the sample relay setting calculation for a typical line which was mailed to the constituents.

Assam representative also brought into the notice the basic relay setting philosophy as per IEEE.

The committee requested all the constituents give their suggestion/comments on Zone -3 protection philosophy so that it can be finalized in next OCC/PCC meeting.

The committee requested POWERGRID to give a detail presentation on protection settings with typical examples.

POWERGRID agreed.

The sub-Committee noted as above.

B.4. <u>SPS scheme for Pallatana</u>

It was observed from load flow studies carried out by NERLDC that tripping of Pallatana unit during peak hours would cause loading of Kopili ICT (160 MVA). To save the situation shedding of around 100 MW of load would be required in the 132 KV pocket through SPS.

During 76th OCC meeting, DGM, NERLDC had informed that a special protection scheme is required to be planned for shedding the above load. The committee

advised NERPC Secretariat to design the SPS in consultation with NERLDC, Assam, Meghalaya, Tripura, NEEPCO, NHPC and OTPC.

POWERGRID representatives had informed that not only SPS but protection schemes are also required to be reviewed before commissioning of Pallatana GBPP. Also from the load flow study it was observed that in certain lines there will be reverse flow of power due to tripping of Pallatana.

The committee had requested POWERGRID to study the protection schemes and prepare a report.

During 77th OCC meeting, DGM, NERLDC stated that in case of tripping of Pallatana unit, around 120 MW of load shedding through SPS would be required in Mizoram, Tripura and South Assam (each 40 MW) and some load shedding would be required in Meghalaya. POWERGRID informed that the implementation of SPS for tripping of far off lines/loads will be difficult as there will be co-ordination problem because of non-availability of communication links and NERLDC should find some other nearby lines or SPS can be linked with Kopili ICT. NERLDC had informed that some radial lines in NER system have been identified for disconnecting during emergency conditions to save the grid and SPS can be implemented on those lines which are available in 132 kV Pocket. All the constituents agreed for implementation of SPS on these lines and also for emergency disconnection of listed lines in case of necessity. NERLDC was to prepare the SPS scheme in consultation with NERPC & POWERGRID.

During 78th OCC meeting, the committee requested NERLDC to prepare the SPS scheme of Pallatana in consultation with NERPC and POWERGRID.

During 79th OCC meeting, NERLDC informed that lines have been identified in NER system for disconnection during emergency conditions to save the grid. SPS can be planned accordingly. The committee requested NERLDC to give the list of lines associated with tripping of Unit-1 at Pallatana and POWERGRID was requested to plan the implementation of the SPS scheme.

Since the 400kV Silchar – Byrnihat line is commissioned, there will not be any requirement for backing down of state generation. However tripping of above line / tripping of generator at Pallatana may cause grid disturbance.

The System Protection Scheme (SPS) associated with tripping of generating unit of OTPC at Pallatana or tripping of 400 kV Silchar-Byrnihat line, prepared by

NERLDC, was deliberated during 83rd OCC meeting. GM, NERLDC emphasized that implementation of the SPS is essential to maintain grid security under above contingency conditions. The tripping of above generating unit or 400kV line may cause grid disturbance which may even lead to grid collapse. The scheme involves immediate tripping of few identified lines at 132kV level within two hops from the Silchar bus. It was agreed that the scheme will require carrier inter-tripping provision for effective load shedding.

DGM, NERTS informed that the existing PLCC channels are fully utilized and there is no spare channel for such carrier inter-tripping and new channels need to be established additionally.

During 7th PC meeting, it was agreed that NERTS would examine the scheme in details and would initiate necessary action for successful implementation of the proposed protection scheme at the earliest possible time and the status of implementation plan would be reviewed in next PCC meeting. SE (O) informed that a Power system study group has also been created in the region taking representation from various constituents including IIT (Guwahati) to carry out studies relating to SPS, islanding scheme etc.

SE (O) informed the status of nomination for System Study Group; the nominations were as given below:

Ar. Pradesh – Shri Tarik Mize, Executive Engineer.
Assam – Navjit Patir, AEGCL.
Manipur – Shri N. Jasobanta Singh, AE & Shri Th. Bimol Singh, AE
Mizoram- Sh. C.C.Lalrimwala, SDO & Sh. Zoramdina, AE
Meghalaya – Sh. D.J. Lyngdoh, AEE, SLDC & Sh. T. Gidon, AEE, SLDC
Nagaland- Sh. S. Longkumer, SDO, Sh. H. Assumi, SDO & Sh. C. Walling, SDO
Tripura – Sh. Mrinal Paul, Manager & Sh. Anwesh Choudhury, Manager.
NEEPCO – Sh. Bhaskar Goswami, Sr. Manager.
NERLDC – Sh. A. Mallick, CM & Sh. Anupam Kumar, Engineer
NERTS – Sh. P. Kanungo, DGM & Sh. Supriya Paul, Dy Manager
OTPC – Sh. Tapas Karmakar, Asstt. Manager
NERPC – Sh. Lalrinsanga, EE & Sh. D.K. Bauri, EE

IIT, Guwahati - nomination will be taken up by NERPC Secretariat.

During 8th PC meeting, NERLDC had given the presentation on system studies pertaining to System Protection Scheme (SPS) proposed for following conditions:

Case 1: Tripping of generating unit of OTPC at Palatana
Case 2: Tripping of 400 kV D/C Palatana-Silchar line
Case 3: Tripping of 400 kV Silchar-Byrnihat line,

NERLDC informed that the study was carried out by taking the base case of NER peak and off-peak conditions in July, 2013.

During off-peak hours, the above trippings may not create serious problem. But during peak hours, above trippings may lead to grid disturbance.

As pre-condition, for successful operation of the proposed System Protection Scheme (SPS), the following lines should be kept in open condition for all the three cases mentioned above

- 132 kV D/C Khliehriat(PG) – Khliehriat(MeECL) lines at Khliehriat(MeECL)
- 132 kV Khliehriat(MeECL) – NEHU line
- 132 kV Khliehriat(MeECL) – NEIGRIHMS line
- 132 kV Pailapool – Jiribam line at Jiribam end

The scheme for all the three cases will be as follows:

Case 1: <u>When Palatana unit trips:</u>

i. When generator at Palatana trips a signal will be generated from trip relay of the unit.
ii. This signal should trip the CB of 132 kV Silchar – Srikona D/C & 132 kV Silchar – Panchgram lines at Silchar.
iii. Subsequent to tripping of 132 kV Silchar – Panchgram line, the CB at Badarpur of 132 kV Badarpur – Panchgram line should be tripped.
iv. After these trippings an instant load of 80 MW will be relieved during off-peak hours & 130 MW will be relieved during peak hours which will prevent the system from cascade tripping
v. Then manual demand disconnection/management should be imposed.

Case 2: <u>When 400 kV Palatana-Silcher (D/C) lines trip</u>

i. When both the ckts of 400 kV Palatana – Silchar lines trip, a signal will be generated from trip relays at Silchar

ii. This signal should trip the C CBs at Silchar end of 132 kV Silchar – Srikona D/C & 132 kV Silchar – Panchgram lines.

iii. Subsequent to tripping of 132 kV Silchar – Panchgram line, the CB at Badarpur end of 132 kV Badarpur – Panchgram line should be tripped.

iv. After these trippings an instant load of 80 MW will be relieved during off-peak hours & 130 MW will be relieved during peak hours which will prevent the system from cascade tripping

v. Then manual demand disconnection/management should be imposed.

Case 3: <u>400 kV Silchar – Byrnihat line</u>

i. When 400 kV Byrnihat – Silchar lines trip, signal will be generated from trip relays at Silchar

ii. This signal should trip CB of GTG/STG of Generating Unit at Palatana. But unit may run in Full Speed No Load (FSNL) condition.

iii. An instant relief of load of 230/130 MW will prevent the system from cascade tripping.

v. Then manual demand disconnection/management should be imposed.

The committee deliberated in details about trippings under above three conditions and requested POWERGRID to check the feasibility for implementation of the above schemes. Further, the committee requested all constituents to go through the schemes and give their suggestions/comments before finalization of the schemes.

MS I/C, NERPC informed that the SPS should be in place before trial operation of Unit #1 of OTPC for safe operation of the grid and requested POWERGRID & OTPC to take early necessary action for designing the scheme including inter-tripping arrangement for successful implementation of the proposed SPS scheme. All constituents agreed to give their comments in the next OCC/PCC meeting to finalize the SPS.

Deliberation of the Committee

During the deliberation, POWERGRID informed that necessary action has already been taken at their end and OTPC have to take necessary action at their end for successful implementation of the proposed SPS scheme. The matter was also discussed during 85th OCC meeting.

The representative of OTPC informed that BHEL will be consulted to complete the SPS scheme at the earliest. Further, he requested POWERGRID to depute their engineer to Palatana site for assistance.

SE(O), NERPC informed that the SPS should be in place before trial operation of Unit #1 of OTPC (under full load condition) and benefit of SPS for safe operation of the grid can be realized. However, after implementation, the scheme needs to be discussed /reviewed from time to time for fine tuning and further improvement taking into account various system conditions.

The committee requested OTPC to complete the work at the earliest in consultation with NERLDC, NERTS/POWERGRID so that the scheme can be tested during trial operation of the Unit#1 and any further improvement in the Scheme can be taken up for discussion. OTPC agreed.

The sub-Committee noted as above.

B.5. Automatic demand management, SPS & Islanding schemes

As a defense mechanism from possible grid collapse and also to ensure safe & secure operation of grid it is essential to put in place i) Automatic demand management schemes in every state, ii) SPS & iii) Islanding schemes as discussed in 76th OCC meeting. Additional UFRs & df/dt relays may be required for implementation of the schemes. The Sub-committee had decided to discuss further in detail.

Moreover, for survival of different parts/pockets (with identified generation along with some load) of NER grid in the event of grid disturbance, it has been proposed that islanding schemes may be planned & implemented.

During 76th OCC meeting, DGM, NERLDC stated that some islanding schemes need to be planned so that the islands survive during any grid disturbance so that start-up power can be extended to other generating stations.

During 77th OCC meeting, two proposals for islanding scheme were discussed. In both proposals, first step is isolation of NER from NEW Grid at a particular frequency by tripping of 400kV D/C line and 220kV D/C line connecting ER and NER. In one case it has been proposed for formation of two Sustainable Small System (SSS) and then Unit islanding and ultimately Safe shutdown of Generating units when frequency falls to different levels. The frequency level at which actions are to be initiated is to be finalized after discussion.

The Committee requested all the constituents to study the islanding schemes and communicate their comments/suggestions at the earliest so that the islanding scheme for NER can be finalized.

Further, DGM, NERLDC informed that the list of radial lines in NER system, which can be tripped during emergency to save the grid, have been identified. During emergency there may not be time to co-ordinate with SLDC (like written message etc.) before taking such action. However, formal communication shall be made by NERLDC afterwards.

During 79th OCC meeting, the committee felt that further study is required before finalizing the islanding scheme for NER. The committee requested all the NER constituents to study their systems and give suggestions/comments, if any before finalization of the same. All constituents had agreed.

During the 6th PCC meeting, NERLDC informed that automatic demand management, SPS and islanding schemes were planned and submitted to CEA and POWERGRID for further action. The scheme will be mailed to all the constituents. MS (I/C) stated that the frequency level at which actions are to be initiated, the location of UFR & df/dt relays, their setting (in view of revised frequency band specified by CERC) and communication link required etc. needs to be studied for implementation of islanding scheme. The sub-committee had suggested that NERPC, NERLDC and POWERGRID may discuss and plan accordingly for implementation.

During 7th PCC meeting, the committee requested NERLDC and NERPC to study the system and prepare few islanding scheme for the region requiring minimum number of line opening and keeping in view the system operation as well as implementation aspects. NERELDC was requested to discuss / to give presentation on planned islanding scheme for the region.

During 8th PCC meeting, DGM, NERLDC gave the presentation for following ~~two~~ islanding schemes:

1) Isolation of NER from the NEW grid
2) Island comprising of generating units of AGBPP, NTPS & LTPS and loads of Upper Assam system & Deomali area [Total Generation: 380-400MW and load: 200-300MW]
3) Island comprising of generating units of AGTPP, generating units at Baramura, Rokhia & Gumati and loads of Tripura system & Dullavcherra area [Total Generation: 150-160MW and load: 110-150MW]

The Committee discussed in details for both the islanding schemes. Further, the committee invited comments/suggestion from constituents before finalizing the schemes in the next OCC/PCC meetings. The frequency level at which isolation of NER form NER grid should take place needs to be deliberated further as the gas based units cannot operate at very low frequency (say 47.9 Hz as proposed by NLDC for islanding).

NERLDC was requested to study and plan any other SPS required (other than SPS for Pallatana) for the region.

Deliberation of the Committee

MS I/C, NERPC informed that during the NPC meeting, held at CEA, New Delhi on 15th April, 2013, he had expressed the difficulty in preparation of islanding schemes in NE Region because of very low level of frequency (i.e. 47.9 Hz) proposed for islanding. POSOCO was requested by NPC to extend necessary guidance / assistance to NERPC / NERLDC in formulation of the suitable islanding scheme(s) in that region.

Then the islanding Scheme proposed by NERLDC was discussed.

The committee enquired about the frequency setting for tripping of the Gas based generating Units covered under the proposed islanding schemes.

Assam representatives informed that the frequency setting for tripping of the Gas based generating Units of NTPS is 48.72 Hz.

NEEPCO informed that the frequency setting for tripping of the Gas based generating Units is generally much higher than proposed islanding frequency i.e. 47.9Hz. The frequencies at which generating Units of AGBPP are likely to trip are 47.5 Hz (for M/s Mitsuibisi make unit) and 48.0 Hz (for M/s BHEL make unit) and that of AGTPP is 48.0 Hz. OTPC informed that frequency setting for tripping of the Gas based generating Units of OTPC is 47.8 Hz (for M/s BHEL make Unit).

After detailed discussion the committee has decided the following frequencies for creation of islands in NER:

Sl. No.	Islanding Scheme	Frequency
1.	Island comprising of generating units of AGBPP, NTPS & LTPS and loads of Upper Assam system & Deomali area [Total Generation: 380-400MW and load: 200-300MW]	48.80 Hz
2.	Island comprising of generating units of AGTPP, generating units at Baramura, Rokhia & Gumati (Hydro) and loads of Tripura system & Dullavcherra area [Total Generation: 150-160MW and load: 110-150MW]	48.20 Hz
3.	Isolation of NER from NEW grid at ER-NER boundary with rest of the generation and load of NER	47.90 Hz

Further, the committee suggested for discussion with ER regarding isolation of NER from NEW grid at ER-NER boundary. The matter was also deliberated at length during 85th OCC meeting held on 9th May, 2013. All constituents were requested to study the proposal so that the matter can be discussed further before finalization.

The sub-Committee noted as above.

B.6. Non Operation of Protective Switchgear of DOP, Manipur

Undesirable tripping of 132kV Imphal (PG) – Imphal (S) Line and 132kV Dimapur – Imphal Line during fault in Manipur system due to non-operation of protective switchgear of Manipur system is being observed since long.

The issue was discussed in details during 9th TCC & NERPC Meeting held on 11th & 12th August 2010. During the meeting, Manipur had informed that necessary action is being taken to replace old and outdated equipments.

In the 4th PCC meting the status could not be updated as Manipur representatives were not present.

During the 5th PCC meeting, Manipur representative informed that the renovation of old Sub-stations is being done in phased manner as per CEA guidelines. Presently renovation work of Yerumbum S/S is in process and subsequently two more S/S (Karong and Kackching) will be taken up.

POWERGRID informed that they have reduced the time delay setting of Zone-3 so that the 132kV Imphal-Imphal line gets tripped before spreading of the fault to other areas.

During the 6th PCC meeting, Manipur representative informed that the renovation of old Sub-stations is going on. Under the renovation scheme all old equipments (CB, CT, PT etc.) will be replaced.

During 7th PCC meeting, Manipur representative informed that the renovation of old Sub-stations is in progress.

During 8th PCC meeting, Manipur representative again informed that the renovation of old Sub-stations is in progress and the work would be completed soon.

The status could not be updated as Manipur representatives were not present during the meeting.

The Sub-committee noted as above.

B.7. <u>Frequent Tripping Of 33kV System of DOP, AP at Nirjuli and Ziro</u>

During 9th TCC & NERPC Meeting, the issue was discussed in details and Arunachal Pradesh had informed that various measures to reduce no. of faults on 33 KV lines owned by Dept. of Power, Govt. of Arunachal Pradesh have been initiated.

During 10th TCC & NERPC Meeting POWERGRID had again expressed concern for non-reduction of no. of faults in 33kV Feeders. Arunachal Pradesh had again assured to take necessary action urgently to reduce no. of faults in their 33kV lines.

During 4th PCC Meeting the Sub-committee had requested POWERGRID to monitor the status of trappings for one more month and the same would be reviewed again in the next PCC meeting.

During the 5th PCC meeting it was brought to the notice of the representative of Ar. Pradesh that the tripping is still on higher side as reflected below.

A. 132/33kV Ziro Sub Station

Sl. No.	33 KV feeder	Jan' 12 & FEB' 12	
		Nos.	Tripping/month
1	Kurung Kamey	32	16
2	Old Ziro	24	12
3	Kimin	62	31

B. 132/33kV Nirjuli Sub Station

Sl. No.	33 KV feeder	Jan' 12 to Aug' 12	
		Nos.	Tripping/month
1	AP #1	88	11
2	AP #2	124	15.5
3	AP #4	10	1.25

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

Ar. Pradesh representative stated that the topography of Ar. Pradesh is very difficult because of which maintenance of these lines is getting difficult.

Further, POWERGRID informed that there is no improvement in tripping.

No. of trippings during September '12 – November '12 are as below:

A. 132/33kV Ziro Sub Station (Tripping of 33kV Feeders)

Sl. No.	33 KV feeder	Oct – Nov '12	
		Nos.	Tripping/month
1	Kurung Kamey	16	8
2	Old Ziro	13	6.5
3	Kimin	22	11

B. 132/33kV Nirjuli Sub Station (Tripping of 33kV Feeders)

Sl. No.	33 KV feeder	Sep '12 to Nov '12	
		Nos.	Tripping/month
1	AP #1	20	6.67
2	AP #2	74	24.67
3	AP #4	2	0.67

During 6th PCC meeting, SE(O) informed that the NERPC secretariat has already taken up the matter with CE, DoP, Ar. Pradesh and has requested Ar. Pradesh to take necessary action early for reducing the faults in their 33 kV lines.

During 7th PCC meeting, the status could not be updated as representatives from Ar. Pradesh were not present in the meeting.

During 8th PCC meeting, the representative of Ar. Pradesh informed that the matter will be taken up again with higher authority.

The representative of Ar. Pradesh informed that DoP, Ar. Pradesh has taken up the matter to reduce the tripping on these lines.

The committee requested POWERGRID to monitor the tripping of above 33 kV feeders and the status may be intimated in the next PCC meeting.

The Sub-committee noted as above.

B.8. <u>T- Connection of Lekhi & Bhalukpong sub-Station and installation of harmonic filters at Banderdua</u>

During 4th PCC meeting, POWERGRID had informed that 132kV Ranganadi-Nirjuli Line is being tapped (i.e. operating with T – connection) to feed Lekhi Sub Station instead of LILO since Aug/Sept 2008 and had requested Dept. of Power, Ar. Pradesh to expedite the action for LILO of Ranganadi – Nirjuli line at Lekhi sub-station.

SE, Ar. Pradesh had informed that the LILO arrangement at Lekhi S/S would be completed by January, 2012. However, till date the LILO arrangement has not been completed at Lekhi Sub Station.

POWERGRID informed that some corrective action is to be taken otherwise the transformer at Nirjuli substation will again fail.

Assam stated that the tapping of line should be stopped as it is not advisable and the LILO should be restored at the earliest in the interest of the Region.
Ar. Pradesh representative stated that he will take up the matter to their higher authority to complete the job as early possible.

During 5th PCC meeting, SE(Com.) emphasized that T-connection is not a healthy practice and should normally be avoided as such arrangement leads to unwanted trippings of main line.

The committee had requested NERPC Secretariat to take up the matter with DoP, Ar. Pradesh to complete the LILO at the earliest.

During the 6th PCC meeting, NEEPCO representatives stated that there is one more T-connection at Bhalukpong in Ar. Pradesh at 132 kV Balipara-Khupi line which was earlier approved by NERPC Chairman for 3 months on temporary based to make necessary LILO arrangements. The same LILO is still not completed; the committee may request Ar. Pradesh to complete the LILO at the earliest as in case of fault the line gets tripped and the construction power to Kameng Project gets interrupted.

POWERGRID representatives informed that Ar. Pradesh has not installed harmonic filters at Banderdua as agreed by Ar. Pradesh in 13th NERPC meeting held on 10.07.2012 at Faridabad which is being generated by Steel Plant at Banderdua.

The status could not be updated as Ar. Pradesh representatives were not present in the meeting.

The committee had requested NERPC Secretariat to take up all the issues with Ar. Pradesh at the earliest to improve the healthiness of NER grid.

During 6th PCC meeting, SE (O) informed that the NERPC secretariat has already taken up the matter with CE, DoP, Ar. Pradesh and has requested DoP, Ar. Pradesh to take necessary action for early completion of LILO arrangement at Lekhi substation and Bhalukpong.

During 7th PCC meeting, the status could not be updated as representatives from Ar. Pradesh were not present in the meeting.

During 8th PCC meeting, the representative of Ar. Pradesh informed that the matter will be taken up again with higher authority.

The representative of Ar. Pradesh informed regarding LILO of Lekhi the work of six towers have been completed and the work is about to complete by June, 2013 and regarding Bhalukpong LILO about 75% of the work has been completed. He also informed that the order for Harmonic filter has already been placed.

The committee requested NERPC Secretariat to take up the matter with Principle Secretary (P), Govt. of Ar. Pradesh for early completion of LILO work associated with Lekhi and Bhalukpong.

The Sub-committee noted as above.

B.9. Commissioning of Line CVTs of 132kv Khliehriat (PG) - Khliehriat (Me.ECL) Line # II

The CVTs of Khliehriat (Me.ECL) Bay # II at Khliehriat (PG) Sub Station have been erected but not commissioned till date. Presently the voltage input for Distance relay as well as for Back up protection relay is being taken from Bus CVT installed in POWERGRID, Khliehriat Sub-station. Matter was informed to R.E (Me.ECL), Khliehriat for taking necessary action in this connection.

During 4th PCC meeting, the representative of Meghalaya informed that they will take up the matter and request the concern division to commission the CVTs of Khliehriat at the earliest

During 5th & 6th PCC meeting, Me.ECL representatives stated that they will take up the matter again with R.E., MEECL and the work will be completed at the earliest. The committee had also requested NERPC Secretariat to take up the matter with Me.ECL. NERPC secretariat has already taken up the matter with Me.ECL.

During 7th PCC meeting, the Me.ECL representatives informed that the matter had been taken up with the concerned person and the work is likely to be completed by March, 2013.

During 8th PCC meeting, the representative of Me.ECL informed that the work is likely to be completed very soon.

The Me.ECL representatives informed that installation work will be completed by May, 2013.

The Sub-committee noted as above.

B.10. Installation of BMK at Khliehriat (MeECL) Bay # II at Khliehriat (PG) Station

CM, POWERGRID had informed that during the commissioning of Khliehriat (MeECL) Bay # II at POWERGRID's Khliehriat Sub Station, MeECL had excavated pit for installation of BMK and the pit was a safety hazard. Matter was referred to R.E (Me.ECL), Khliehriat for taking necessary action.

During 4th PCC meeting, the representative of Meghalaya had informed that the concern division would be requested to look into the matter. The status quo is still maintained even after 8 months.

During 5th & 6th PCC meeting, Me.ECL representatives stated that they will take up the matter with R.E., Me.ECL and the work will be completed at the earliest. The committee had also requested NERPC Secretariat to take up the matter with Me.ECL. NERPC secretariat has already taken up the matter with Me.ECL.

During 7th PCC meeting, the Me.ECL representatives informed that the matter had been taken to the concerned person and the work is likely to be completed by March, 2013.

During 8th PCC meeting, the representative of Me.ECL informed that the work is likely to be completed very soon.

The Me.ECL representatives informed that foundation work will be completed by May, 2013.

The Sub-committee noted as above.

B.11. Installation of 2nd Distance Protection Relay for 220KV and above System

POWERGRID had already installed 2nd Distance Protection Relay (DPR) for all 220kV and above voltage level lines as per the CEA regulation.

As per CEA regulation, where two distance protection has been provided, it is also required to ensure that separate directional earth fault relay is either provided or activated in case of Numerical distance relay to take care of high resistance faults.

During 4th PCC Meeting the Sub-committee recommended to replace obsolete relays with numeric relay complying with IEC 61850 protocol in phased manner.

During 5th PCC meeting Assam stated that two of their DPRs are being utilized by POWERGRID in Misa-Samaguri Lines; as soon as they receive their DPRs from POWERGRID it will be installed in BTPS lines. POWERGRID informed that it will take 3-4 months.

During 6th PCC meeting, POWERGRID informed that SPAR of Balipara end of 400 kV Ranganadi- Balipara line operated, but Ranganadi end did not operate. As a result the 400kV line remained charged upto Ranganadi, which is a serious matter as far as safety is concerned.

NEEPCO informed that one of the distance relay, in which the SPAR feature was disabled, operated at Ranganadi end. As per their normal practice, the SPAR feature is enabled only in Main-I relay to avoid multiple shots for CB. However, the matter will be discussed with their Design wing to resolve the problem.

POWERGRID informed that the SPAR feature is to be enabled in both the Relays and to avoid the multiple shots at same time a standalone auto reclosure relay may be used.

MS (I/C), NERPC informed that if distance relays are numerical type, then both relays must have auto reclosure as an inbuilt feature. The manufacturer of the relay may also be consulted to sort out problem.

The status of installation of 2nd DPR in respect of following lines as given in 8th PCC is as follows:

SN	Station	Line	Utility	Status
1	Kopili HEP	220 KV Misa #1	NEEPCO	By May' 2013
2	Kopili HEP	220 KV Misa #II	NEEPCO	By May' 2013
3	Kopili HEP	220 KV Misa #III	NEEPCO	By May' 2013
4	Kathalguri PH	220 KV Misa	NEEPCO	Completed
5	Kathalguri PH	220 KV Mariani	NEEPCO	Completed
6	Samaguri SS	220 KV Balipara	AEGCL	Oct, 2013
7	BTPS SS	220 KV Salakati # I	AEGCL	Oct, 2013
8	BTPS SS	220 KV Salakati # II	AEGCL	Oct, 2013

During 8th PCC meeting, POWERGRID informed that BTPS-Salakati- I& II are short lines; therefore line differentials protection is preferred over distance protection.

Assam representatives also agreed in principle that line differential protection is preferred for short line like BTPS-Salakati- I& II line.

Further, POWERGRID informed that they will be receiving 7SA513 relay shortly; so they will return Assam 75AS13 relays in lieu of their 7SA522 relays taken from Assam.

After detail deliberation POWERGRID agreed to return numerical relay complying with IEC 61850 to Assam.

The committee requested AEGCL and POWERGRID to resolve the issue bilaterally and intimate the status.

The Sub-committee noted as above.

B.12. Parallel Operation of 3x20 MVA Transformer with 160 MVA Auto-transformer at Kopili

Assam had informed that right from the time of the commissioning of 160 MVA Auto transformer of Power Grid at Kopili, the existing 3 numbers of 20 MVA, single phase transformers, supplied by NEEPCO, are not in working condition.

The NEEPCO representative had also informed that the above said transformers were not charged since March, 2011.

The committee had suggested NEEPCO to keep the 3x20 MVA transformers in charged condition so that it could be connected to grid in case of outage of 160 MVA Autotransformer.

NEEPCO informed that the 3x30 MVA Transformers was successfully charged from 220 kV side on 8th September, 2012.

During 5th PCC meeting, SE(Com), NERPC informed that these transformers should not be kept in charged condition for long period without load and other possibilities of utilization of these regional asset should be explored.

CM, POWERGRID stated that this transformer can be operated in isolation to feed radial load. Further, he informed that the parallel loading of transformer is possible if the percentage impedance of the both transformer bank is within the permissible limit, otherwise the loading of 160 MVA ICT will be limited. Assam informed that tripping of 160MVA transformer could lead to tripping of 3x20MVA transformers.

The Committee inquired from NEEPCO about the percentage impedance of both transformers. NEEPCO agreed to provide the information in the next OCC / PCC meeting.

The Committee requested POWERGRID to explore possibilities of effective utilization of these transformers as these regional assets should not be kept idle.

During 77th OCC meeting NEEPCO informed that the 3x30 MVA Transformers was successfully charged from 220 kV side on 8th September, 2012.

The Committee inquired from NEEPCO about the percentage impedance of both transformers to explore the parallel operation. NEEPCO agreed to provide the information in the next OCC meeting.

The Committee agreed and requested POWERGRID to explore for more possibility for utilizing these transformers as these are regional projects and cannot be kept idle. It was also decided that possibility will be explored for charging the ICT along with 132 kV Kopili – Khandong ckt-I in the event of shut down of 132 kV Kopili – Khandong ckt-II.

During 78th OCC meeting, NEEPCO submitted the percentage impedance of 3x20 MVA transformers to the committee. The committee requested POWERGRID to check with the existing 160 MVA ICTs percentage impedance and explore the possibility of parallel operation of both the transformer banks.

During 79th OCC meeting, POWERGRID informed that they have compared the percentage impedance of 3x20 MVA transformers with the existing 160 MVA ICT and found it to be within permissible limit. The vector group of the banks is to be checked to explore the possibility of parallel operation of 3x20 MVA transformers with the existing Kopili ICT. The committee requested POWERGRID and NEEPCO to make the necessary arrangement/tests required to check the possibility of parallel operation

During 6th PCC meeting, the representative of NEEPCO had requested NERPC Secretariat to write to their management to explore the possibility of parallel operation after carrying out necessary tests in association with PGCIL.

During the 7th PCC meeting, SE (O) informed that NERPC Secretariat has already communicated to NEEPCO, vide letter No. NERPC/OP/OCC/2013/4018-4020

dated 06-03-2013, regarding parallel operation of 3x20 MVA transformers with the existing 160 MVA ICT in co-ordination with POWERGRID.

NEEPCO representatives informed that the 3x 20 MVA transformer is being charged from 220 kV side, however, the parallel operation is yet to be done. The committee requested NEEPCO to complete the paralleling operation at the earliest.

During the 8th PCC meeting, DGM, NEEPCO informed that the percentage impedance of 3x20 MVA Auto-transformer provided earlier needs to be checked again. Therefore, a joint site visit of officers' of POWERGRID and NEEPCO is required for verification of data, for deciding about the test to be carried out to check the adequacy of rating of Kopili/Khandong bay equipment and bus capacity before going for parallel operation.

The committee requested POWERGRID and NEEPCO to go for a joint visit to the site for examining the feasibility of parallel operation.

POWERGRID informed that the site has already been inspected once and after 25th May, 2013 they will plan to visit the site again and the status will be intimated in next PCC meeting.

The Sub-committee noted as above.

B.13. Details of Installations and self-certification (by STUs and CTUs) in respect of operationalisation of Under Frequency Relays (UFRs) in NER systems and additional requirement of UFR and df/dt relays

During 79rd OCC, Manipur had informed that the UFRs have been installed on 33 kV Yurembum-Limukhong radial feeder as advised by the committee. In the process installation of all UFRs in the NER has been completed as per earlier decision of the committee. Further all constituents (STUs and CTUs) were requested to furnish the relevant information in the format prescribed by CEA. It was also discussed that the requirement of UFR and df/dt relays need to be reviewed based on the recommendation of the enquiry Committee constituted by the Ministry of Power headed by Chairperson CEA and revised frequency band specified by CERC (i.e. 49.7 to 50.2 Hz).

During the 82nd OCC meeting, SE (O), NERPC enquired from constituents whether the UFRs installed in the region have operated during the recent grid disturbances occurred on 14.12.2012 & 20.01.2013. He requested all the constituents to furnish the details of UFR operation. All constituents agreed.

As per clause no. 5.2(n) of IEGC, utilities are to submit UFR operation report on monthly basis to RPC. All constituent states are requested to inform the committee about the operation of UFR since its commissioning, particularly during grid disturbances, which is being monitored strictly by CEA/MoP after the grid disturbances on 30th & 31st July, 2012. The UFR operation detail may please be furnished to RLDC and NERPC as per format circulated.

All constituents agreed to submit the data in the prescribed format.

The Committee also suggested that if UFR operation can be linked to annunciation on control panel, then operation of UFR can be easily recorded.

The committee requested all the constituents to explore the possibility to record the operation of UFRs. It was also stressed for linking the UFR operation with the control panel annunciation system.

During 8th PCC meeting, all State utilities agreed to explore the possibility and the status will be updated in the next PCC meeting.

The committee requested all the constituents to submit the UFR operation detail to RLDC and NERPC.

All constituents agreed to submit the same.

Deliberation of the Committee

MS I/C, NERPC informed that three stage UFR based load shedding for 120MW is already in place NER and four stage UFR based load shedding (Frequency levels: 49 Hz, 48.8Hz, 48.6Hz, 48.4Hz and Quantum of load to be shed: 60% of peak load of the state) has been proposed in Automatic Defense Plan prepared by POSOCO. During the NPC meeting, held at CEA, New Delhi on 15th April, 2013, quantum of load shedding and frequencies levels at which UFR based load shedding is to be done, was discussed at length. It was agreed that 1st stage of UFR based load

shedding should be at 49.2Hz (in place of 49.0 Hz proposed earlier for NEW grid) and the other frequency levels, number of stages and quantum of load to be shed need to be discussed further by RPCs to ensure safe and secure operation of grid and intimate the decision to NPC for further discussion and finalization. All constituents were requested to study the proposal of POSOCO regarding UFR based load shedding. The matter was also discussed in 85th OCC meeting.

NERLDC informed that recently CERC has notified Frequency Response Characteristics (FRC), regulations to monitor the response of each control Area (States/discoms as well as Generators) for all instances of wide variations in system frequency.

Sub-committee noted as above.

B.14. <u>Tripping of POWERGRID lines due to faults in networks of STU:</u>

POWERGRID informed that tripping occurred in their lines due to faults of networks of STU as indicated below:

i. 132kV Aizwal – Zemabawk line tripped on 19/02/13 for downstream fault in 33kV Network of Mizoram.
ii. 132kV R C Nagar – Kumarghat tripped on 25/01/13 due to non-tripping of 79 Tilla-Rokhia line.
iii. 220kV Misa-Dimapur-I & II, 132kV Dimapur-Imphal, 132kV Dimapur-Doyang-I & II tripped on 19/01/13 due to opening of Jumper in Dimapur bay, Dimapur(ST) problem

TSECL representatives informed that they will examine the reason of tripping after getting the tripping detail of 132kV R C Nagar – Kumarghat line and intimate the status in the next PCC meeting.

The other tripping details will be discussed in the next PCC meeting after getting the details from Mizoram and Nagaland.

TSECL vide e-mail dated 38.03.13 has informed that as informed by POWERGRID representative in the 7th PCC meeting; where it was said that due to the disturbance in 132kV 79 Tilla Grid- Rokhia line a tripping occurred at 132 KV RC Nagar- Kumarghat line on 25.01.13. But, as per record of TSECL and of RC Nagar, no such disturbance had occurred on 25.01.13.

OTPC representative informed that the 400 kV Palatana-Silchar line tripping analysis may be done as frequent tripping of the line is creating problem for generating Units.

All the constituents are requested to submit the tripping details of the lines for further analysis as frequent tripping of important lines have become a matter of concern.

Refer to Item No. B.2 above.

B.15. Tripping of 400 kV Palatana- Silchar line:

During 8th PCC meeting, TSECL informed that 400 kV Palatana- Silchar line is frequently tripping. Due to these trippings, Tripura system is also disturbed frequently. This forum is requested to look into the matter immediately.

The committee requested NERLDC/POWERGRID/OTPC to submit the detail tripping for further analysis in the next PCC meeting.

Refer to Item No. B.2 above.

B.16. Maintenance of 220 kV Misa bay at Samaguri:

In the 8th PCC meeting, Assam representative informed that the one isolator of the Misa bay is having some problem and needs to be attended urgently. Further, the 220 kV Misa bay belongs to POWERGRID and the bay is not maintained properly.

POWERGRID informed that order for Isolator have been placed and it is likely to be replaced by August, 2013.

Sub-committee noted as above.

C. NEW ITEMS

C.1 Furnishing Event information of the System:

Following major events occurred in NER during April 2013.

- 400 kV Silchar-Byrnihat & 400 kV Silchar-Palatana D/C tripped at 1622 Hrs on 15.04.13
- LBB operation at 220 kV Misa S/S at around 0312 Hrs on 20.04.13
- 220 kV Birpara-Salakati I & II, 220 kV BTPS-Salakati I & II, 400/220 kV, 315 MVA ICT, 220 kV BTPS-Agia, 220 kV Bus Coupler at BTPS and 80 MVAR Bus Reactor IV at Bongaigoan tripped at 1800 Hr on 27.04.13.
- 132 kV AGTPP-Kumarghat, 400 kV Silchar-Palatana I, 132 kV Kumarghat-Badarpur & 132 kV Kumarghat-Aizawl tripped at 2211 Hr, 2235 Hr, 2253 Hr & 2258 Hr on 27.04.13 respectively.
- Multiple tripping of elements: 132 kV Imphal(PG)-Imphal I and II, 132 kV Dimapur-Imphal S/C, 132 kV Loktak-Ningthoukong S/C, 132 kV Loktak-Imphal S/C, 132kV Loktak-Jiribam II, at 0535 Hrs on 03.05.13.

These events are serious in nature and needs detailed investigation. Letter nos. NERLDC/SO-II/9025-36 dtd. 22.04.13 and NERLDC/SO-II/9470-82 dtd.29.04.13 were issued to all power utilities of NER for furnishing details as per IEGC and CEA Grid Standard Regulations.

Regional entities are requested to furnish details at the earliest in line with IEGC and CEA Grid Standard Regulations.

Refer to Item No. B.1.

C.2 Any other item

C.3 Date and Venue of next PCC

It is proposed to hold the 10th PCC meeting of NERPC on 7th June, 2013 (Friday). As per roaster, Ar. Pradesh will be the host for 10th PCC meeting. The exact venue will be intimated in due course.

The meeting ended with thanks to the Chair.

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Annexure-I

List of Participants in the 9th PCC meeting held on 10/05/2013

SN	Name & Designation	Organization	Contact No.
1.	Sh. Tarik Mize, EE, SLDC	Ar. Pradesh	09436059758
2.	Sh. P. Hazarika, DGM, MRTC	Assam	09435193264
3.	Sh. G.K. Bhuyan, AGM, Prot. cell	Assam	09854015601
4.	Sh. A. Bhatcharjee DM, Prot. cell	Assam	09435332928
5.	**No Representatives**	**Manipur**	
6.	Sh. A.G. Tham, AE, MRT	Meghalaya	09774664034
7.	Sh. C. W. Chen, AE, SLDC	Meghalaya	09863093311
8.	Sh. Vanlalrema, SE, SLDC	Mizoram	09436140353
9.	Sh. Lalnunsanga, AE, P&ED	Mizoram	09436144651
10.	**No Representatives**	**Nagaland**	
11.	Sh. B. Debbarma, DGM, SO	Tripura	09436450501
12.	Sh. P.P. Bandyopadhyay, DGM	NERLDC	09436302725
13.	Sh. P. Kanungo, DGM	NERTS	09436302823
14.	Sh. M Madhavanand, DM	NERTS	09436335250
15.	Sh. B. Goswami, Sr. Mgr	NEEPCO	09436163983
16.	Sh. Diganta Goswami, Sr. Mgr	NEEPCO	09435577655
17.	Sh. Tanya Taji, Sr. Mgr	NEEPCO	09436042053
18.	**No Representatives**	**NHPC**	
19.	Sh. S. Datta, Sr. Mgr.	OTPC	09436368209
20.	Sh. S.K. Ray Mohapatra, MS I/C	NERPC	09818527857
21.	Sh.B. Lyngkhoi, SE (O)	NERPC	09436163419
22.	Sh. D.K. Bauri, EE	NERPC	09863317236