



भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति

North Eastern Regional Power Committee
मेघालया स्टेट हाउसिंग फिनांस को- आपरेटिव सोसायटी लि. बिल्डिंग
Meghalaya State Housing Finance Co-Operative Society Ltd. Building
नाग्रिम हिल्स, शिल्लोंग - ७९३००३
Nongrim Hills, Shillong – 793003.



ISO 9001:2008

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No. NERPC/SE (O)/OCC/2013/ 5229-58

Dated: September 18, 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 13th PCC Meeting held on 13th September, 2013 at Shillong.

The Minutes of the 13th PCC Meeting of NERPC held on 13.09.2013 at “Shillong Club”, Shillong 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

भवदीय / Yours faithfully,

बि. लिंगखोइ / B. Lyngkhoi

अधीक्षण अभियंता / **Superintending Engineer**

प्रचालन / **Operation**

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 13th

PROTECTION COORDINATION SUB-COMMITTEE MEETING

OF NERPC

Date: 13.09.2013 (Friday)

Time: 13:30 Hrs.

Venue: "Shillong Club," Shillong.

The List of Participants in the 13th PCC Meeting is attached at **Annexure – I**

The meeting was started after the 89th OCC meeting. Member Secretary I/C requested Shri B. Lyngkhai, SE (O), NERPC to take up the agenda items for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 12th MEETING OF PROTECTION SUB-COMMITTEE OF NERPC.

SE (O), informed that the minutes of the 12th meeting of the PCC held on 8th August, 2013 at Guwahati were circulated vide letter No. NERPC/OP/PCC/2013/4726 -55 dated 16th August, 2013.

No comments or observations were received from any of the constituents, the minutes of 12th PCC meeting was confirmed.

ITEMS FOR DISCUSSION

B. FOLLOW UP ACTION

B.1. Independent third party audit of protection system

The protection audit of the substations / generating stations in NER was completed in February, 2013 and subsequently Detailed Project Report (DPR) was submitted to CEA in June, 2013. The estimated cost projected in the DPR for rectification / renovations of substations / generating stations of seven states of the region is about Rs. 816 crores. He also highlighted about the discussion in 2nd NPC meeting held at Delhi on July 16, 2013 regarding funding from PSDF for renovation & up-gradation of substations and generating station in NER. During the meeting CEA had informed that Min. of Power has been requested for considering 20% funding from PSDF. It was also made clear that the funding for entire amount, projected in the DPR will not be available and states should take up renovation & up-gradation of protection systems without waiting for funds from the center. The fund accumulated in PSDF from NER is only about Rs. 110 crores. The rectification / renovations work proposed in DPR cannot be taken up with this nominal fund.

During the 14th TCC meeting, the issue had been discussed in detailed. The committee decided that the states should plan to take up renovation & up-gradation of protection systems at the earliest without waiting for funding from PSDF. Since constituents are not in a position to finalize the funding pattern, the committee requested NERPC, on behalf of the region, to take up the matter with Ministry of Power and DoNER for funding from Non-Lapsable Central Pool Resources (NLCPR) – Central.

Deliberation of the Committee

SE (O) stated that consolidated project proposal for funding through NLCPR (Central) is to be prepared for taking up renovation/rectification works. The proposal is to be submitted on behalf of the region to MoP with copy to DoNER. The up-gradation/ renovations of substations / generating stations are essential for safety, security and reliable operation of the system. Initiative should be taken for taking up rectification work at the earliest without waiting for funding.

The Sub-committee noted as above.

B.2. Standardization of Protection Scheme for transmission system in NER:

During the 14th TCC meeting, the Committee agreed to adopt the following Protection Philosophy for transmission system in NER in line with requirement of CEA's regulation as decided in the 12th PCC meeting with only some minor modification in SN. 5 & 12 as below:

Protection philosophy in NER

(A) Line Protection

SN	Protection	Setting
1	Distance Protection: Zone - 1	The setting shall be 80 % of the protected line length. Time Delay = Instantaneous
2	Distance Protection: Zone - 2	For single circuit line, the setting shall be [100% of the protected line length (length of principal line section) + 50% of the shortest line emanating from far end bus bar] or [120% of the protected line] whichever is higher. For double circuit line, the setting shall be 150% of the protected line length (length of principal line section) to take care of the effect of mutual compensation. However, it must be ensured that Zone-II setting does not enter into lower voltage level through transformer. It may be restricted to 50% of total transformer impedance to have discrimination with Zone-III. $T_{Z2} = 300\text{ms}$ (for lines less than 100kms) $T_{Z2} = 500\text{ms}$ (for lines more than 100kms)
3	Distance Protection: Zone - 3	The setting shall be [120% of protected section + 100% of the longest line emanating from the far end bus bar] or [100% of the protected line + 100% of the longest line emanating from the far end bus bar + 20%-30% of the shortest line emanating from the far end of the second line considered], whichever is lower. It must be ensured that Zone-III setting does not enter into lower voltage level through transformer. It should be restricted to (protected section + 90% of total transformer impedance) $T_{Z3} = 1.0$ secs.
4	Distance Protection: Reverse Zone	Reverse reach shall be 20% of the shortest line & 10% of longest line emanating from that bus $T_{Z3R} = 1.0 - 1.2$ secs.
5	Lines with Series and other compensations in the vicinity of Sub-station	80% of the protected line with Permissive Over Reach (POR) Scheme should be adopted. 100 milli seconds time delay for allowing correct distance measurement after the series capacitor is bypassed. 100 ms at remote end.

6	Power swing blocking	Block tripping in all zones (except Zone 1) for all lines. Out of step tripping to be applied on all inter regional tie lines. De-block time delay = 2 Secs.
7	Protection for broken conductor	Negative sequence current to positive sequence current ratio more than 0.2 ($I_2/I_1 \geq 0.2$). Only for alarm. 3.5 – 5.0 Secs.
8	Carrier Communication & Protection	Protection using carrier communication (PLCC / OPGW) is to be provided for all 400 kV, 220 kV and 132 kV lines (where auto-reclosure is in operation). Each 400 kV and 220 kV line shall be provided with two (2) protection channels in addition to one speech + data channel for each direction. In case of 220kV and 132kV lines, the speech and data channel can also be used for protection, wherever possible.
9	Back up protection	For 220 kV, 132kV and 66kV lines with only one distance Protections (i.e Main-I), back up protection by IDMT O/C and E/F is also to be provided.
10	Directional Earth fault protection	400 kV & 220 kV lines with two (2) Numerical Distance Protections Relays (i.e. Main-I & Main -II), shall be supplemented with activation of inbuilt IDMT Directional Earth Fault (DEF) protections to detect very high resistance fault, which cannot be detected by Distance relay. $T_{DEF} = T_{Z3} + 100ms$
11	Auto Re-closing with dead time	Single Phase Auto Reclose Scheme Dead time = 1.0 sec, Reclaim time = 25 sec.
		Three Phase Auto Reclose Scheme Dead time = 1.0 sec, Reclaim time = 25 sec.
12	Over Voltage Protection	Two stage Over voltage protection to be provided for 400kV lines Stage # II setting for all lines are same as below: $V_{S2} = 140\%$ & $T_{S2} = 100ms$ Stage # I setting of multiple circuits connected between two same stations to be graded with time & voltage. For example, the Over Voltage settings for four circuits connected between two stations A & B shall be as follows: <u>Circuit # 1</u> : $V_{S1} = 110\%$ & $T_{S1} = 5 s$ <u>Circuit # 2</u> : $V_{S1} = 110\%$ & $T_{S1} = 6 s$ <u>Circuit # 3</u> : $V_{S1} = 110\%$ & $T_{S1} = 7 s$ <u>Circuit # 4</u> : $V_{S1} = 110\%$ & $T_{S1} = 8 s$ O/V relay for 400kV lines shall be connected to trip concerned line breaker(s), start LBB, block auto reclosure and send direct trip command.
13	Disturbance	To be provided as a standard for all 400kV & 220kV lines on

	Recorder (DR), Event Logger (EL) and Fault locator (FL)	both ends. DR, EL & FL, being inbuilt feature in Numerical Relays, such features should also be used even at 132kV and 66kV level.
14	Time Synchronising Equipment (TSE)	To be provided as a standard for all 400kV, 220kV and 132kV/ 66kV substations.

(B) Bus bar and LBB Protection

SN	Protection	Setting
1	LBB protection and bus bar protection	Bus bar & LBB protection to be provided at 400kV & 220kV level for substations and Generating stations having multiple feeds. Bus bar & LBB protection may also be provided at 132kV level for important substations having multiple feeds. LBB current should be in pick up condition always LBB Time delay = 200ms.

(C) Protection for Inter Connecting Transformer (ICT) [400kV/220kV/132kV/66kV Class]

SN	Protection	Setting
1	Differential protection	Differential Relay to be provided for Internal Fault in Transformer Trip
2	Restricted Earth Fault (REF) protection	REF to be provided for Internal Earth Fault in Transformer Trip
3	Back up Directional (IDMT) O/C & E/F protection on HV and LV side with non-directional High Set Element	Back up protection to be provided for Internal and external Fault. Directional Trip for IDMT Non-directional Trip for HS
4	Over Fluxing (OF) protection	Over Flux Relay be provided for protection from Over Fluxing (V/f)=1.1 for alarm & (V/f)=1.4 for tripping
5	Over Load Relay	Over Load Relay to be provided for Over Load Alarm 110% of rated current T _{OL} = 5 Secs
6	Buchholz protection	Buchholz Relay to be provided for detection of incipient internal fault in Transformer Tripping for both stages (The contacts for both stages shall be paralleled so that tripping command goes to CB(s) in both stages.) However, the existing practice of two stage tripping may be reviewed by utilities.
7	Winding Temperature	WTI to be provided for preventing the transformer winding from High Temperature Operation. Cooling,

	Indicator (WTI)	Alarm Trip The temperature settings shall be as per manufacturer's recommendations.
8	Oil Temperature Indicator (OTI)	OTI to be provided for preventing the transformer oil from High Temperature Operation. Alarm Trip The temperature settings shall be as per manufacturer's recommendations.
9	Pressure Relief Device (PRD)	PRD to be provided for protection of transformer tank from blasting due to development of high internal pressure during heavy internal fault Trip
10	Magnetic Oil Gauge (MOG)	MOG to be provided for Low oil level Alarm.
11	Oil Surge Relay (OSR)	OSR to be provided for OLTC against sudden oil surge Trip
12	Surge Arresters	Gapless Surge Arresters shall be provided on both primary and secondary sides of transformers, located outdoors with overhead connection.
		The Protection of transformer could be divided into two groups (Group-A & Group-B) and each group should be connected to separate DC source. Both Group-A & Group-B protection shall give trip impulse to circuit breaker of ICT. The Group-A should include Differential protection, back up protection (on HV side), over fluxing protection (on HV side), high oil temperature tripping, PRD tripping and Delta winding protection (wherever applicable). The Group-B should include REF protection, back up protection (on LV/MV side), over fluxing protection (on LV/MV side), high Winding temperature tripping, OSR tripping, low oil level tripping and Buchholz tripping.

(D) Protection for Reactor

SN	Protection	Setting
1	Differential protection	Differential Relay to be provided for Internal Fault in Transformer Trip
2	Restricted Earth Fault (REF) protection	REF to be provided for Internal Earth Fault in Transformer Trip
3	Back up Impedance Protection	Back Up Impedance protection to be provided for protection of reactor from winding fault Impedance setting around 60% of winding Time Delay 1000ms

4	Buchholz protection	Buchholz Relay to be provided for detection of incipient internal fault in Transformer Tripping for both stages (Matter to reviewed again later)
5	Winding Temperature Indicator (WTI)	WTI to be provided for preventing the transformer winding from High Tem. Operation. Alarm Trip The temperature settings shall be as per manufacturer's recommendations.
6	Oil Temperature Indicator (OTI)	OTI to be provided for preventing the transformer oil from High Tem. Operation. Alarm Trip The temperature settings shall be as per manufacturer's recommendations.
7	Pressure Relief Device (PRD)	PRD to be provided for protection of transformer tank from blasting due to development of high internal pressure during heavy internal fault Trip
8	Magnetic Oil Gauge (MOG)	MOG to be provided for Low oil level Alarm. Alarm
9	Surge Arresters	Gapless Surge Arresters (SAs) shall be provided on HV side. The Neutral Grounding reactor shall also be provided with SAs.
		The Protection of reactor could be divided into two groups (Group-A & Group-B) and each group should be connected to separate DC source. Both Group-A & Group-B protection shall give trip impulse to circuit breaker of reactor. The Group-A should include Differential protection, back up protection, high oil temperature tripping, and PRD tripping. The Group-B should include REF protection, high Winding temperature tripping, low oil level tripping and Buchholz tripping.

(E) Protection for Bus Coupler / Bus Transfer bay

SN	Protection	Setting
1	Bus coupler or Bus transfer bay protection	Non Directional over current and Earth fault protection.

The Sub-committee noted as above.

GM, POWERGID highlighted that the setting of high set element of back up Over Current & Earth fault protection needs to be relooked. The high set element should be disabled considering the present scenario in NER. Subcommittee supported his view.

The Committee also suggested that Generator protection Philosophy including protection for Generator Transformer (GT), Unit Auxiliary Transformer (UAT), Station Auxiliary Transformer (SAT), Excitation Transformers should also be prepared and requested all the Central sector and State sector Generating companies in NER (NEEPCO, NHPC, NTPC & OTPC; Assam, Meghalaya, Tripura) to furnish their practices at the earliest so that Draft can be prepared for discussion in the next PCC meeting.

All Central sector and State Sector generating companies agreed to furnish the information.

B.3. SPS scheme for Pallatana

The following four (4) System Protection Scheme (SPS) associated with generating Unit#1 (363.3MW) of OTPC at Palatana has been planned for NER and are under implementation.

Case 1: Tripping of generating unit of OTPC at Palatana

Case 2: Tripping of 400 kV D/C Palatana- Silchar line (with generation from OTPC's plant at Palatana)

Case 3: Tripping of 400 kV Silchar-Byrnihat line (with generation from OTPC's plant at Palatana)

Case 4: Tripping of 400 KV Silchar – Byrnihat line (without generation from OTPC's plant at Palatana)

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

Case 1: When Palatana unit trips:

- 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: When 400 kV Palatana-Silcher (D/C) lines trip

- i. When both the ckts of 400 kV Palatana – Silchar lines trips, a signal will be generated from trip relays at Silchar
- ii. This signal should trip the 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: 400 kV Silchar – Byrnihat line (with generation at Pallatana)

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

- i. This signal should trip CB of GTG/STG of Generating Unit at Palatana. But unit may run in Full Speed No Load (FSNL) condition.
- ii. An instant relief of load of 230/130 MW will prevent the system from cascade tripping.
- iii. Then manual demand disconnection/management should be imposed.

Case 4: When 400 kV Silchar – Byrnihat line trip(without generation at Pallatana)

- i. When 400 KV Byrnihat – Silchar line trips, a signal will be generated from trip relays at Silchar.
- 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, a signal will be

generated from trip relay of 132 KV Silchar – Panchgram line. This signal should trip the CB at Badarpur of 132 kV Badarpur – Panchgram line.

- iv. After these trippings an **instant load relief** of around **95 MW in Peak Hours** which will prevent the system from cascade tripping.
- v. Then manual demand disconnection/management may be imposed, if necessary. Load reduction in 132 kV pocket is required for SPS under Case-I and the scheme has already been implemented by NERTS in line with discussion in OCC forum.

For Case-II, generation reduction at Palatana as well as load reduction in 132 kV pocket are required. Load reduction part has already been implemented by NERTS in line with discussion in OCC forum. Regarding generation reduction, it has been seen from the study that injection of power at Palatana should be reduced to around 20 MW excluding own auxiliary consumption.

For Case-III, generation reduction to the tune of 200 MW is required in case Unit # 1 is running under full load i.e the generation should be brought down to around 150 MW. The scheme will be kept in 'OFF' mode/ineffective mode in case generation is around 150 MW. OTPC, BHEL will plan how the required generation reduction will be effected for implementation of the schemes under Case-II & III.

Regarding SPS under Case-IV, it has been decided that the scheme will be implemented as early as possible considering the adverse impact of tripping of the line on the NER grid. The scheme is similar to Case-I and hence implementation should not take much time. NERTS was requested to take necessary action for implementation at the earliest.

SPS will be reviewed from time to time after implementation for further improvement based on the system requirement. The SPS will be reviewed again when the second Unit at Palatana is connected to the NER grid.

During 14th TCC meeting, the committee requested OTPC to highlight action plan for reducing the generation for implementation of proposed SPS. OTPC requested NERLDC for providing certain information as desired by BHEL. Committee advised OTPC to communicate NERLDC accordingly for getting the required information. OTPC was requested for taking early action for implementation of SPS for safety & security of the NER grid.

Deliberation of the Committee

GM, NERTS informed that for SPS corresponding to Case I & IV will be made operational from 14.09.2013.

GM, NERLDC stated that the main concern is for SPS corresponding to Case – II & III above and requested OTPC to look into the matter for implementation at the earliest.

GM (Plant), OTPC stated that such reduction of load at very short duration would be difficult. However, he stated that no proposal has been received from BHEL. However, BHEL's representative will be requested to visit the site again and discuss with NERLDC along with OTPC so that matter can be resolved at the earliest. Subcommittee requested OTPC to resolve the issue at the earliest in consultation with NERLDC & BHEL. This is the need of the hour.

The Sub-committee noted as above.

B.4 Automatic demand management, Implementation of islanding schemes

During 14th TCC meeting, the quantum of UFR based load shedding has been approved by the Committee as decided in the 88th & 13th PCC meeting as given below:

SN	Stages	Frequency (in Hz)	State-wise Load Shedding	Total Load shedding (in MW)
1	Stage-I	49.2	Arunachal = 5 MW Assam = 55 MW Manipur = 5 MW Meghalaya = 15 MW Mizoram = 5 MW Nagaland = 5 MW Tripura = 10 MW	100
2	Stage-II	49.0	Arunachal = 5 MW Assam = 55 MW Manipur = 5 MW Meghalaya = 15 MW Mizoram = 5 MW Nagaland = 5 MW Tripura = 10 MW	100
3	Stage-III	48.8	Arunachal = 5 MW Assam = 55 MW Manipur = 5 MW Meghalaya = 15 MW Mizoram = 5 MW Nagaland = 5 MW	100

			Tripura = 10 MW	
4	Stage-IV	48.6	Arunachal = 5 MW Assam = 55 MW Manipur = 5 MW Meghalaya = 15 MW Mizoram = 5 MW Nagaland = 5 MW Tripura = 10 MW	100
	Total load shedding			400

Deliberation of the Committee

The Sub-committee requested all constituents to identify and furnish the list of feeders for above quantum of UFR based load shedding in their respective States (Ar. Pradesh, Manipur, Mizoram & Nagaland – 4 x 5 = 20 MW, Assam – 4 x 55 = 220 MW, Meghalaya – 4 x 15 = 60 MW and Tripura – 4 x 10 = 40 MW for all the four (4) stages so that the same can be finalized in the next OCC/PCC meetings.

All constituents agreed to submit the list of feeders at the earliest.

The Sub-committee noted as above.

B.5 Implementation of islanding scheme in NER

The implementation of Islanding scheme is also one of major recommendations of enquiry committee in order to restore the system fast in case of grid disturbance. In NER most of generating plants are either hydro based or gas based plant. The frequency at which the Gas based generating Units trip is generally much higher than islanding frequency i.e. 47.9Hz recommended by the enquiry committee. During discussion in OCC and PCC forum it was brought to notice that the frequency setting for tripping of the Gas based generating Units of NTPS is 48.72 Hz. Similarly the frequency setting at which generating Units of AGBPP are likely to trip is 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. & Gas based generating Units of OTPC at Palatana is 47.8 Hz (for M/s BHEL make Unit). After deliberation in OCC and PCC forums following islanding scheme and associated frequencies levels for creation of islands in NER has been planned and are under implementation.

SN	Islanding Scheme	Lines required to be opened	UFR Location	Implementing Agency
1	ISLAND AT 48.80 Hz: Island comprising of generating units of AGBPP (Gas), NTPS (Gas) & LTPS (Gas) and loads of Upper Assam system & Deomali area (Ar. Pradesh) [Total Generation: 380-400MW and load: 200MW (off peak)-300MW (peak)]	220 kV New Mariani (PG) – AGBPP	UFR-1 [At New Mariani (PG)]	POWERGRID
		220 kV New Mariani (PG) – Misa		
		220 kV Mariani – Misa	UFR-2 [At Mariani, Samaguri of AEGCL]	AEGCL
		220 kV Mariani – Samaguri		
		132 kV Mokukchung – Mariani		
132 kV Dimapur (PG) – Bokajan	UFR-3 [At Dimapur (PG)]	POWERGRID		
2	ISLAND AT 48.20 Hz: Island comprising of generating units of AGTPP (Gas), generating units at Baramura (Gas), Rokhia (Gas) & Gumati (Hydro) and loads of Tripura system & Dullavcherra area (Assam) [Total Generation: 150-160MW and load: 110MW (off-peak)-150MW (peak)]	132 kV Palatana – Udaipur	UFR-1 [At Palatana]	OTPC
		132 kV Palatana – Surjamani Nagar		
		132 kV Silchar – Dullavcherra	UFR-2 [At Silchar]	POWERGRID
		132 kV AGTPP – Kumarghat	UFR-3 [At Kumarghat]	POWERGRID
		132 kV P K Bari – Kumarghat		
3	ISLAND AT 47.90 Hz: Isolation of NER from NEW grid at ER-NER boundary with rest of the generation and load of NER	To be decided after system study		

There is no financial implication for UFRs as the inbuilt feature of Numerical relays, provided for protection of the corresponding line (s) at identified location would be used. The isolation of islanded pocket from rest of the NER grid is only the first stage. The operation of UFRs has to be with certain time delay. But after isolation from rest of the grid, the load and generation matching should take place automatically in the islanded pocket either by reduction of generation or adjustment of loads. The input from SCADA and use of Programmable Logic Controller (PLC) etc. may be required. Otherwise islanded pocket may not survive due to load generation mismatch. Detail engineering is required for automatic load generation matching for successful operation of the island. Regarding the Case – III

above i.e. isolation of NER from ER at ER-NER boundary, the relevant study required is being carried out in association with WRPC.

In the 14th TCC meeting, the islanding schemes 1 & 2 elaborated above have been agreed by TCC members as decided in the 12th PCC meeting. During meeting it was suggested that while finalizing the islanding scheme -1 (proposed at 48.8 Hz), 100MW of UFR based load shedding proposed at 48.8Hz (as decided by NPC) should be taken into account and adequate time delay should be provided for operation of UFR or df/dt relay. Regarding the Case – III mentioned above i.e. isolation of NER from ER at ER-NER boundary, the relevant study required is being carried out in association with WRPC. Further, the committee has requested Prof. Tripathi from IIT, Guwahati to assist the study group of NERPC in carrying out various system studies required for islanding scheme and other studies as and when required. He agreed for providing assistance Necessary data will be furnished to Prof. Tripathy by NERLDC for further action.

Deliberation of the Committee

The Sub-committee decided to form a sub-group to look into the matter and discuss in detail for implementation of the islanding scheme 1 &2.

The sub-group would comprise of representatives from Assam, Tripura, NEEPCO, POWERGRID, NERPC, NERLDC & IIT, Guwahati. The nomination from various organizations should reach NERPC before next OCC/PCC meeting so that further action plan can be discussed in next OCC/PCC meeting. NERLDC was requested to furnish relevant information to Prof. P. Tripathy of IIT, Guwahati so that he can be pursued by NERPC to carry out studies relating to proposed islanding scheme.

The Sub-committee noted as above.

B.5 Frequent Tripping Of 33kV System of DOP, AP at Nirjuli and Ziro:

The present status of tripping of 33kV Feeders at Nirjuli and Ziro Sub Station is as below:

(a) Tripping 33kV Feeders at Ziro

SN	Feeder	Jan'10 – Jun'13	Tripping in Aug'13
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		Nos.	Nos. / Month	Nos.	Nos. / Month
1	Kurung- Kamey	766	18.23	19	19
2	Old Ziro Feeder	440	10.47	3	3
3	Kimin Feeder	1208	28.76	61	61

(b) Tripping 33kV Feeders at Nirjuli

SN	Feeder	Jan'10 - Jun'13		Tripping in Aug,13	
		Nos.	Nos. / Month	Nos.	Nos. / Month
1	AP - 1	262	6.23	7	7
2	AP - 2	590	14.07	17	17
3	AP - 4	82	1.95	2	2

During 14th TCC meeting, the committee expressed concern for frequent tripping in 33kV system of Ar. Pradesh. POWERGRID informed that such repeated tripping resulted in failure of transformers at Ziro & Nirjuli substation. CE, Ar. Pradesh informed that matter has been discussed with POWERGRID and remedial measures have already been taken up after discussion. The work of change of conductor with higher size is in progress and work will be completed within two (2) months. Other remedial measures would be taken at the earliest to reduce tripping in 33kV system of Ar. Pradesh.

Deliberation of the Committee

Assam stated that due to frequent tripping in 33kV system of Ar. Pradesh, the transformers at Ziro and Nirjuli substation have failed twice during the last few years and this has commercial impact on the constituents of the region. The representative of Assam re-iterated that on request of Ar. Pradesh all constituents had agreed to include augmentation of transformation capacity at above substations as the regional project although Ar. Pradesh was the exclusive beneficiary. Hence subcommittee desired that Ar. Pradesh should look into the matter seriously to reduce the frequent tripping in 33kV system so that unwarranted failure of transformers is not repeated.

Since no representative from Ar. Pradesh was present, the status could not be discussed. But subcommittee wanted to convey above message to Ar. Pradesh.

The Sub-committee noted as above.

B.6 T- Connection of Lekhi & Bhalukpong sub-Station

In 14th TCC meeting, CE, Ar. Pradesh informed that work of Loop In Loop Out (LILO) of 132 kV Ranganadi-Nirjuli line at Lekhi is under progress and will be completed by September, 2013. Also the work of Loop In Loop Out (LILO) of 132 kV Balipara – Khupi line at Bhalukpong is under progress and will be completed by December, 2013.

Deliberation of the Committee

Since no representative from Ar. Pradesh was present, the status could not be discussed.

The sub-Committee noted as above.

B.7 T- Connection at various points in NER Grid:

Currently following lines are being tapped (i.e. operating with T-connections) to feed radial loads:

- i. 220 kV Samaguri – Sarusajai I (Jawharnagar)
- ii. 220 kV Sarusajai – Langpi I (Star Cement)
- iii. 132 kV Balipara – Depota (Ghoramara)
- iv. 132 kV Samaguri – Depota (Pavoi)
- v. 132 kV Srikona - Panchgram
- vi. 66 kV Dimapur – Bokajan (Singrijan, Power House & Dairy Farm)

To ensure more reliability and security of these lines, LILO of these lines need to be done at those locations.

Deliberation of the Committee

CGM (LDC), Assam stated that the matter will be looked into and the status will be intimated in the next PCC meeting.

The sub-Committee noted as above.

B.8 Installation of Harmonic Filters:

During 14th TCC meeting, CE, Ar. Pradesh informed that power supply to the

Satyam Steel Plant at Banderdewa has been disconnected and only after completion of installation of harmonic filters the supply to the plant will be resumed. He also informed that the work is likely to be completed by December 2013.

Deliberation of the Committee

Since no representative from Ar. Pradesh was present, the status could not be updated.

The sub-Committee noted as above.

B.8 Un-authorized dismantling of POWERGRID owned 2 Nos PLCC panels at 132 kV Khliehriat (Me. ECL) substation.

Me. ECL has dismantled 2 Nos BPL make PLCC panels of 132 kV Khliehriat (PG)-Khliehriat (Me.ECL) # 1 at Khliehriat (Me.ECL) station without informing/discussing POWERGRID. Thus at present the PLCC link between these two stations through the PLCC link is out of service. Me.ECL has installed the PLCC panels, but away from the previous place of installation and the existing cable from relay panel to PLCC is not sufficient to reach up to new place. Hence, complete new cable is under diversion.

Deliberation of the Committee

Representative from Me. ECL informed that the work has already been completed in the month of July, 2013. Subcommittee requested POWERGRID to verify the status and the same can be discussed in the next PCC meeting.

The sub-Committee noted as above.

B.10 Dismantling of PLCC panel of POWERGRID at 132kV Jirbam substation (PG) for 132 Kv Jiribam (PG) – Pailapool line by AEGCL.

AEGCL has dismantled HBB make PLCC panels of 132 kV Jiribam (PG) – Pailapool (AEGCL) line at Jiribam (PG) station. Thus at present the PLCC link between these two stations through the PLCC link is out of service.

AEGCL may inform the plan for re-installation of the panels.

Deliberation of the Committee

CGM, LDC, Assam stated that the PLCC panels were lying idle for so many years. Now since the OPGW link will cover the above stations, PLCC panels will be redundant once the OPGW link is established.

GM, NERTS also confirmed that the OPGW link will cover the above stations in their schemes and the same is likely to be completed by March, 2014.

The sub-Committee noted as above.

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

The status of installation of 2nd DPR in respect of following lines as given in 12th PCC is as follows:

SN	Station	Line	Utility	Status
1	Kopili HEP	220 KV Misa #1	NEEPCO	Completed
2	Kopili HEP	220 KV Misa #II	NEEPCO	Completed
3	Kopili HEP	220 KV Misa #III	NEEPCO	Completed
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 the 11th PCC meeting, the committee advised Assam to install Main –II (Distance protection) at Tinsukia end of Kathalguri-Tinsukia 220kV D/c line.

During 12th PCC meeting Assam had informed that they intend to install the relays, handed over by POWERGRID, at Samaguri Sub Station (for 220kV Balipara – Samaguri line) and Tinsukia Sub Station (for 220kV Kathalguri – Tinsukia line).

POWERGRID informed that they replenished the relays with Micom P442 and requested Assam to install the relays at BTPS (for BTPS - Salakati # 1 & 2 220kV line). Further, POWERGRID stated that the 220kV BTPS - Salakati Line # 1 & 2 is very important so far as NER-ER connectivity is concerned and in case of disturbance, DR data can be exchanged between Salakati and BTPS for analysis and corrective measures.

Deliberation of the Committee

Assam stated that since the BTPS – Salakati 220kV lines are very short (3-4 KM approx), installation of these DPR may not be very effective.

Subcommittee recommended Assam to consider installation of Line Differential relays for above lines.

The sub-Committee noted as above.

B.12 Non Operation of Protective Switchgear of DOP, Manipur & NHPC

In several cases Loktak connected transmission lines are getting tripped due to non-operation of protective switchgear Manipur downstream faults. This is resulting greater isolation of 132 kV System undesirably affecting 132kV portion of NER Grid. Please refer SN: 23, 24, 25, 38, 39, 57, 61 & 64 of Annexure-1. Protective Switchgear of DOP, Manipur is required to be made functional immediately. 132 kV Loktak-Jiribam-II line is tripping instantaneously on 99% distance for the fault in other lines like 132 kV Jiribam-Aizawl, 132 kV Jiribam-Pailapool, 132 kV Jiribam (PG)-Jiribam (Manipur) etc.

During 14th TCC meeting, CE, DoP, Manipur stated that LILO of Ningthoukhong-Yurembam(Manipur) at Imphal (PG) has been commissioned recently and also R&M work is under progress. Renovation work associated with Yurembam will be completed by December, 2013 and Yangpokpi & Ningthoukhong by March, 2014. Once the R&M works is complete, the problem of frequent tripping will be reduced.

NHPC also informed that replacement of numerical relays will be completed soon and relay setting has been modified as suggested by PGCIL.

GM, NERLDC expressed concern about the frequent tripping in Manipur & NHPC system. He requested that setting of relays can be changed / set in consultation with POWERGRID. Further, he requested CE, DoP, Manipur to furnish the details of tripping in the next PCC meeting for analyzing of the frequent tripping. Also he requested that patrolling of the lines should be done regularly to avoid unnecessary tripping.

Deliberation of the Committee

NHPC representative informed that they have requested the agency (M/S Alstom) to install the relays at the earliest. The status will be intimated in the next PCC meeting.

EE, DoP, Manipur stated that as informed by CE, the work is in progress and the work will be completed as mentioned above.

The sub-Committee noted as above.

B.13 Parallel Operation of 3x20 MVA Transformer with 160 MVA Auto-transformer at Kopili

The committee discussed about the importance of bringing the 3x20MVA transformer back into service. Sr. Mgr. (E/M), NEEPCO informed that the matter has been taken up with POWERGRID. It has been observed that the 3x20MVA, transformer can only operate at Principal tap and there is no back up O/C+E/F protection on 220kV side of transformer. However, all efforts are to be taken to complete the work by July, 2013. The sub-committee had suggested that all required protection should be in place before operation of the transformer.

During 12th PCC meeting Sr. Manager, NEEPCO had informed that Kopili HEP is facing serious problem due to acidic nature of water and most of the engineers are busy with restoration of the plant. However, all efforts will be put by NEEPCO to complete all required tests at the earliest before bringing the transformers into service and parallel operation of above transformer is likely to be completed by August, 2013. The relay co-ordination will be done in consultation with PGCIL.

Deliberation of the Committee

Sr. Manager, NEEPCO informed that the transformer was in charged condition since 08.09.2012 and while attempt was made to load the transformer on 13.08.2013, the transformer got tripped. On inspection, it was found that the tap changer vent of phase-B Transformer has exploded. Once the repair work is over, further action will be initiated and status will be intimated to the forum in next PCC meeting.

The Sub-committee noted as above.

B.14 Up-gradation of existing CTs in NER network:

As per section 5.2 of Revised Manual of Transmission Planning Criteria of CEA (January 2013), the loading limit of transmission lines shall be its thermal loading limit with the emergency thermal limit of 110% of the normal thermal limit. So the CTs of Tr. lines of NER network may be upgraded accordingly. **(Emergency thermal limit of 132 kV Panther Conductor & 220 kV Zebra Conductor is 454 Amps & 845 Amps respectively)**

Deliberation of the Committee

All the constituents agreed to furnish the status of upgradation of CTs in various stations in next PCC meeting.

The Sub-committee noted as above.

C. NEW ITEMS

C.1 Major Grid Disturbances during August, 2013:

There was no major grid disturbance during the month of August, 2013.

Committee may like to note.

However, the following major events occurred in NER during August, 2013 and Committee discussed the remedial solution as below:

Repeated frequent tripping of elements in Loktak - Manipur Sub-system:

Repeated disturbances have been experienced in the above system due to which the power supply to Manipur was affected and also the Grid security depleted. Matters related to corrective actions to be taken were discussed in details in 88th OCC & 12th PCC meetings.

Further the following major events occurred in NER w.e.f. 29th July'13 to 1st September, 2013 in Loktak-Manipur sub-system:

- i. At 0817 Hrs on 09.08.13, 132 kV Loktak – Jiribam II and 132 kV Loktak - Ningthoukhong lines and three units of Loktak tripped.
(Generation loss: 92 MW, Load loss: 25 MW).
- ii. At 1102 Hrs on 15.08.13, 132 kV Loktak - Ningthoukong S/C, 132 kV Imphal (PG) - Imphal S/C and 132 kV Karong - Kohima S/C lines and Likimro HEP tripped. **(Generation Loss: 18 MW, Load Loss : 80 MW)**
- iii. At 1314 Hrs on 15.08.13, 132 kV Loktak - Imphal (POWERGRID) and 132 kV Dimapur - Imphal (POWERGRID) lines and three units of Loktak tripped.
(Generation loss: 105 MW).
- iv. At 1436 Hrs on 15.08.13, 132 kV Loktak – Imphal, 132 kV Dimapur – Imphal and 132 kV Loktak – Ningthoukhong lines and three units of Loktak tripped.
(Generation loss: 105 MW, Load loss: 40 MW).
- v. At 1111 Hrs on 17.08.13, 132 kV Loktak - Imphal S/C, 132 kV Loktak – Ningthoukong and 132 kV Loktak - Jiribam S/C lines and three units of Loktak tripped. **(Generation loss: 72 MW, Load loss: 20 MW).**
- vi. At 1736 Hrs on 22.08.13, 132 kV Loktak - Ningthoukong S/C and 132 kV Imphal (PG) - Imphal S/C lines and three units of Loktak tripped.
(Generation loss: 105 MW, Load loss: 88 MW).
- vii. At 2003 Hrs on 22.08.13, 132 kV Loktak - Ningthoukong S/C and 132 kV Imphal (PG) - Imphal S/C lines and Unit#1of Loktak tripped.
(Generation loss: 50 MW, Load loss: 100 MW).

- viii. At 1430 Hrs on 23.08.13, 132 kV Loktak - Ningthoukong S/C and 132 kV Imphal (PG) - Imphal S/C lines and Unit#1of Loktak tripped.
(Generation loss: 47 MW, Load loss: 74 MW).
- ix. At 1218 Hrs on 26.08.13, 132 kV Loktak - Ningthoukong S/C and 132 kV Imphal (PG) - Imphal S/C lines tripped.
(Generation loss: 25 MW, Load loss: 57 MW).

Multiple tripping of elements in and around Jiribam (Manipur area)

- i. At 1339 Hrs on 27.08.13, 132 kV Jiribam - Pailapool and 132 kV Jiribam - Loktak II lines tripped. **(Load Loss: 31 MW)**
- ii. At 1300 Hrs on 30.08.13, 132 kV Jiribam - Jiribam (PG) and 132 kV Jiribam - Loktak II lines tripped. **(Generation Loss: 36 MW, Load Loss: 42 MW)**

In 12th PCC Meeting it was deliberated that action needs to be taken by all concerned especially by Manipur to identify the reasons of such trippings and rectify the problems.

Deliberation of the Committee

Representative from Manipur & NHPC stated that as discussed in item B.12 above, the frequent tripping will get reduced once the works is completed.

The sub-Committee noted as above.

Multiple tripping of elements in and around Khliehriat area

- i. At 1345 Hrs on 26.08.13, 132 kV Khliehriat (PG) - Khliehriat (S) I, 133 kV Khliehriat (PG) - Khliehriat (S) II and 132 kV Khliehriat – NEHU lines tripped.
(Load Loss: 43 MW)

In the 12th PCC Meeting, it was deliberated that installation of Distance Protection Relay at 132 kV Khliehriat (PG) # 2 bay at 132 kV Khliehriat (Me.PTCL) sub-station is likely to solve the problem.

Deliberation of the Committee

Representative from Meghalaya informed that Distance Protection Relay is not available and the procurement of relay is under process. The same will be installed after receiving of relay.

The sub-committee suggested that as decided in the 12th PCC meeting, a joint inspection of Khliehriat sub-station by a team, comprising of representatives from NERPC, POWERGRID and Me. ECL, is required to identify the problem.

NERPC agreed and the date of inspection shall be intimated in advance to POWERGRID & Me. ECL

The sub-Committee noted as above.

Multiple tripping of elements in and around Doyang and Dimapur area

- i. At 1521 Hrs on 11.08.13, 132 kV Dimapur - Doyang I, 132 kV Dimapur - Doyang II and 132 kV Doyang - Mokokchung S/C lines and three units of Doyang tripped. (**Generation Loss: 70 MW, Load loss: 15 MW**)
- ii. At 0337 Hrs on 26.08.13, 132 kV Dimapur - Doyang I, 132 kV Dimapur - Doyang II, 132 kV Dimapur - Imphal, 132 kV Dimapur - Dimapur and 132 kV Dimapur - Bokajan lines, 220/132 kV ICT 1 & 2 at Dimapur and three units of Doyang tripped. (**Generation Loss: 70 MW, Load loss: 37 MW**)

Deliberation of the Committee

Sr. Mgr. NEEPCO informed that mal operation had occurred due to some human error, which will not be repeated in future.

The sub-Committee noted as above.

Unit tripping/ Power Station Blackout:

- i. At 1152 Hrs on 01.08.13, Unit-1 of Langpi tripped. (Generation Loss: 46 MW).
- ii. At 0552 Hrs on 02.08.13, Unit-2 of Ranganadi tripped. (Generation Loss: 110 MW).
- iii. At 1532 Hrs on 02.08.13, Unit- 2 of Khandong tripped. (Generation Loss: 25 MW)
- iv. At 1342 Hrs on 04.08.13, Unit-1 and 2 of Loktak tripped.(Generation Loss: 70 MW)
- v. At 1559 Hrs on 04.08.13, Unit- 2 of Loktak tripped. (Generation Loss: 35 MW)
- vi. At 0159 Hrs on 08.08.13, Unit- 4 of Kopili tripped. (Generation Loss: 35 MW)
- vii. At 2337 Hrs on 11.08.13, Unit- 2 of Doyang tripped. (Generation Loss: 27 MW)
- viii. At 2126 Hrs on 12.08.13, Unit-2 of Loktak tripped. (Generation Loss: 35 MW)
- ix. At 1951 Hrs on 19.08.13, Unit- 1 of Doyang tripped. (Generation Loss: 23 MW)
- x. At 0810 Hrs on 21.08.13, Unit I, II and IV of AGBPP tripped. (Generation loss: 40 MW).
- xi. At 1735 Hrs on 24.08.13, Unit- 1 of Khandong tripped. (Generation Loss: 24 MW)
- xii. At 1843 Hrs on 24.08.13, Unit-1, 2 & 3 Of Leshka tripped. (Generation Loss: 120 MW).
- xiii. At 0500 Hrs on 26.08.13, Unit- 1 of Doyang tripped. (Generation Loss: 19 MW)
- xiv. At 0913 Hrs on 26.08.13, Unit- 1, 2 & 3 of Doyang tripped. (Generation Loss: 50 MW)
- xv. At 0953 Hrs on 26.08.13, Unit- 1 of Loktak tripped. (Generation Loss: 37 MW)
- xvi. At 1207 Hrs on 29.08.13, Unit-2 and3 of Doyang tripped.(Generation Loss: 56 MW)
- xvii. At 0054 Hrs on 01.09.13, GTG-I of Palatana tripped followed by tripping of STG-I of Palatana. (Generation Loss: 55 MW)

Related tripping/ Cascade Tripping :

- i. 220 kV Samaguri - Sarusajai II tripped at 1327 and 1531 Hrs on 03.08.13.
- ii. 132 kV Khleihriat (PG) - Khleihriat I tripped at 1255 and 1305 Hrs on 05.08.13
- iii. 132 kV Dharmanagar - Dullavcherra S/C tripped at 1740 and 1917 Hrs on 11.08.13.
- iv. 132 kV Khandong - Haflong S/C tripped at 0058 and 1856 Hrs on 12.08.13.
- v. 220 kV AGBPP - Tinsukia II tripped at 1943 Hrs on 12.08.13 and again at 0120 Hrs on 13.08.13.
- vi. 132 kV Khandong - Haflong S/C tripped at 0000 and 1234 Hrs on 15.08.13.
- vii. 132 kV Imphal (PG) - Imphal S/C tripped at 1640 and 1940 Hrs on 23.08.13.
- viii. 132 kV Aizawl - Jiribam S/C tripped at 2023, 2033 and 2057 Hrs on 23.08.13
220 kV Kathalguri - Tinsukia II tripped at 1802, 1816 and 2020 Hrs on 25.08.13

Tripping of critical elements:

- i. At 1152 Hrs on 01.08.13, 220 kV BTPS - Agia S/C and 220 kV Sarusajai – Samaguri I lines tripped.
- ii. At 0127 Hrs on 02.08.13, 220 kV Misa - Samaguri I tripped.
- iii. At 0552 Hrs on 02.08.13, 400 kV Balipara - Ranganadi II line tripped.
- iv. At 0634 Hrs on 02.08.13, 220 kV Baliipara - Samaguri S/C tripped.
- v. At 0959 Hrs on 02.08.13, 400/220 kV, 315 MVA Balipara ICT tripped.
- vi. At 1157 Hrs on 03.08.13, 220 kV BTPS - Agia S/C tripped.
- vii. At 2215 Hrs on 04.08.13, 132 kV Salakati - Gelyphu S/C tripped.
- viii. At 2208 Hrs on 04.08.13, 132 kV Rangia - Deothang S/C tripped.
- ix. At 0307 Hrs on 05.08.13, 400 kV Bongaigaon - N'Siliguri I tripped.
- x. At 1342 Hrs on 05.08.13, 132 kV Rangia - Deothang S/C tripped.
- xi. At 1418 Hrs on 05.08.13, 220 kV Misa - Byrnihat I tripped.
- xii. At 1040 Hrs on 10.08.13, 220 kV Balipara - Samaguri S/C tripped.
- xiii. At 1125 Hrs on 10.08.13, 220 kV Samaguri - Sarusajai I tripped.
- xiv. At 1625 Hrs on 11.08.13, 400 kV Binaguri - Bongaigaon I tripped.
- xv. At 0753 Hrs on 12.08.13, 220/132 kV, 160 MVA ICT at Kopili tripped.
- xvi. At 2027 Hrs on 13.08.13, 400 kV Bongaigaon - Balipara II tripped.
- xvii. At 0725 Hrs on 14.08.13, 220 kV Misa - Byrnihat II tripped.
- xviii. At 0221 Hrs on 17.08.13, 220 kV Misa - Byrnihat II tripped.
- xix. At 2119 Hrs on 19.08.13, 220 kV Birpara - Salakati I tripped.
- xx. At 2119 and 2301 Hrs on 19.08.13, 220 kV Birpara - Salakati II tripped.
- xxi. At 0130 Hrs on 21.08.13, 132 kV Salakati - Gelyphu S/C tripped.
- xxii. At 1209 Hrs on 21.08.13, 220 kV Samaguri - Sarusajai II tripped.

- xxiii. At 0005 Hrs on 23.08.13, 220 kV Agia - Sarusajai S/C tripped.
- xxiv. At 1030 Hrs on 23.08.13, 400 kV Silchar - Palatana I tripped.
- xxv. At 1653 Hrs on 25.08.13, 132 kV Balipara - Depota S/C tripped.
- xxvi. At 1958 Hrs on 25.08.13, 400 kV Balipara - Bongaigaon II tripped.
- xxvii. At 1630 Hrs on 26.08.13, 220 kV Birpara - Salakati I tripped.
- xxviii. At 2235 Hrs on 26.08.13, 400 kV Silchar – Byrnihat tripped.
- xxix. At 0908 Hrs on 27.08.13, 400 kV Balipara - Bongaigaon II tripped.
- xxx. At 1314 Hrs on 01.09.13, 220 kV Byrnihat-Misa II tripped.

AGBPP Unit tripping due to problem of Gas Compressor:

- i. At 1735 Hrs on 03.08.13, the GC III tripped resulting in tripping of unit II, III and IV.
(Generation loss: 74 MW).
- ii. At 1940 Hrs on 03.08.13, the GC IV tripped resulting in tripping of unit II and IV.
(Generation loss: 53 MW).
- iii. At 2245 Hrs on 03.08.13 the GC IV tripped resulting in tripping of unit II, and III.
(Generation loss: 22 MW).
- iv. At 0912 Hrs on 04.08.13, the GC IV tripped resulting in tripping of unit II, and III.
(Generation loss: 66 MW).
- v. At 1458 Hrs on 04.08.13, the GC II tripped resulting in tripping of unit II, III and VII.
(Generation loss: 68 MW).
- vi. At 1556 Hrs on 04.08.13, the GC IV tripped resulting in tripping of unit II, IV and VII.
(Generation loss: 68 MW).

Deliberation of the Committee

The Sub-committee requested that details of tripping should be sent to all the constituents in advance so that constituents can come with relevant information and discussion / deliberation can be fruitful.

NERPC agreed. NERPC has also requested all the constituents to furnish the details in advance so that the same can be circulated to them before the meeting.

The sub-Committee noted as above.

System Isolation:

At 1540 Hrs on 07.08.13, 132 kV AGTPP - Kumarghat S/C, 132 kV Kumarghat - PKBari S/C, 132 kV Silchar - Dullavcherra S/C and 132 kV Surjamaninagar -

Budhjangnagar II lines tripped. Tripping of the elements resulted in isolation of Tripura system (Except Udaipur and Surjamaninagar load) along with AGTPP Generation from rest of NER Grid. [132 kV Surjamaninagar - Budhjangnagar I and 132 kV Rokhia - Udaipur S/C were under shutdown]

(Generation Loss: 55 MW, Load Loss: 30 MW)

Grid Disturbance:

At 1559 Hrs on 13.08.13, 220 kV Misa - Byrnihat I, 220 kV Misa - Byrnihat II and 132 kV Dimapur - Imphal S/C lines tripped while 220/132 kV, 160 MVA, Kopili ICT was out of service. This resulted in isolation and collapse of Manipur, Mizoram, South Assam, Tripura and part of Meghalaya system along with generation of Loktak, AGTPP.

(Generation Loss: 435 MW, Load Loss: 505 MW)

Members may kindly deliberate the above incidents. With growing demand every MW is important and all effort should be made that all protection scheme are operating in the intended manner. NERLDC has been requesting to all power utilities of NER time and again for furnishing details of every incident in line with IEGC and CEA Grid Standard Regulations. This data/information is required for detailed investigation and for taking remedial measures. Most of the detail information of above events are still awaited. Members are requested to expedite sending of the details.

Deliberation of the Committee

The Sub-committee requested that as agreed in last TCC meeting on 04.09.13 at Agartala the detailed information of events in line with IEGC and CEA Grid Standard should be furnished to NERLDC within 24 hours so that NERLDC can analyze the reason of tripping and remedial action can be taken accordingly.

The sub-Committee noted as above.

Tripping related to OTPC, Pallatana:

On 23.08.13, 10:30 Hrs 400 kV Silchar-Pallatana-I Ckt tripped and A/R could not take place due to DT receipt at Silchar end.

Deliberation of the Committee

The Sub-committee requested that details of tripping should be sent to all the constituents in advance so that constituents can come with relevant information and discussion / deliberation can be fruitful.

NERPC agreed. NERPC has also requested all the constituents to furnish the details in advance so that the same can be circulated to them before the meeting.

The sub-Committee noted as above.

Tripping related to AEGCL, Samaguri:

On 2nd & 10th August, 2013, 220 kV Balipara – Samaguri line tripped with 48 & 15 KM distance from Balipara end respectively. Balipara end A/R Operated and subsequently line A/R kept in non-auto mode.

Deliberation of the Committee

Representative from Assam informed that the fault was in Y- phase and the DPR operated correctly. However, auto reclosing scheme is not kept in service because of the obsolete CB (i.e MOCB) which is not suitable for SPAR. Further, necessary patrolling will also be carried out to monitor the tripping.

POWERGRID suggested for bypassing SPAR / keeping SPAR out of service at Balipara end till AEGCL replace the CB and put SPAR in service.

Assam informed that they will look into the matter and necessary action will be taken accordingly.

The sub-Committee noted as above.

Tripping related to NEEPCO:

i. The removal of High set element of Over Current relay at RHEP of 132 kV Nirjuli-Ranganadi line was discussed in various PCC meetings.

Deliberation of the Committee

Sr. Mgr. NEEPCO informed that he will revert back about the setting / removal of HS element.

The sub-Committee noted as above.

ii. 132 kV Khandong-Haflong line tripped on Dir O/C (Highset) and E/F at Khandong end and no tripping at Haflong end. The adopted relay settings at Khandong end found to be very low (Stage-2 of O/C & E/F), revised settings has been forwarded to NEEPCO. Now, line is under observation.

The sub-Committee noted as above.

Date and Venue of next PCC

It is proposed to hold the 14th PCC meeting of NERPC in first week of October, 2013. As per roaster, Ar. Pradesh will be the host for 14th PCC meeting. The exact venue will be intimated in due course.

The meeting ended with thanks to the Chair.

Annexure-I

List of Participants in the 13th PCC meeting held on 13/09/2013

SN	Name & Designation	Organization	Contact No.
1.	No Representatives	Ar. Pradesh	
2.	Sh. H.C. Phukan, CGM, SLDC	Assam	09435559447
3.	Sh. P. K. Sarma, GM, Com-T	Assam	09435344083
4.	Sh. B. C. Bordoloi, DGM, SLDC	Assam	09435045675
5.	Sh. J. K. Baishya, AGM, SLDC	Assam	09435041494
6.	Sh. A. K. Saikia, AGM, SLDC	Assam	09864116176
7.	Sh. K. Goswami, AGM, Com-T	Assam	09864020019
8.	Sh. G.K. Bhuyan, AGM, (Protection)	Assam	09954055295
9.	Sh. Budha Chandra Sharma, EE	Manipur	09436020911
10.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
11.	Sh. L. Nongkhlaw, AEE, PLCC	Meghalaya	09863102087
12.	No Representatives	Mizoram	
13.	Sh. Nitovi Wotsa, EE (E)	Nagaland	09436004928
14.	Sh. A. Jakhalu, EE (Trans)	Nagaland	09436002696
15.	Sh. A. Gan. Chaudhuri, DGM (C&T)	Tripura	09436139311
16.	Sh. B. Debbarma, DGM (SO)	Tripura	09436450501
17.	Sh. T. S. Singh, GM	NERLDC	09436302717
19.	Sh. N. R. Paul, DGM	NERLDC	09436302723
20.	Sh. A. Mallick, CM (SO-II)	NERLDC	09436302720
21.	Sh. B.R Medhi, Dy. Manager	NERLDC	09436335379
22.	Sh. Rahul Chakrabarti, Engineer	NERLDC	09402507543
23.	Sh. A. Patir, GM	NERTS	09436302529
24.	Sh. Madhavan, Manager	NERTS	09436335250
25.	Sh. P.C. Barman, DGM	NEEPCO	09435144141
26.	Sh. D. Choudhury, Sr. Mgr	NEEPCO	09435339747
27.	Sh. Bhaskar Goswami, Sr. Mgr.	NEEPCO	09436163983
28.	Sh. C.L. Khayuingam, Asst. Mgr (E)	NHPC	09402880207
29.	Sh. Pranav Kumar, Engineer (E)	NHPC	09436894887
30.	Sh. M. Banerjee, GM (Plant)	OTPC	08413990716
31.	Sh. Atanu Nath, Associate Mgr.	ENICL	09547808241
32.	Sh. S.K. Ray Mohapatra, MS I/C	NERPC	09818527857
33.	Sh.B. Lyngkhoi, SE (O)	NERPC	09436163419
34.	Sh. S. M. Jha, EE (O)	NERPC	09831078162