भारत सरकार Government of India
विद्युत मंत्रालय Ministry of Power
उत्तर पूर्वी क्षेत्रीय विद्युत समिति
North Eastern Regional Power Committee
मेघालया स्टेट हाउसिगं फिनांस को- आपरेटिव सोसायटी लि. बिल्डिगं
Meghalaya State Housing Finance Co-Operative Society Ltd. Building
नांग्रिम हिल्स, शिलोंग - ७९३००३
Nongrim Hills, Shillong – 793003.

ISO 9001:2008

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No. NERPC/SE (O)/OCC/2013/***6144-77*** Dated: November, 27 2013

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
8. Chief Engineer (WE Zone),Department of Power ,Govt. of Arunachal Pradesh, Itanagar- 791 111
9. Chief Engineer (EE Zone),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
10. Chief Engineer (TP&MZ),Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
11. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
12. Chief Engineer (P), Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
13. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
14. General Manager, TSECL, Agartala – 799 001
15. Regional ED (East –II), NTPC, 3rd Floor, OLIC Bldg., Pl No- N.17/2, Nayapalli, Bhubaneswar-12
16. ED (O&M), NERTS, PGCIL, Dongtieh-Lower Nongrah, Lapalang, Shillong -793 006
17. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
18. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
19. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad,Haryana-121003
20. GM (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
21. GM, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
22. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
23. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066

Sir,

Sub: Minutes of the 91st OCC Meeting held on 15th November, 2013 at Itanagar.

The Minutes of the 91st OCC Meeting of NERPC held on 15.11.2013 at "Hotel Donyi Polo Ashok", Itanagar, Arunachal Pradesh is enclosed for favour of kind information and necessary action please**.**

Any comments or observations may kindly be communicated at the earliest.

With warm regards,

Encl: As above

भवदीय / Yours faithfully,

बी. लिंगखोइ

बि. लिंगखोइ / B. Lyngkhoi
अधीक्षण अभियंता / **Superintending Engineer**
प्रचालन / **Operation**

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. 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.

वी. लिंगरुंडु

अधीक्षण अभियंता / **Superintending Engineer**

North Eastern Regional Power Committee

MINUTES OF THE 91st OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 15/11/2013 (Friday)
Time : 10:00 hrs
Venue : "Hotel Donyi Polo Ashok", Itanagar.

The List of Participants in the 91st OCC Meeting is attached at **Annexure – I**

The meeting was started with welcome address by Shri A. Perme, Chief Engineer (P), T, P&M, Dept. of Power, Govt. of Arunachal Pradesh. He stated that Ar. Pradesh is honoured by the opportunity to host these important OCC & PCC meetings in their State after a long gap. He was of the view that these meetings should be held in each state of the region on rotation basis to give opportunity to engineers of the concerned state to participate in more numbers, to share their views and interact with other participants of the region. Further, he wished that the active participation & discussion by all the participants will give fruitful outcome.

The meeting was followed up by lighting of lamps by dignitaries on the dias.

S.K. Ray Mohapatra, Member Secretary (I/C), NERPC in his address welcomed Shri A. Perme, CE, T, P&M, Dept. of Power, Ar. Pradesh, Shri H.C. Phukan, CGM (LDC), AEGCL and delegates of constituents of the region. He thanked Ar. Pradesh for agreeing to host the meeting at Itanagar and making all arrangements for delegates. He also thanked Mr. Perme and Mr. Phukan for sparing their valuable time to attend the meeting and contributing for the benefit of the forum. He stated that geographic location of Ar. Pradesh is such that many river basins, viz. Subansiri, Siang, Dibang, Tawang, Kameng and Lohit etc., having huge hydro potential make Ar. Pradesh the only state in the region to be known as power house of India. Hence, in future Ar. Pradesh has a big role to play in the power sector of India. Transmission corridor is the main concern for evacuation of huge quantum of power from the state and hence number of +/- 800 KV HVDC lines has been planned. He also mentioned that at present Ar. Pradesh is running with shortage of

power and few years down the line, the state will be surplus in power and strengthening of transmission & distribution network within the state of Ar. Pradesh is very much essential to meet their own power demand. He highlighted about some of the important issues to be discussed in the meeting viz. NLCPR-Central funding, SPS, Islanding scheme and UFR based load shedding, standard procedure to be followed before declaration of CoD for transmission system and matters pertaining to Ar. Pradesh. He also informed the forum that Mr. Sonjib Banerjee of M/s Manav Energy Private Limited is interested to give a short presentation on earthing in the next OCC/PCC meeting.

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

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 90th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

S.E (O) informed that the minutes of 90th meeting of Operation Co-ordination Sub-committee held on 13th September, 2013 at Shillong were circulated vide letter No. NERPC/SE (O)/OCC/2013/5259-5288 dated 18th October, 2013.

The Sub-committee confirmed the minutes of 90th OCCM of NERPC as no observations or comments were received from the constituents.

SE (O), NERPC then requested NERLDC to give the presentation on the grid performance of NER during the month of October, 2013.

The presentation as given by NERLDC is given as below:

ITEMS FOR DISCUSSION

B.1. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING OCT' 13

As per the data made available by NERLDC, the grid performance parameters for October, 2013 are given below:

NER PERFORMANCE DURING OCTOBER, 2013

	Energy Met (MU)			Energy Reqr. (MU)		
States	**Oct-13**	**Sep-13**	**% inc(+)/dec(-)**	**Oct-13**	**Sep-13**	**% inc(+)/dec(-)**
Ar. Pradesh	40.465	**37.82**	7.0	42.61	**40.21**	6.0
Assam	645.619	**680.01**	-5.1	676.2	**729.43**	-7.3
Manipur	42.009	**42.16**	-0.4	45.48	**45.54**	-0.1
Meghalaya	138.288	**129.68**	6.6	148.78	**139.78**	6.4
Mizoram	36.3	**33.22**	9.3	37.8	**34.93**	8.2
Nagaland	42.09	**45.81**	-8.1	43.85	**47.52**	-7.7
Tripura	105.389	**97.39**	8.2	108.98	**105.14**	3.7
Region	**1050.16**	**1066.09**	-1.5	**1103.7**	**1142.55**	-3.4

	Demand Met (MW)			Demand in (MW)		
States	**Oct-13**	**Sep-13**	**% inc(+)/dec(-)**	**Oct-13**	**Sep-13**	**% inc(+)/dec(-)**
Ar. Pradesh	113	**103**	9.7	115	**105**	9.5
Assam	1220	**1220**	0.0	1266	**1329**	-4.7
Manipur	111	**124**	-10.5	114	**125**	-8.8
Meghalaya	276	**285**	-3.2	278	**296**	-6.1
Mizoram	60	**65**	-7.7	61	**67**	-9.0
Nagaland	99	**100**	-1.0	99	**103**	-3.9
Tripura	250	**217**	15.2	254	**216**	17.6
Region	**2048**	**1987**	3.1	**2140**	**2164**	-1.1

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Oct-13**	**Sep-13**
Total Generation in NER (Gross)	932.18	942.806
Total Central Sector Generation (Gross)	594.26	587.285
Total State Sector Generation (Gross)	337.92	355.521
Inter-Regional Energy Exchange		
(a) NER-ER	19.17	20.639
(b) ER-NER	146.53	157.642
© Net Import	127.36	137.003

AVERAGE FREQUENCY (Hz)

Month---->	**Oct-13**	**Sep-13**
	% of Time	% of Time
Below 49.7 Hz	0.79	1.09
Between 49.7 to 50.2 Hz	89.23	90.05
Above 50.2 Hz	9.98	8.86
Average	50.04	50.02
Maximum	50.63	50.62
Minimum	49.28	49.23

From the above table, it was observed that energy demand met of the region has decreased, whereas peak met has increased.

The Summary of Category A, B, C Messages issued by NERLDC for the constituents of NER for the Month of October, 2013 is given as below:

State	A (<49.8 Hz)		B (<49.7 Hz)		C (<49.7 Hz) Persistent Overdrawal		**Total**	
	Sep'13	Oct'13	Sep'13	Oct'13	Sep'13	Oct'13	Sep'13	Oct'13
Ar. Pradesh	01	04	00	01	00	00	01	05
Assam	01	05	00	01	00	00	01	06
Manipur	01	04	00	00	00	00	01	04
Meghalaya	01	04	00	00	00	00	01	04
Mizoram	01	00	00	00	00	00	01	00
Nagaland	01	06	00	00	00	00	01	06
Tripura	00	05	00	01	00	00	00	06

The Sub-committee noted as above.

FOLLOW UP ACTION

C.1 Synchronization of Pallatana Module -I

During the 14th TCC meeting, representative of OTPC informed that the Unit tripped after re-synchronization due to rotor earth fault. However, the machine will be resynchronized to the grid during middle of September, 2013. Regarding Unit#2, he informed preliminary tests are in progress and the machine will be synchronized by November 2013 for trial run. The declaration of CoD is expected by December 2013.

The status of execution of various transmission lines as given in 89th OCC meeting is given below:

Byrnihat – Bongaigaon 400kV line – **October, 2013**

Balipara – Bongaigoan 400 KV D/C line **-December, 2013**

Silchar- Imphal 400kV D/c line and substation at Imphal- **works in progress**

Silchar- Melriat 400kV D/c line and substation at Malriat - **works in progress**

Mariani – Mokokchung 220kV D/c line - **works in progress**

In the 90th OCC meeting, representative of OTPC informed that rotor earth fault problem has been resolved and machine is generating about 100MW to 150MW as advised by NERLDC.

After detailed discussion, the Sub-committee had decided as below:

i. OTPC should maintain the steady generation in the range of 100 MW to 150MW during coming Durga Puja festival.

ii. Rotor earth fault should be checked thoroughly and rectified before Puja. All testing should be stopped during this period.

iii. OTPC should strictly follow the advice of NERLDC for the safety and security of the grid during the Durga Puja festival.

Deliberation of the Committee

The representative of OTPC informed that rotor earth fault problem has been resolved and machine is ready for PPA test subject to availability of clean gas. Further he informed that ONGC has assured that cyclone separator will be installed within the next 10-15 days (i.e. by 05.12.2013). Also he stated that since CERC has given their extension for infirm power injection till 31.12.2013, all efforts to complete the remaining test would be of utmost importance to them. He requested the forum to allow them to generate upto the full load for 72 (seventy two) hours for PPA test before declaring CoD. He also informed that one Gas compressor is expected to reach site from BHEL's factory at Hyderabad by mid of January, 2014 and accordingly the trial operation of the Unit-II is expected in June, 2014.

DGM, NERLDC requested OTPC to intimate them one week in advance so that necessary action can be taken up with the constituents for ensuring smooth operation of the grid during PPA tests.

The Sub-committee also reviewed the status of Pallatana & Transmission lines. The status as informed by OTPC and POWERGRID is as follows:

SN	Items	Present status
1	Trial operation of Unit -I of OTPC at Palatana	December, 2013
2	Trial operation of Unit -II of OTPC at Palatana	June, 2014
3	400KV D/C Silchar - Melriat line	June, 2014

4	400KV D/C Silchar - Imphal line	June, 2014
5	220KV D/C Mariani (New) - Mokokchung	March, 2014
6	400KV D/C Byrnihat-Bongaigaon line	December, 2013
7	400kV Balipara – Bongaigaon D/C line # 3 & 4 with FSC	December, 2013

The Sub-committee noted as above.

C.2 Independent third party audit of protection system:

During 90th OCC meeting, SE (O) stated that NERPC will help in preparation of the project proposal for funding through NLCPR (Central) for taking up renovation/rectification works. The proposal is to be submitted by each constituent state to Ministry of Power with copy to DoNER. However, a consolidated project proposal for funding through NLCPR (Central) for taking up renovation/rectification works will also be submitted to Ministry of Power with copy to DoNER through Chairman, NERPC & Hon'ble Minister of Power, Govt. of Tripura. 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.

Deliberation of the Committee

SE (O) informed that 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.

In the meantime the draft project proposal prepared by NERPC was sent to constituent states of the region for suggestion/comments / observations and no response was received from any states except Assam. After incorporating the suggestion from Assam, the draft project proposal has already been submitted to Secretary, Ministry of Power (Govt. of Tripura) with request to submit the proposal, on behalf of the region, to Ministry of Power (Govt. of India) through Chairman NERPC & Hon'ble Minster of Power, Govt. of Tripura.

Member Secretary I/C requested all constituent states of the region to take up the issue with their respective Power Ministry for approaching the Ministry of Power, Govt. of India so that funding under NLCPR-Central is approved at the earliest and

the schemes is implemented early for smooth operation of the grid for the benefit of the region as well as for the country. He also highlighted that the project funded under NLCRP-Central will be executed by Central Agency as per the guidelines.

CE, Ar. Pradesh expressed reservation on implementation of the scheme by Central Agency. He was of the opinion that funds should be given to the States instead of getting the work done by Central Agency as the state agencies are more familiar with ground reality and can execute the work in a better manner. He requested all other constituent states to look into the matter regarding the funding pattern and executing agency.

DGM, POWERGRID stated that certain works need to be carried out on urgent basis by the NER constituents even if funding is not available from external resources in order to avoid unwarranted tripping / system isolation and smooth operation of the Grid. Accordingly, he suggested that based on the protection audit report, essential rectification work should be taken up at the earliest without waiting for funding.

The Sub-committee requested all the constituent states to take up the matter with their respective Power Ministry so that funding for execution of above work is made available from NLCPR-Central to the constituent states of the region at the earliest.

C.3 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 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 Tripura = 10 MW	100
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**

During the 89th OCC meeting, 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.

During 90th OCC meeting, the subcommittee decided to change the existing setting of UFR. The UFR's frequency setting of 48.8Hz will be changed to 49.2Hz (i.e. Ist Stage), 48.5Hz will be changed to 49.0Hz (i.e. IInd Stage), 48.2Hz will be changed to 48.8Hz (i.e. IIIrd Stage) and one more setting will also be introduced at 48.6Hz (i.e. IVth Stage). Accordingly additional requirement of quantum of load can be calculated as per above Table. Subcommittee advised to include least important loads/feeders for 1st stage of UFR based load shedding (i.e at 49.2Hz). Assam, Tripura & Meghalaya have submitted the list of feeders and quantum of load shedding at different stages. All other constituent states of the region agreed to submit the list of feeders at the earliest. The details of UFR based load shedding (existing/proposed/additional requirement) is given at **Annexure – C.3 (i).**

Deliberation of the Committee

All other constituent states (Ar. Pradesh, Manipur and Nagaland) of the region agreed to submit the list of feeders at the earliest. Mizoram has submitted the proposed feeders for UFR based load shedding for 20MW. Details could not be discussed in the absence of the representative from Mizoram. Further, the Sub-committee suggested for introduction of time delay in operation of UFRs and requested POWERGRID to look into the matter so that the same can be finalized in the next OCC/PCC meeting. POWERGRID agreed.

The Sub-committee noted as above.

C.4 Lines under long outages

During the 89th OCC meeting, the issue for restoration of these lines was reviewed by the committee and the status was as follows:

a) 220kV BTPS – Agia line (one ckt) – [Since Nov'97]: Material has already been procured and the target for completion of work is January, 2014.

b) 132kV Mariani – Mokokchung line –Representative from DoP, Nagaland informed that the work of changing the insulators is in progress and the status / progress will be intimated in the next OCC/PCC meetings.

c) 39km of 132kV Rengpang – Jiribam line – [Since Oct'02]: CE, Manipur informed that line is complete and test charge has already been carried out. The line will be put back into service by September, 2013.

d) LILO of 132 kV Dimapur - Dimapur - II line – Representative from DoP, Nagaland informed that formal communication has been made to POWERGRID to assist in establishment of alternative arrangement for evacuation of power. GM, POWERGRID stated that they have not received any communication from Nagaland in this regard. DoP, Nagaland handed over the letter to POWERGRID during the meeting. GM, NERTS stated that they will look into the matter and the status will be intimated in the next OCC/PCC meetings**.**

Deliberation of the Committee

The status for restoration of following lines as reviewed in the 91st OCC meeting is given below:

a) 220kV BTPS – Agia line (one ckt) – [Since Nov'97]: Material has already been procured and the target for completion of work is January, 2014.

b) 132kV Mariani – Mokokchung line - [Since Apr'02]

EE, DoP, Nagaland informed that 60 strings of insulators have been replaced and rest of the work is likely to be completed by **December, 2013.**

c) 39km of 132kV Rengpang – Jiribam line – [Since Oct'02]

The EE, DoP, Manipur informed that the line was charged for one week, but due to road cutting by BRTF, the minimum ground clearance was hampered and the line has been kept out of service.

d) LILO of 132 kV Dimapur (Nagaland) – Kohima (Nagaland) line at 220/132 kV Dimapur (PGCIL) Substation- [Since Aug'11]:

The representative of Nagaland informed that work for upgrading the existing 3x20 MVA by 2x100 MVA is in progress. Also he informed that some minor modification in one of the tower is required for completion of LILO and Dept. of Power had already engaged a firm for designing the same and the drawing was submitted to POWERGRID for examination.

DGM (OS), POWERGRID stated that they have not received the communication in this matter. Also he enquired about the likely date for commissioning of 2x100 MVA transformers.

EE, Nagaland stated that the drawing has been handed over to Chief Manager (PGCIL) of Dimapur. He also mentioned that 1x100 MVA transformer will be commissioned by 10.12.2013.

DGM (OS), POWERGRID enquired from Nagaland about joint inspection which was carried out to examine the alternative arrangement for evacuation of power and some additional information was requested by POWERGRID for checking the technical feasibility of the proposal and **POWERGRID had informed that the proposed arrangement, if agreed, will take about one year for implementation and hence he requested the forum to bring back** the LILO arrangement into service.

EE, Nagaland stated that there may be some communication gap and requested POWERGRID to verify the same.

The subcommittee requested Nagaland & POWERGRID to resolve the issue at the earliest.

The Sub-committee noted as above.

C.5 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: <u>When 400 kV Palatana-Silcher (D/C) lines trip</u>

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: <u>400 kV Silchar – Byrnihat line (with generation at Pallatana)</u>

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: <u>When 400 kV Silchar – Byrnihat line trip(without generation at Pallatana)</u>

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 & Case-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, Committee advised OTPC to communicate NERLDC for getting the required information. OTPC was requested for taking early action for implementation of SPS for safety & reliability of the NER grid.

During 89th OCC meeting, 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.

During 90th OCC meeting, DGM, POWERGRID informed that SPS associated with all the above cases has already been implemented w.e.f. 14.09.13 at their end. OTPC has to execute the work associated with SPS corresponding to Case – II & III.

SE(O) informed that OTPC vide their letter No. OTPC/UDP/Pallatana/13-14/768 dated 26.09.2013 has communicated that the machine will take about 12.5 minutes to come down to house load from full generation of about 350MW. The committee requested OTPC to implement the SPS immediately for safety and security of the grid. 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 and also after commissioning of the Silchar – Bongaigaon 400kV line.

Deliberation of the Committee

The subcommittee requested OTPC to take up the matter with BHEL and the SPS for Case II & III should be implemented at the earliest without further delay. In case any problem is encountered due to implementation of the SPS, the scheme will be modified / reviewed by the sub-committee. OTPC agreed for early implementation.

DGM, NERLDC requested OTPC & NERTS to confirm the implementation of Case-I at the earliest through written communication to NERLDC & NERPC so that the same can be activated as and when required specially during PPA test of Palatana.

The Sub-committee noted as above.

C.6 Implementation of islanding scheme in NER

During the 87th OCC meeting, the committee had decided the following islanding scheme and associated frequencies levels for creation of islands in NER:

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)]**	(a) 220 kV New Mariani (PG) – AGBPP	UFR-1 [At New Mariani (PG)]	**POWERGRID**
		(b) 220 kV New Mariani (PG) – Misa		
		(c) 220 kV Mariani – Misa	UFR-2 [At Mariani, Samaguri of AEGCL]	**AEGCL**
		(d) 220 kV Mariani – Samaguri		
		(e) 132 kV Mokukchung – Mariani		
		(f) 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		

During 89th OCC meeting, the Sub-committee had decided to form a sub-group to look into the matter and discuss in detail for implementation of the islanding scheme 1 & 2.

The study group would comprise of representatives from Assam, Tripura, NEEPCO, POWERGRID, NERPC, NERLDC & IIT, Guwahati.

In the 90th OCC meeting, the subcommittee had decided to have a meeting of the sub-group at 13:30 PM on 25th October, 2013 at SLDC, Kahilipara to discuss about the Islanding scheme. Assam, Tripura, NEEPCO, POWERGRID, NERPC & NERLDC were requested to depute their concerned persons for discussion so that course of action can be finalized for implementation of the islanding scheme.

For the purpose of system study for Islanding Schemes of NER, the following sets of parameters are required for the generating Units within the proposed island:

a. H : Machine Inertia Constant in p.u. on Machine Base (including turbine inertia)
b. R : Governor Permanent Droop in p.u.
c. D : Turbine Damping Factor/Co-efficient in p.u. on Machine Base
d. Pmax/Qmax : Maximum Generator Active/Reactive Power Output (in MW)
e. Pmin/Qmin : Minimum Generator Active/Reactive Power Output (in MW)

The subcommittee requested Assam (for NTPS, LTPS), NEEPCO (for AGBPP, AGTPP) and Tripura (for Rokhia, Baramura & Gumati Generating plants) to provide above information during the meeting

Deliberation of the Committee

SE(O) informed that the above meeting of Study group could not be held at Kahilipara on 25.10.2013 due to unavoidable circumstances and the same was postponed. He requested the forum to fix the date for next meeting so that NERPC can inform the concern constituents. He also requested all the concerned constituents to furnish the above data at the earliest to NERLDC/NERPC for fruitful outcome of the meeting.

AGM (Protection), AEGCL requested NERPC to include MD, APGCL/APDCL in the mailing list so that data pertaining to generation can be obtained from them. NERPC agreed.

The Sub-committee decided to have the **meeting of the sub-group at 13:30 PM on 29th November, 2013 at SLDC, Kahilipara to discuss about the Islanding scheme**. Assam, Tripura, NEEPCO, POWERGRID, NERPC & NERLDC were requested to depute their concerned persons for discussion so that course of action can be finalized for implementation of the islanding scheme.

The Sub-committee noted as above.

C.7 Release of day ahead drawal schedule based on actual requisition by Constituents instead of open and full capacity requisition:

In the 14th TCC meeting, GM, NERDC informed that requisition based scheduling has been implemented on 27.08.2013 on 15 minutes time block (96 blocks in a day) and so far no difficulties have been encountered.

The committee appreciated the efforts taken by NERPC/NERLDC in successful implementation of the requisition based scheduling. Further, the committee requested to follow up and monitor the technical & commercial issues in the sub-committee of NERPC.

During 89th OCC meeting, DGM, TSECL stated that requisition based scheduling has been implemented from 27th August, 2013; but sometimes as per their requisition the schedule was not implemented.

DGM, NERLDC stated that during 88th OCC meeting all constituents had agreed for full support and co-operation during the initial stage of implementation of requisition based scheduling and the sub-committee had requested the constituent states to bear with the problems likely to be encountered during initial phases and co-operate with NERLDC for successful implementation. NERLDC also informed that the technical minimum quantum declared by the generators will be followed by them for scheduling purposes as it is difficult to cross check the figures furnished by generators along with DC.

NERLDC requested Tripura to furnish the details of the communications sent to NERLDC for revision of schedule so that the reason for not entertaining such revision can be ascertained.

Sr. Manager, NEEPCO stated that MoP/CEA have set the annual generation target and they have to achieve the target strictly and at the same time, if most of the constituents are in under drawal mode, it will be very difficult not only to meet the target but also will lead to financial loss to them.

DGM, TSECL again stated that revision of scheduling is not intimated by NERLDC and requested NERLDC to intimate them whenever revision takes place. NERLDC informed that all the revisions are posted in their web site as soon as it is done.

The Sub-committee enquired from other constituents if they have faced any difficulty so far. All other constituents informed that no difficulty has been encountered so far and agreed for providing all support to NERLDC. The Sub-committee requested Tripura to co-ordinate with NERLDC and any difficulty faced by the constituent states during the process of implementation can be discussed further in OCC meeting.

The Sub-committee noted as above and requested all constituents to co-operate with NERLDC for successful implementation.

During 90th OCC meeting, representative of TSECL informed that request for revision of Schedule was not implemented by NERLDC on 30th September and 1st October, 2013. NERLDC informed that the request for revision of requisition of Tripura on above dates was incorporated in the schedules taking into consideration the technical minimum limits of the stations as declared by the generators. The subcommittee highlighted that the request of any constituent states for reduction of share to zero or below the technical limit of generating plant cannot be accommodated and the commercial issues relating to requisition based scheduling will be discussed in next commercial subcommittee meeting. All other constituents informed that no difficulty has been encountered so far and agreed for providing all support to NERLDC. The Sub-committee requested Tripura to co-ordinate with NERLDC and any difficulty faced by the constituent states during the process of implementation can be discussed further in next OCC meeting.

Deliberation of the Committee

DGM, TSECL stated that while NERLDC considered the technical minimum limits of the stations as declared by the generators, they should also consider technical minimum limit / generation capacity of the generating plants of Tripura while requesting for reduction of state generation.

DGM, NERLDC stated that they are honouring the technical minimum capacity declared by ISGS for preparation of schedule. Regarding reduction of state generation in case of contingency, he suggested to adjust generation of different units maintaining individual generation either on lower side or higher side outside the dead bands of units.

EE, SLDC (Ar. Pradesh) also informed that even though they have agreed for the scheduling on a day ahead basis, but due to non-availability of SLDC, they are unable to know about the quantum of rescheduling on the next day (implementation day) and by the time they received the message the timing was already over and hence the State has to bear unnecessary burden of paying UI.

CE, AP stated that many 33KV & 11 KV lines are connected between Ar. Pradesh & Assam and hence requested Assam to help them by informing to the concern SLDC officers of Ar. Pradesh whenever revision is taking place for the benefit of the State till they have a full fledge SLDC. Assam agreed to help them.

The Sub-committee enquired from other constituents, if they have encountered any difficulties like Ar. Pradesh & Tripura. All constituents informed that no such problem is being faced by them till date.

The Sub-committee noted as above and requested all constituents to co-operate with NERLDC for successful implementation. The status will be reviewed again in the next OCC meeting.

C.8 Maintenance of Isolators at 79 Tilla S/S:

Tripura informed that maintenance work of 6 nos of isolators at 79 Tilla Grid s/s which are connected with 132 KV R C Nagar L-I & L – II have been pending since a very long time. Power Grid had done only partial maintenance work on 3 (three) isolators out 6 (six). The remaining work of isolators along with Earth switches is very urgent from operational point of view.

During the 89th OCC meeting, GM, POWERGRID informed that materials have already been received by them and the work will be completed in September, 2013.

Deliberation of the Committee

DGM, POWERGRID informed that the OEM had supplied all the 6 nos. of MOM Boxes but, during execution 3 nos. of MOM Box found to be manufactured wrongly. So the work associated with one bay could be completed with 3 nos. of MOM Boxes. The defectives Boxes will be replaced by OEM and the work associated with 2nd bay will be executed in another one and half months.

The Sub-committee requested POWERGRID to complete the work of other bay at the earliest.

The Sub-committee noted as above.

C.9 Installation of Harmonic Filters:

In the 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

SE (E), DoP, Ar. Pradesh informed that installation of harmonic filters will be completed by November, 2013.

The Sub-committee noted as above.

C.10 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	
		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.

During the 13th PCC meeting, 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.

In the 14th PCC meeting, DGM, POWERGRID informed the forum that one more 1-Phase 132/33kV Transformer unit failed at Ziro Sub Station during Sept'13. The same has been replaced with available spare. He also reiterated that if tripping is not reduced failure of major equipments cannot be prevented.

EE, SLDC, Ar. Pradesh informed that the matter has been intimated to the higher authority and hopefully the frequent tripping will be reduced.

The Sub-committee requested NERPC to take up the matter again with Ar. Pradesh for the benefit of the region. The Sub-committee also suggested for organizing the next PCC meeting in Ar. Pradesh.

Deliberation of the Committee

DGM, POWERGRID informed the forum that the issue has been discussed in all the forums of NERPC since last 4 / 5 Years without any improvement. Further he stated to discuss the effect of frequent tripping along with issues at item C.11 & C.12.

C.11 Failure of 5 MVA, 132/33 KV Y-Phase ICT at 132/33 KV Ziro SS:

The 5MVA, 132/33kV (Y-Phase) ICT of 132kV Ziro Sub Station failed on 10.09.2013 causing complete power supply disruption at Ziro. The supply was restored at Ziro on 15.09.2013 by replacing the failed unit with available spare unit. The details of failure are as below:

- Item Designation : ICT-I
- Make : M/S Alstom 5MVA, 132/33kV Y-Phase Unit
- Sr No : D-4106
- DOC : 31.03.04
- Date of failure : 10.09.13
- Date of restoration : 15.09.13 (Spare Unit)
- Failure Description : Failure of Winding. Further HV Core Clamps & insulation block dislocated. Clamping bolts of LV winding found to be loose

Cause of Failure:

The frequent tripping of 33kV feeders of DoP, Ar. Pradesh at Ziro Sub Station is constantly stressing the transformer since commission on 31.03.2004 and causing the failures. The matter has already been taken up with DoP, AP since last 4 years but, Arunachal has done hardly anything to reduce the tripping of 33kV Feeders.

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

SN	Feeder	Jan'10 – Jun'13		Tripping in Aug'13	
		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

NOTE:

1) The R-Phase unit (SN D-4104) of the ICT had also suffered similar failure on 30.05.2010 and M/S Alstom replaced the winding at their factory.

2) With above rate of tripping the failed unit has already suffered Average 57.47 tripping per month since commission i.e., more than 6000 trappings before failure

Observations during Internal Inspection with OEM:

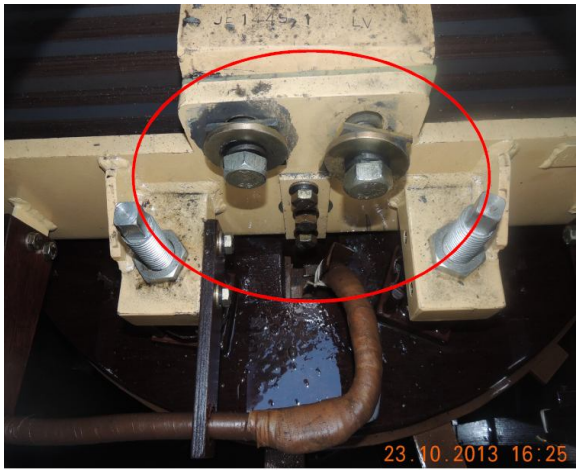
1) Carbon & Copper Granules are spread all over on the top yoke, windings & oil.
2) Core Clamps & Insulation Blocks are dislocated. 2nos. core clamping bolts at HV side found to be open. It is suspected that the bolts had fallen down to the bottom of the transformer tank. One no. washer was found near bottom inspection cover, clamping bolts at LV side was also found to be loose.
3) Carbon & Copper granules are found at the bottom side of the HV winding.

Remedial Measures:

1) Arunachal Pradesh to take necessary action on priority to reduce no. of faults in 33kV feeders to avoid further failure of transformers at Ziro Sub Stations.

2) Considering the observation (2) of internal inspection as above it is essential to carryout preventive internal inspection of healthy R & B Phase units.

Photographs of Internal Inspection:



LOOSE CLAMPING BOLTS AT LV SIDE

MISSING CLAMPING BOLTS (HV SIDE)

WASHER & PAPER FOUND NEAR BOTTOM INSPECTION COVER

CARBON MARK ON TOP INSPECTION COVER (HV SIDE)

Effect of Failure:

1) The total power supply disruption at Ziro during failure of transformer units caused immense suffering to the people of Ziro.

2) POWERGRID in incurring huge financial loss additionally for unwarranted repairing and preventive internal inspection of transformer units at Ziro Sub Station.

Deliberation of the Committee

CE, DoP, AP stated that since the Items C.10 to C.11 are common in nature, he wanted to discuss these in general. He informed that many 33 KV lines in the State are very long line (more than 100 KM) and these lines pass thorough hills & difficult terrains and are not easily approachable. Regular patrolling of these lines is very difficult due to nature of terrain, protection systems are not working and in some lines protections are not even available. He informed that Govt. of Ar. Pradesh have approached the Govt. of India for funding under Comprehensive Transmission Scheme and after the implementation of the scheme these problems is expected to be resolved. He further, requested the concerned officers of Ar. Pradesh to review the relay setting & co-ordination to overcome the situation. He also, informed the forum that a meeting with representatives of POWERRGRID, NERPC and NERLDC would be organized soon to sort out the issue.

DGM, POWERGRID expressed concerned about failure of transformers and if the present situation continues, many more transformers may fail before implementation of the comprehensive scheme. He stated that as per their record the transformer has already encountered more that 6000 nos. faults and the internal mechanical force developed due to short circuit fault is likely to lose the bolts. The internal view presented in the meeting clearly indicates the scenario. DGM, POWERGRID stated that unless the number of tripping is reduced the failure of transformer is bound to occur. Member Secretary I/C supported the statement of DGM, POWERGRID and informed that similar failures have also been reported in past in other places.

Member Secretary I/C also enquired from POWERGRID about the status of commissioning of new 2x50 MVA, 132/33kV transformers at Nirjuli/Zero. DGM, POWERGRID informed that tendering process is in progress at Corporate Office and the execution will be completed within 24 months after award of contract. MS I/C stated that unless the trippings are reduced the fate of these two new transformers will also be the same. He requested Ar. Pradesh to look into the matter seriously to reduce the number of trippings due to frequent fault in lines.

CGM, SLDC Assam suggested Ar. Pradesh to sectionalize the line so that fault can be reduced.

CE, AP appreciated the suggestion given by CGM, Assam, but reiterated that once the comprehensive scheme is implemented these problems will be resolved. Further, he stated that frequent trippings occur mainly during monsoon period, but numbers of trippings get reduced afterwards.

SE (O) enquired if the secondary side of 132/33 KV at Nirjuli is connected through 33/11 KV distribution system of Ar. Pradesh or being fed directly from the transformer at Nirjuli.

CE, AP informed that necessary action have been taken up by them and soon the 33/11 KV SS will be constructed along with necessary protection schemes etc., and hope that frequent trippings will be reduced.

Sr. Manager (E/M), NEEPCO also raised the issue of frequent tripping of Deomali SS. He stated that due to fault in 33KV side of Ar. Pradesh, the same is reflected in their 132kV sub-station. He requested Ar. Pradesh to look into the matter.

CE, DoP, Ar. Pradesh informed the forum that he has taken over the charge of transmission system of Ar. Pradesh recently and assured the forum that all efforts will be made to improve the situation.

The Sub-committee noted as above.

C.12 Preventive Internal Inspection of 2 (two) nos., of 10 MVA, 132/33 KV ICTs at Nirjuli Sub-station

There is violation of fault gases in both the 10MVA, 132/33kV ICTs at 132/33kV Nirjuli Sub Station. The last three DGA Results are as below:

SN	Equipment	S. DATE	H2	C2H6	CO	CO2
			(100)	(65)	(350)	(2500)
1	132/33kV 10MVA ICT-II SN 13436, Make: Andrew Yule	02.09.13	**156**	9	300	**4193**
		01.06.13	**129**	6	285	**3885**
		27.02.13	**194**	21	**634**	**3526**
2	132/33kV 10MVA ICT-I SN 3210/1, Make: Bharat Bijlee	05.10.13	36	**66**	**462**	2059
		02.09.13	63	**77**	314	**3190**
		01.06.13	70	**112**	**374**	**3883**

The frequent fault in downstream 33kV Feeders at Ziro and Nirjuli Sub Station is constantly stressing the transformers. Meanwhile, one no. of 10MVA 132/33kV ICT at Nirjuli and two nos. of 5MVA, 132/33kV 1-Phase ICT at Ziro have already failed. Further, at Ziro it has been observed that clamp bolts & nuts got loosen due to internal force developed in transformers during catering of downstream fault.

In view of above, immediate internal inspection and Dry out of ICTs at Nirjuli will have to be taken up as preventive measure for which necessary approval of shut down is to be accorded under OMSU Head.

Deliberation of the Committee

CE, AP agreed to the proposal of POWERGRID.

The Sub-committee noted as above.

C.13 T- Connection of Lekhi & Bhalukpong sub-Station

During 13th PCC meeting, the status could not be updated since no representative from Ar. Pradesh was present.

During 14th PCC meeting, EE, SLDC, Ar. Pradesh informed that diversion of the line for LILO at Lekhi due to teak plantation. However, DoP, Ar. Pradesh is trying their best to complete the LILO at Lekhi by December, 2013. The LILO work at Bhalukpong will be completed by March 2014. The Sub-committee also suggested for organizing the next PCC meeting in Ar. Pradesh so that all issues can be discussed with higher authority of Ar. Pradesh.

Deliberation of the Committee

SE (E) DoP, Ar. Pradesh informed that the LILO at Lekhi will be completed by December, 2013 as stated earlier and the LILO works (tower structure & control room etc.) at Bhalukpong is under progress and the same will be completed by March, 2014.

DGM, POWERGRID informed that a section of the existing 132 KV S/C Nirjuli – Dikrong line [Section covering location No. 1 to 23 including location 134 (common tower for NDTL & GITL)] near Doimukh area is required to be diverted/shifted on account of construction of a new Railway Line. POWERGRID has been given a time schedule of two years (i.e. up to May, 2015) by the District Administration to complete the diversion work. Preliminary works towards this realignment have already been taken up by POWERGRID. During diversion/shifting, the LILO is to be disconnected from its existing position (in between the location No. 10 & 11).

CE, DoP, AP informed that he would organize a separate meeting with officials of POWERGRID and NERPC to discuss and resolve the issue.

The Sub-committee noted as above.

C.14 Parallel Operation of 3x20 MVA Transformers with 160 MVA Auto-transformer at Kopili:

The committee has 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 88th OCC meeting, 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 OCC meeting.

During 90th OCC meeting, NEEPCO informed that the existing 3x20MVA transformer is more than 30 years old and there is no support from OEM.

DGM, POWERGRID stated that the 132 kV Kopili – Khandong D/c line is one of the most important 132kV link for South Assam and the states of Mizoram, Tripura and Manipur. Thus installation of another 160MVA, 220/132kV Transformer in parallel in place of existing 60MVA transformer will strengthen the link considerably. Further, the existing 132kV Single Main Bus Arrangement at Kopili is also required to be replaced with Double Main Bus Arrangement (GIS may be required considering the space constraints) for enhancement of reliability at 132kV Level.

The subcommittee agreed with the proposal for replacement of existing 3x20MVA, 220/132kV transformer by 1x160MVA, 220/132kV transformer. The matter will be taken up in RPC forum for approval. The conversion of existing 132kV Single Main Bus Arrangement to Double Main Bus Arrangement and possibility of introduction of GIS will be discussed further in next OCC meeting so that matter can be taken up to RPC forum for approval.

Deliberation of the Committee

After detailed discussion, the subcommittee agreed with the proposal for replacement of existing 3x20MVA, 220/132kV transformer by 1x160MVA, 220/132kV transformer along with conversion of existing 132kV Single Main Bus Arrangement to Double Main Bus Arrangement. The matter will be taken up in TCC/RPC forum for approval.

The Sub-committee noted as above.

C.15 Poor Availability of Auxiliary Supply at various Sub-stations of POWERGRID in NER & Provision of 2nd Source for Auxiliary Supply at various Sub-stations of POWERGRID in NER:

During 89th OCC meeting, GM, NERTS informed that the status is still the same, no further improvement till date.

The Sub-committee requested POWERGRID to pursue with concerned constituents so that the work could be completed at the earliest for the benefit of the grid.

The issue of poor reliability of auxiliary power supply and providing 2nd source of auxiliary power supply wherever tertiary is not available is being taken up with concerned authority. The present status is as below.

SN	Station	Present Availability	Status / Action Plan
1	Bongaigaon SS	60%	• **1st Source:** From Tertiary • **2nd Source:** ASEB is planning to rearrange existing connection to improve the reliability and accordingly ASEB to submit Cost Estimate. ***ASEB may expedite the process***
2	Salakati SS		
3	Kumarghat SS	80%	• **1st Source:** From 132kV Bus of Kumarghat (99%) • **2nd Source:** TSECL informed that the reliability of existing connection from PK Bari SS at 11kV level can not be improved further for which alternative dedicated connection from PK Bari at 11kV level is to be taken. Accordingly POWERGRID requested TSECL to submit cost estimate. ***TSECL may expedite the process***
4	Misa SS	20%	• **1st Source:** Tertiary • **2nd Source**: ASEB informed that the reliability of existing connection at 11kV Level cannot be improved. Further, for improvement of reliability the connection will be taken at 33kV level for which ASEB has submitted Cost Estimate of Rs. 27.00 Lakhs for new connection at 33kV level. ***For Information***

SN	Station	Present Availability	Status / Action Plan
5	Balipara SS	75%	• **1st Source:** Tertiary • **2nd Source:** The reliability of the existing undedicated connection at 11kV from Balipara (ASEB) SS cannot be improved. Further, alternative dedicated connection at 33kV level from 132/33kV Ghoramari Sub Station is also not feasibly considering its distance and route. Hence, POWERGRID will installation spare 10/16MVA, 132/33kV Transformer and bay equipments of Nirjuli SS at 132kV Balipara Bus once the Transformers at Nirjuli SS is upgraded to 50MVA. ***For Information***
6	Badarpur SS	60%	• **1st Source:** From Panchgram Sub Station at 11kV level. All the tappings already removed and present availability is around 80%. • ***ASEB may improve reliability*** • **2nd Source:** ASEB to submit Cost Estimate for new dedicated connection at 33kV level from Panchgram Sub Station for which survey has already been completed. ***ASEB may expedite the process***
7	Haflong SS	99%	• **1st Source:** From ASEB, Haflong Sub Station at 33kV • **2nd Source:** ASEB informed that independent second source is not available. Hence, POWERGRID will install 2nd DG Set (100/125kVA) & capitalize the same. ***For Information***
8	Aizawl SS	99%	• **1st Source:** From Lungnual SS of P&E, Mizoram at 11kV Level • **2nd Source:** P&E, Mizoram informed that 2nd souce is not available. Hence, POWERGRID will install 2nd DG Set (100/125kVA) & capitalize the same. ***For Information***

SN	Station	Present Availability	Status / Action Plan
9	Nirjuli SS	99%	• **1st Source:** From 132kV Bus of Nirjuli • **2nd Source:** Connection of 2nd source from 132/33kV Lekhi SS of DoP, AP may be feasible. But considering frequent tripping of existing 33kV Lines in Arunachal it is prudent not to construct another 33kV line which is also likely to suffer frequent tripping resulting low reliability. Hence, POWERGRID will install 2nd DG Set (100/125kVA) & capitalize the same. ***For Information***
10	Dimapur SS		• **1st Source:** From 132/33 kV Dimapur (S) Substation. • **2nd Source:** DoP, Nagaland informed that 2nd source is not available. Hence, POWERGRID will install 11/.4kV Transformer at Tertiary of 220/132kV Transformer and capitalize the same. ***For Information***
11	Ziro SS	99%	• **1st Source:** from 132kV Bus of Ziro (PG) SS. • **2nd Source:** Not available. Hence, POWERGRID will install 2nd DG Set (100/125kVA) & capitalize the same. ***For Information***

During 90th OCC meeting, the Sub-committee requested POWERGRID to pursue with concerned constituents for getting supply from 2nd source so that the work could be completed at the earliest for the benefit of the grid. Also the Sub-committee advised POWERGRID to go for 2nd DG set only in substations where there is no 2nd reliable source, availability of 1st source is not good and also the outage of 1st source is very long. Further, wherever 2nd Transformer with Tertiary is available and is designed for loading on Tertiary, POWERGRID should install 2nd station / auxiliary Transformer, fed from tertiary.

Accordingly, POWERGRID informed that 2nd DG Set / 2nd station / auxiliary Transformer, fed from tertiary will be installed in following substations:

SN	Station	2nd Source	Remarks
1	Misa	2nd station / auxiliary Transformer, fed from tertiary.	2nd Main Transformer (Existing)
2	Balipara	2nd station / auxiliary Transformer, fed from tertiary.	2nd Main Transformer (Future)
3	Bongaigaon	2nd station / auxiliary Transformer, fed from tertiary.	2nd Main Transformer (Future)
4	Silchar	2nd station / auxiliary Transformer, fed from tertiary.	2nd Main Transformer (Existing)
5	Dimapur	1st station / auxiliary Transformer, fed from tertiary.	Main Transformer (Existing)
6	Aizawl	2nd DG Set	
7	Haflong	2nd DG Set	
8	Nirjuli	2nd DG Set	
9	Ziro	2nd DG Set	
10	Salakati	2nd DG Set	
11	Badarpur	2nd DG Set	
12	Khliehriat	2nd DG Set	

The Sub-committee agreed to the proposal for 2nd station / auxiliary Transformer, fed from tertiary of the transformer(s) & proposal of 2nd DG set at Halflong & Ziro sub-station. However, the proposal for 2nd DG set at Aizawl, Nirjuli, Salakati,

Badarpur & Khliehriat sub-stations will be discussed further in the next OCC meeting.

Deliberation of the Committee

SE (O) enquired from POWERGRID if the proposal for 2nd DG set at Aizawl, Nirjuli, Salakati, Badarpur & Khliehriat sub-stations is really required since power availability at these stations is not bad. DGM, POWERGRID stated that 2nd DG Set is required to be installed in Sub Stations where 2nd Reliable independent Source is not available to meet the situation of longer outage of 1st source. Hence the proposal for 2nd DG set mentioned above is necessary.

The Member Secretary (I/C) enquired about the financial burden to the constituents of the region due to procurement of 2nd DG Sets and Auxiliary Transformers. DGM, POWERGRID informed that the procurement of 2nd DG Sets and Auxiliary Transformers will be covered under PoC mechanism. The Sub-committee agreed to the proposal of POWERGRID.

The matter will be taken up in TCC/RPC forum for approval.

C.16 Long outage of Transformers at BTPS:

During 88th OCCM, CGM, LDC, AEGCL informed that the (1x160MVA, 220/132kV) transformer failed during the warranty period and hence was dispatched to the factory of M/s EMCO for repair for which outage of the transformer was so long. CGM, LDC, AEGCL informed that commissioning of the transformers (1x160 MVA, 220/132kV + 1x80 MVA, 220/132kV) will be completed by September, 2013.

Deliberation of the Committee

CGM, LDC, AEGCL informed that commissioning of the transformers (1x160 MVA, 220/132kV + 1x80 MVA, 220/132kV) has already been completed by October 25, 2013.

The Sub-committee noted as above.

C.17 Single-Phase Auto-Reclosure(SPAR) of Transmission Lines.

The status of SPAR as reviewed during the 75th OCC meeting is as under.

Sl. No.	Name of the Line	Ownership	Status as per 75th OCC meeting
1.	220kV Kopili - Misa # I & II	NEEPCO	December, 2012
2.	220kV Salakati – BTPS - I & II [Ckt#I]	AEGCL	December, 2012
3.	220kV Balipara – Samaguri	AEGCL	December, 2012
4.	132kV Khandong – Haflong	NEEPCO	December, 2012
5.	132kV Khandong – Kopili	NEEPCO	

During 90th OCC meeting, Sr. Manager, NEEPCO requested POWERGRID to help them so that the SPAR associated with 220kV Kopili – Misa # I & II can be made operational.

DGM, POWERGRID agreed to complete the above work by October, 2013.

Regarding other lines, he informed that order has already been placed for procurement of single pole CBs and the implementation of SPAR will be completed immediately after installation of CBs.

Further, DGM, POWERGRID informed that in North Easter Region, following 132kV Lines do not have Single Pole Auto Reclose (SPAR) facility because Gang (3P) Operated Circuit Breaker at one or both ends.

SN	Name of the Line	End 1	End 2
1	132kV Gohpur-Nirjuli	3P	3P
2	132kV Aizawl-Kumarghat	3P	3P
3	132kV Badarpur-Kolasib	3P	3P
4	132kV Kolasib-Aizwal	3P	1P
5	132kV Badarpur-Jiribam	3P	3P
6	132kV Badarpur-Khlieriat	1P	3P
7	132kV Badarpur-Silchar # 1	3P	1P
8	132kV Badarpur-Kumarghat	3P	3P
9	132kV Badarpur-Badarpur	3P	3P

10	132kV Kumarghat-R C Nagar	3P	NEEPCO (1P)
11	132kV K'dong-K'riat # I	3P	NEEPCO (MOCB)
12	132kV K'dong-K'riat # II	3P	3P
13	132kV K'riat(PG)-K'riat(M)	3P	3P
14	132kV Jiribam-Loktak II	3P	NHPC
15	132kV Nirjuli-Ranganadi	3P	NEEPCO (3P)
16	132kV Ranganadi-Ziro	NEEPCO (3P)	1P
17	132kV Agartala-RC Nagar # 1	3P	NEEPCO (1P)
18	132kV Agartala-RC Nagar # 2	3P	NEEPCO (1P)

During the deliberation DGM, POWERGRID stated that for reliable operation of transmission system, SPAR plays important role during transient fault. So far as 132kV Lines are concerned, these are more prone to transient fault because of low clearance. Moreover, NER is prone to lightening and hence many instances of transient tripping of 132kV lines are observed during lightening. Under such circumstance implementation of SPAR is most important / essential at 132kV level for which replacement of the existing Gang (3P) Operated Breaker by single pole CBs is required for increasing availability.

The representative of NEEPCO informed that order has already been placed for procurement of single pole CBs and the implementation of SPAR will be completed immediately after installation of CBs.

The subcommittee agreed with the proposal for replacement of existing Gang Operated (3P) Circuit Breakers. The matter will be taken up in TCC/RPC forum for approval.

DGM, NERLDC requested DGM, POWERGRID to furnish the list of lines where SPAR is operational and POWERGRID agreed to provide the same soon.

Deliberation of the Committee

Sr. Manager (E/M), NEEPCO informed that SPAR for 220 KV Kopili – Misa #I is functioning; whereas, some problem is there with SPAR on line #2 and the same

will be rectified soon. Regarding 132 KV Khandong-Halflong and 132 KV Khandong – Kopili, order has been placed for procurement of CBs and the work is likely to be completed by March, 2014.

DGM, LDC, Assam stated that SPAR on 220 KV Salakati – BTPS #I has already been incorporated. Regarding 220 KV Salakati- BTPS #2 and 220 KV Balipara – Samaguri, the SPAR could not be implemented due to CB problem. He stated that they will look into the matter and work is expected to be completed by March, 2014.

The Sub-committee enquired about the requirement of SPAR in all the above stated 18 nos. of lines.

Member Secretary (I/C) stated that SPAR may also be required to be implemented in other important lines.

DGM, NERLDC stated that from system point of view SPAR is essential in all the lines of the grid, however they will go through the list provided by POWERGRID and intimate their view in the next OCC meeting.

The Sub-committee noted as above.

C.18 Discrepancy in drawal of Power by Mizoram

In the 90th OCC meeting, Mizoram informed that the real time drawal of power by them as shown in NERLDC website differs from the corresponding SEM readings, by as much as 10-15 MW since past 4/5 months. This has seriously misled the SLDC in maintaining the actual drawal of power close to the schedule/entitlement. Since the SCADA readings of real time shown in the website are the only means for monitoring real time drawal of power for SLDC without SCADA system, he requested NERLDC to look into the matter.

DGM, NERLDC stated that he will check up the matter to sort it out. Meanwhile, during the meeting itself, engineers dealing with SCADA at NERLDC confirmed that there was some problem of RTU at Kolosib end which gave wrong reading. NERLDC requested Mizoram to take corrective RTU at Kolasib end in consultation with POWERGRID.

The Sub-committee requested POWERGRID to check RTUs at drawal points of Mizoram and revert back in next OCC meeting.

Deliberation of the Committee

DGM, POWERGRID informed that problem has been resolved. On enquiry by the forum, DGM, PGCIL informed that the charger associated with RTUs was switched off wrongly.

The Sub-committee noted as above.

C.19 Enhancement of loadability of 132 KV Lines by putting double jumper and increasing CT Ratio (if required):

At present in following 132kV Lines the jumpers are single which causes restriction in power flow:

SN	*Transmission Lines*	*Length (KMs)*	*D.O.C.O*	*Remarks*
1	S/C Badarpur-Kolasib	107.23	01.02.00	
2	S/C Kolasib-Aizwal	66.10	01.02.00	
3	S/C Aizwal – Zemabawk	6.72	01.09.88	
4	D/C Doyang - Dimapur-I & II	92.53	01.04.97	
5	S/C Gohpur – Nirjuli	42.50	01.07.91	
6	S/C Imphal - Imphal-I	1.50	01.04.97	
7	S/C Imphal-Imphal-II	0.44	01.04.13	
8	S/C Jiribam – Aizwal	172.32	01.09.88	
9	S/C Jiribam-Haflong	100.63	01.08.87	
10	S/C Khandong – Haflong	63.17	01.10.87	
11	S/C Khandong - Khliehriat-I	42.48	01.03.84	
12	S/C Khandong - Khliehriat-II	40.93	01.02.00	
13	S/C Khandong - Kopili – II	11.56	01.11.10	
14	S/C Khliehriat-Khliehriat	7.80	01.02.00	
15	S/C Ranganadi-Ziro	44.52	01.04.04	
16	D/C Silchar-Srikona-I & II	1.20	01.04.12	
17	D/C Silchar-Badarpur-I & II	19.20	01.05.12	
18	D/C Silchar-Hailkandi-I & II	17.30	01.07.12	

Further, following 220kV Lines in NER often gets overloaded which may cause load flow restriction:

SN	Transmission Lines	Length (KMs)	D.O.C.O	Remarks
1	S/C Balipara-Tezpur	8.62	01.02.00	
2	D/C Misa-Dimapur-I & II	123.52	01.04.96	
3	220 KV D/C Misa-Kopili – I & II	72.79	01.03.84 01.02.88	
4	S/C Misa-Kopili-III.	75.79	01.02.00	
5	D/C Misa-Samaguri-I & II	34.44	01.03.84 01.02.88	

Deliberation of the Committee

DGM, POWERGRIID requested forum to review the above lines for requirement of enhancement of loadability. Accordingly, DGM, NERLDC requested POWERGRID to furnish the present CT Ratio / CT Rating of above lines for further review by NERLDC.

POWERGRID agreed to furnish the details and the issue will be further discussed in next OCC Meeting.

The Sub-committee noted as above.

C.20 Monthly MU requirement & availability of each state of NER as per format:

As per 2013-14 LGBR of NER, monthly estimated MU requirement & availability of NER states are as per format below. The figures are to be reviewed/confirmed.

Requirement

Name of State	Oct13	Nov13	Dec13	Jan14	Feb14
Arunachal Pradesh	62.73	51.57	54.78	51.60	49.31
Assam	617.54	547.42	607.09	574.81	478.68
Manipur	58.29	56.33	53.75	58.29	44.99
Meghalaya	163.22	167.09	168.46	185.86	165.68
Mizoram	39.25	38.77	36.44	37.05	32.44
Nagaland	59.87	53.25	47.33	53.83	44.08
Tripura	110.03	97.19	106.16	112.21	84.84
NER	**1110.9**	**1011.60**	**1074.01**	**1073.64**	**900.02**

Availability

Name of State	Oct13	Nov13	Dec13	Jan14	Feb14
Arunachal Pradesh	49.91	38.39	34.39	31.22	27.83
Assam	540.49	460.28	420.20	389.88	353.85
Manipur	66.64	52.44	49.97	46.97	42.79
Meghalaya	216.80	147.52	135.61	122.77	107.65
Mizoram	50.21	43.40	41.83	40.33	37.53
Nagaland	56.86	43.42	39.05	35.31	32.20
Tripura	110.16	102.84	100.90	96.91	87.85
NER	**1091.1**	**888.29**	**821.94**	**763.38**	**689.71**

These data required for system study, daily report, computation of TTC-ATC and preparation of reports for various meetings of Ministries, CEA, Constituents etc.

DGM, NERLDC informed that the above data have not been received by them and hence have taken the figures from LGBR. He requested the constituents to check the data and suggest any changes, if required.

Deliberation of the Committee

The Sub-committee requested all the constituents to check the data given above and intimate, if figures have to be updated/corrected.

All the constituents confirmed that the data projected above is correct.

The Sub-committee noted as above.

C.21 CT Ratio of Transmission Lines:

For determining present loadability limits of Transmission lines of NER (132 kV & above), all constituents are requested to send the following details of CTs at both ends of their lines at the earliest: Present Setting of CT Ratio & PSM Setting (for protection) and CT specification.

It was discussed during 90th OCC meeting that the data to be provided at the earliest. However, no data was received from any utility.

C.22 Bay Owner Details of Inter-State Transmission Lines:

NERLDC requested all the constituents to provide the Owner detail of Bays at both ends of all Inter-State Transmission Lines at the earliest for ensuring proper co-ordination among all concerned.

Deliberation of the Committee

The Sub-committee requested all the constituents to provide the information to NERLDC at the earliest for better operation of the grid.

All the constituents agreed to provide the above information in respect of C.21 & C.22 at the earliest.

The Sub-committee noted as above.

C.23 Indiscriminate Earth Cutting by PWD for Highway construction in Arunachal Pradesh causing damage in POWERGRID Lines:

POWERGRID informed that several tower locations of the 132KV Nirjuli-Rangnadi & 132KV Ziro-Ranganadi Transmission lines under Operation & Maintenance by Power Grid Corporation of India Ltd in the state of Arunachal Pradesh has been endangered as a result of indiscriminate earth cutting being carried out in connection with the ongoing construction of Arunachal Trans-Highway.

The agencies deployed by PWD, (NH) Division for road construction have been carrying out excavation/earth cutting on massive scale near to the existing tower locations, thereby removing the supporting soil strata. This has not only endangered the tower foundations but also substantially reduced ground clearance. Although the matter has been repeatedly taken up with PWD, (NH) Division, Arunachal Pradesh for refraining from such activities which jeopardizes the existing tower locations, no positive outcome has been noticed as on date in this regard. The following tower locations in the above lines have particularly become vulnerable in view of these haphazard excavation activities & are required to be shifted very soon for long term safety of the lines.

POWERGRID has taken up the matter with the State Administration & DoP, Arunachal Pradesh.

SN	Location	Transmission line	Remarks
1	Loc.18, loc.19, loc.20,loc.22, loc.60	132KV Ranganadi-Ziro line	Loc. No. 22 had to be shifted
2	Loc.33,loc.34, loc.48, loc.49, loc.52, loc.54, loc.58, loc.59, loc.63	132KV Nirjuli-Ranganadi line	Loc. No. 52 under shifting

Photographs of Construction Activity:

On 31.10.2013, the 132KV Nirjuli- Ranganadi line tripped at 21:43 Hrs. Immediate ground patrolling revealed that the tripping was due to Earth-Fault caused by construction works under the aegis of PWD, AP in between tower locations 58 & 59. Conductors in the subject span have been badly damaged by High Boom Cranes used for the purpose of excavation which needs immediate replacement. Besides, towers members at location 58 & 59 have suffered damages due to deposition of the excavated soil at their base.

Since the above lines are vital & the only links for catering power requirement of Arunachal Pradesh, any damage on account of these excavation activities may put the lines under long outage.

Deliberation of the Committee

CE, AP informed that they have taken up the matter with concerned Dept and the issue will be discussed in the chamber of Chief Secretary, Govt. of Ar. Pradesh this afternoon (i.e. 15.11.2013) along with CE, Dept. of Power and CE, PWD, Govt. of Arunachal Pradesh. He informed that damages have been caused not only to POWERGRID but the same had happened with Dept. of Power, Ar. Pradesh and the

decision taken by the Chief Secretary will be intimated accordingly. He appreciated POWERGRID for putting up the agenda with Photographs as the same can be taken up in other concerned forum to resist haphazard construction of Highway which is damaging the transmission lines of various organizations.

The Sub-committee noted as above.

D. N E W I T E M S

D.1 Proforma for Operational Statistics

The operational Statistics as given below was not furnished in the meeting.

(i) – Schedule Vs Actual Generation.

(ii) – Peak Demand: Schedule Vs Actual.

(iii) – Integrated Operation of the system.

(iv) – Details of DC, schedules and injections from Central sector stations, drawal schedules and entitlements of constituents.

(v) – Details of major reservoirs in NER.

The operational statics were shown in the presentation by NERLDC.

The Sub-committee noted as above.

D.2 State-wise anticipated peak demand/requirement, shortage for November-December, 2013 & January - March, 2014.

The sub-Committee reviewed & finalized the anticipated peak demand/energy requirement/Availability (without Pallatana generation) for the months of November to December, 2013 & January - March, 2014.

A. Peak Demand

SN.	State	Peak Demand (MW) Nov' 13	Peak Demand (MW) Dec' 13	Peak Demand (MW) Jan' 14	Peak Demand (MW) Feb' 14	Peak Demand (MW) Mar' 14
1	Ar. Pradesh	130	130	120	95	95
2	Assam	1350	1350	1300	800	800
3	Manipur	130	130	120	105	105
4	Meghalaya	280	300	280	230	230
5	Mizoram	85	85	75	55	55
6	Nagaland	120	120	100	80	80
7	Tripura	260	260	230	155	155
	Region	2355	2355	2245	1520	1520

B. Peak Availability

SN.	State	Peak Availability (MW) Nov' 13	Peak Availability (MW) Dec' 13	Peak Availability (MW) Jan' 13	Peak Availability (MW) Feb' 13	Peak Availability (MW) Mar' 14
1	Ar. Pradesh	120	100	100	100	100
2	Assam	1050	850	830	830	830
3	Manipur	115	110	110	110	110
4	Meghalaya	250	240	240	240	240
5	Mizoram	75	65	60	60	60
6	Nagaland	115	95	85	85	85
7	Tripura	150	180	160	160	160
	Region	1875	1600	1585	1585	1585

The Committee noted as above.

D.3 <u>Generation Planning (ongoing and planned outages)</u>

NEEPCO/NHPC may kindly intimate the availability for hydro stations:

Khandong – 1.584 MU
Kopilli – 2.376 MU
Ranganadi - Subject to inflow
Doyang – 1.589 MU
Loktak – 2.520 MU

Hydro generation planning for lean hydro period - With the onset of winter season, reservoir levels in all the hydro stations have started depleting. Hence proper planning is required to utilize the available water for entire lean hydro period, say upto April, 2014.

The subcommittee suggested that Khandong generation has to be reduced to preserve the water in the reservoir. NERPC & NERLDC will review the status of water level from time to time.

The Committee discussed and approved the proposed shutdown by Generating Stations.

1. <u>Shutdown of Khandong Unit #I for 5 months w.e.f. 01.11.2013 for R&M works</u>:

The works involve:- replacement of stator with new one which has already been built up and tested at site, replacement of underwater parts like top cover, pivot ring, guide vanes etc. with SS materials, weld build up of damaged embedded under water parts like stay ring, spiral casing etc. with SS coating. The above works shall be carried out by M/S BHEL.

During the 90th OCC meeting, the Sub-committee has approved the shutdown of Khandong Unit #I for 5 (five) months w.e.f. **20.11.2013.**

In the meantime, NEEPCO vide their email dated 31.10.2013 has written that as the lean hydro season has already been started and work involvement is huge, it was anticipated that approval of shut down shall be given. Accordingly, BHEL has mobilized their workforce so that work can be completed within schedule (before starting of next monsoon).

In this regard NEEPCO would like to request to kindly review the decision of last OCC meeting and allow us to avail the shut down w.e.f. **15.11.2013** (if not from 01.11.2013)as mobilization has already been done considering the shut down w.e.f. 01.11.2013. During this period, there is no plan to put Khandong U # 2 and KHEP Stage -II unit under shut down.

<u>Deliberation of the Committee</u>

The Sub-committee discussed & approved the shutdown of Khandong #I w.e.f. 22.11.2013 for a period of 5 (five) months.

The Sub-committee also discussed & approved the shutdown of other units of NEEPCO as given below:

Plant & Unit	From	To	No. of days	Reason
RHEP #3	03.12.13	23.12.13	21 days	APM & replacement of Governor with RGMO facility
RHEP #3	03.01.14	23.01.14	21 days	APM & replacement of Governor with RGMO facility

RHEP #3	03.02.14	02.03.14	28 days	APM & replacement of Governor with RGMO facility
Kopili #I	01.12.13	28.02.14	90 days	R & M works
Kopili #2	01.01.14	31.03.14	90 days	R & M works

The Committee noted as above.

D.4 Outage Planning Transmission elements

SE (O) stated that it has been observed that transmission elements which are being taken under shutdown are not revived in schedule time which create problem in real time system operation. On 05.11.13, the shutdown of 400kV Balipara-Bongaigoan -I line was availed as per OCC approval from 08:00 hrs to 15:00 Hrs. But the lines were restored at 1624 Hrs (delay in returning of above shutdown is 84 minutes). ***Hence timely return of shutdown should be strictly adhered to in future***.

Further, the Sub-committee had decided that in case of daytime shutdown, the transmission elements should be brought back into service as per approved shut down programme and the line should be charged by 15:00 Hrs sharp (during winter season). **No planned shutdown, other than those approved in OCC meeting, of transmission elements and generating unit will be entertained anymore unless it is of emergency nature. In this regard, NERPC has already communicated number of times and request all constituents of the region to co-operate.**

After detail discussion the sub-committee approved the shutdown as proposed by POWERGRID, Assam (AEGCL), Tripura and NEEPCO for November, 2013 to January, 2014 as given in Annexure – D.4.

The Sub-committee noted as above.

D.5 Estimated Transmission Availability Certificate (TAC) for the month of October, 2013.

The Estimated Transmission System Availability for the month of October, 2013, furnished by PGCIL, is **99.9511%.** The detail outage data for calculation of

Transmission System Availability furnished by PGCIL is at **Annexure D.5.** NER constituents are requested to kindly communicate their views and observations, if any, by 28th November, 2013 so that Final TAC for the month of October, 2013 may be finalized by NERPC Secretariat.

The Sub-committee noted as above.

D.6 Major grid disturbances in the previous month (October, 2013)

As intimated by NERLDC, there was no major grid disturbance during the month of October, 2013 pertaining to NER.

Members may kindly note.

D.7 Transformer Tap Optimization

NERLDC informed that it was observed in real time Grid operation that voltages at some particular buses are not within the permissible limit as per IEGC. To maintain the voltage within permissible limit, it is necessary to optimize the tap position of some transformers located at different sub-stations. Therefore, a system study has been conducted by NERLDC considering load-generation and network pattern of July, 2013 during Peak & Off-Peak periods, with appropriate taps changing of transformers of NER. Study report at **Annexure D.7.**

During the 90th OCC meeting, the Sub-committee requested all the concern constituents to take necessary action accordingly for changing the tap position of the transformer (s) and the status will be reviewed in next OCC meeting. Constituents agreed.

Deliberation of the Committee

The Sub-committee requested all the concern constituents to verify the current tap position and intimate to NERLDC at the earliest. Constituents agreed.

The Committee noted as above.

D.8 Grid security problem in Capital & Dhaligoan areas of Assam:

NERLDC informed that loading of 220 kV BTPS-Salakati D/C is more than 140 MW in each circuit during certain period of peak hours. Under this condition Capital &

Dhaligaon areas of Assam including Nangalbibra load are not secure under N-1 criteria. To remain secured under N-1 criteria, flow on in this line should be kept below 100 MW in each circuit.

Deliberation of the Committee

The Sub-committee requested Assam & Meghalaya to restrict their drawal as per the instruction of NERLDC for safety of the grid.

DGM, NERLDC suggested that augmentation of 220 KV BTPS (NTPC) & 220 KV BTPS (Assam) is required to enhance the capacity of the corridor so that more power can be drawn by Assam & Meghalaya (through 132 KV Agia – Nangalbibra line)

CGM, LDC stated that they will look into the proposal and the same will be discussed in OCC meeting.

The Committee noted as above.

D.9 Submission of data according to Standards of Performance of ISTS Regulations, 2012, CERC:

NERLDC stated that as per Standards of Performance of ISTS Regulations 2012, CERC, the following data are required on monthly basis for computation of Dependability Index, Security Index and Reliability Index:

1. Nc – Number of correct operations during the month
2. Nu - Number of unwanted operations during the month
3. Nf - Number of failures to operate at internal power system faults during the month
4. Ni - Number of incorrect operations during the month

In addition of above data, data of five or more tripping of a transmission element in a month are also required. These data are to be sent to CERC on monthly basis.

In this regard, three letters (01.11.13, 01.08.13 & 01.07.13) are sent to ISTS licensees to furnish these data for previous month by 10th day of the month.

POWERGRID have furnished Nc, Nu, Nf & Ni for the period w.e.f Oct12 to Mar13. The above data not yet received from NETC w.e.f Oct 12 to Oct 13 & from POWERGRID Apr13 to Oct13.

This is a regulatory requirement. ISTS licensees are requested to furnish these data for previous month by 10th day of the month. POWERGRID & NETC are also requested to furnish these data for the period w.e.f. Oct12 to Mar13 & w.e.f Oct 12 to Oct 13 respectively.

Deliberation of the Committee

The Sub-committee requested POWERGRID & NETC to furnish the above data to NERLDC at the earliest.

The Committee noted as above.

D.10 Any other item:

D.10.1 Augmentation of transformation capacity in Sub-stations in NER:

(a) 400/220kV Balipara Sub Station:

The augmentation of existing 2X50MVA, 220/132kV Transformers (1X50MVA of AEGCL and 1X50MVA of NEEPCO) at 400/220kV Balipara (PG) Sub Station by 2X160MVA, 220/132kV Transformer at 400/220kV Balipara (PG) Sub Station was discussed by the committee.

The subcommittee agreed with the proposal for augmentation of existing transformation capacity of 2x50MVA, 220/132kV at 400/220kV Balipara (PG) Sub Station by 2x160MVA, at 400/220kV Balipara (PG) Sub Station. The matter will be taken up in TCC/RPC forum for approval.

(b) 220/132kV Salakati Sub Station:

The augmentation of existing 2X50MVA, 220/132kV Transformers at 220/132kV Salakati (PG) Sub Station by 2X160MVA, 220/132kV Transformer at 220/132kV Salakati (PG) Sub Station including establishment of 132kV D/C connectivity between 220/132kV Salakati (PG) Station and 220/132kV Harigaon (AEGCL) Sub Station was discussed by the committee.

The subcommittee agreed with the proposal for augmentation of existing 2X50MVA, 220/132kV Transformers at 220/132kV Salakati (PG) Sub Station by 2X160MVA, 220/132kV Transformer at 220/132kV

Salakati (PG) Sub Station. However, AEGCL will revert back in next OCC for additional 132kV D/C connectivity between 220/132kV Salakati (PG) Station and 220/132kV Harigaon (AEGCL) Sub Station. ***The matter will be taken up in TCC/RPC forum for approval.***

(c) 400/220/132kV Bongaigoan Sub Station:

At present NER Grid is connected to rest of NEW Grid through 400/220/132 KV Bongaigaon and 220/132kV Salakati substation. DGM, NERLDC opined that connectivity of NEW Grid to different station of NER is needed to be planned for improving reliability and security of NER Grid. In this connection he suggested the option of LILO of one of the existing 400 kV Balipara – Bongaigaon D/C line # 1 & 2 at upcoming Alipurduar substation in Eastern Region.

The subcommittee agreed with the proposal for LILO of one of the existing 400 kV Balipara – Bongaigaon D/C line # 1 & 2 at upcoming Alipurduar substation in Eastern Region. This will create redundancy by having one more infeed point to NER, since Alipurduar will be the pooling point for many upcoming power projects in ER. The matter will be taken up in TCC/RPC forum for approval.

(d) 132kV Dimapur/Imphal/Aizawl:

132 kV Dimapur(PG), 132 kV Imphal (PG) and 132 kV Aizawl (PG) substations are important nodes which cater major loads to Nagaland, Manipur, Mizoram and Southern part of NER respectively and Bus Schemes at these substations need to be upgraded to Double Main Bus Scheme, in order to improve reliability of the NER Power System.

DGM, POWERGRID informed that the Bus Bar arrangement of above stations is “Main and Transfer Scheme”. Further, he stated that feasibility of converting the same to “Double Main cum Transfer” will be checked and accordingly revert back in next OCC.

The Sub-committee also requested all the constituents to put up proposals relevant for NER system improvement for discussion in the forum so that the same can be put forward to TCC/RPC for approval.

D.10.2 Procurement of Emergency Restoration System (ERS)

In NER most of the lines are single circuit. Hence, outage of any of the line will hamper the power supply to the adjacent areas. In order to make un-interrupted power supply during the outage of the normal lines, it is proposed to procure 2 (two) nos., of ERS by POWERGRID. The location of ERS to be kept and its usages would be decided by the OCC forum of NERPC.

Deliberation of the Committee

DGM, POWERGRID informed that ERS is most common item and the individual constituents can procure the same and train their employees for use. Further, he informed that the ERS is mainly required for lines of 220kV and above and for 132kV Lines, pole structures can be used.

Member Secretary (I/C) enquired about the availability of ERS with POWERGRID. DGM, POWERGRID informed that they have 13 (thirteen) sets of ERS tower. Further, Assam also informed that they have ERS and the same is being used on requirement.

The Sub-committee decided to review requirement again later.

The Committee noted as above.

D.11 Mock Black Start Drill:

NERLDC informed that as part of the Disaster Management Policy of GOI and IEGC, they have to coordinate/carry out mock black start of power plant/energize of death substation. Accordingly NERLDC proposes to carry out the same during Nov, Dec 2013 for which suitable plant/substations have been identified [details will be furnished during the meeting].

Deliberation of the Committee

DGM, NERLDC informed that Mock Drill exercise has been planned by them w.e.f. 25.11.2013 to 30.11.2013 and accordingly they will intimate to the concerned constituents before carrying out the mock exercise. In case of any problem during this period the exercises will be carried out in the 1st part of December, 2013.

The Sub-committee requested NERLDC to furnish the procedure and steps to be followed during the exercise to the concerned utilities beforehand. NERLDC agreed.

The Committee noted as above.

D.12 Uploading of "Draft Restoration Procedure of NER Grid – 2013"

In line with IEGC stipulation the 'Restoration Procedure of NER grid' is under revision and the draft procedure has been uploaded in NERLDC website for comments/views of concerned utilities. All concerned are requested to please send their comments/views, if any, to NERLDC by 25th Nov, 13 so that same can be finalized by the end of Nov, 2013.

Deliberation of the Committee

DGM, NERLDC informed that Draft Restoration Procedure of NER Grid – 2013 has been uploaded in NERLDC website and requested all the constituents to give their comments or observations before 25.11.2013 for incorporation, otherwise, the same will be treated as final. The password for opening of the document is- '**2013**'.

The Committee noted as above.

D.13 Any other item:

i) Trial Operation of Transmission Elements:

MS I/C informed that during the hearing of the Petition No: 96/TT/2011 dated 27.09.2013 by CERC,

Hon'ble Commission has directed RPCs to discuss the issue of trial operation of transmission elements and submit the proposal to CEA who in turn shall submit a consolidated proposal regarding trial operation of transmission elements to the Commission. The staff of the Commission shall study the proposal made by CEA and make suitable changes to the existing Regulations to deal will all such cases in future.

Deliberation of the Committee.

The Sub-committee enquired from POWERGRID about the steps/procedures being followed by them so far before declaring the transmission elements CoD.

DGM, POWERGRID informed before test charging of the line, clearance from Electrical Inspectorate, Govt. of India, Ministry of Power has to be obtained first. After test charging, they will monitor any defects found in the transmission elements and rectify the same. Regarding duration of charging etc., he informed that there are no clear guide lines to be followed for declaration of CoD.

The Sub-committee suggested that mere completion of test charge should not be basis for declaration of CoD. Some members were of the view that actual power flow, wherever possible, should be monitored for certain period of time before declaration of CoD and no planned shutdown should be allowed for certain period of time.

Due to shortage of time detail discussion could not be held and sub-committee decided to discuss further in the next OCC meeting before sending views of the forum to CEA

The Committee noted as above.

ii) Formation of Study Group:

MS I/C informed that P&E Dept, Govt. of Mizoram has already formed a System Study Group and requested other State constituents to follow the same. He stressed upon the importance of the study group. The objective of formation of study group is to develop the capability of each state to carry out various studies relating to their own transmission network as well as for regional network independently for different contingencies so that corrective measures can be taken accordingly. The soft copy of relevant files including SLD for the existing network of each state (compatible to PSSE software) was

also handed over to the participants during the first meeting of system study group of NER, organized on 20.08.2013 at NERLDC, Shillong so that system studies for different conditions can be carried out by them independently. NERLDC has also agreed to provide all kind of support to State constituents for system studies. Constituents are also requested to study their network for reactive power management. Member Secretary I/C informed that Prof. P. Tripathi, IIT, Guwahati has been included as the member of the study group of NER to assist the constituents in various system studies relating to NER region as well as constituent states. Faculty from NITs of respective states may also be included in their system study group.

The Committee noted as above.

iii) **Submission of POC data –** NERLDC requested all concerned the POC data for submission of POC data for the 4th quarter (Jan–March, 2014) at the earliest as validation committee meeting is scheduled to be held on 19.11.2013.

All concerned agreed to submit the same.

D.14 Date & Venue of next OCC meeting

It is proposed to hold the 92nd OCC meeting of NERPC in second week of December, 2013. The exact date & 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 91st OCC meeting held on 15/11/2013

SN	Name & Designation	Organization	Contact No.
1.	Sh. A. Perme, CE (P), T, P&M	Ar. Pradesh	09436040297
2.	Sh. Tasso Hinda, SE (E), Dirang	Ar. Pradesh	09402698356
3.	Sh. R. Tago, SE (E), Naharlagun	Ar. Pradesh	09436044986
4.	Sh. Modan Jini, SE (E)	Ar. Pradesh	09436249596
5.	Sh. Tarik Mize, EE, SLDC	Ar. Pradesh	09436059758
6.	Sh. Dagyom Ango, EE (E), Rumgong	Ar. Pradesh	09436042909
7.	Sh. Zomba Nasho, EE (E), Aalo	Ar. Pradesh	09436047021
8.	Sh. D. Taipodia, EE (E), CEZ	Ar. Pradesh	
9.	Sh. Joram Lali, EE (E), CEZ	Ar. Pradesh	
10.	Sh. Tano Gongo, AE (E), Yeso	Ar. Pradesh	09615514180
11.	Sh. Boku Basar, AE (E), Ruksin	Ar. Pradesh	09436255244
12.	Ms. Oyi Nasi, AE, SLDC	Ar. Pradesh	08974938678
13.	Sh. H.C. Phukan, CGM, SLDC	Assam	09435559447
14.	Sh. B. C. Bordoloi, DGM, SLDC	Assam	09435045675
15.	Sh. A. K. Saikia, AGM, SLDC	Assam	09864116176
16.	Sh. K. Goswami, AGM, APDCL	Assam	09864020019
17.	Sh. B. M. Saikia, AGM (Com), APDCL	Assam	09435017233
18.	Sh. G.K. Bhuyan, AGM (Protection)	Assam	09854015601
19.	Sh. H. Shanti Kumar Singh, EE(SCD-I)	Manipur	09436022381
20.	Sh. A. Shanti Kishor Sharma, AE	Manipur	09436025924
21.	Sh. A. Kharpan, SE, Me. PTCL	Meghalaya	09436117802
22.	Sh. D.J. Lyngdoh, EE, SLDC	Meghalaya	09863063375
23.	Sh. C.S. Thangkhiew, EE (T&T)	Meghalaya	09436109140
24.	Sh. M. Mawlieh, AEE	Meghalaya	09436108972
25.	**No Representatives**	**Mizoram**	
26.	Sh. Tiameren Walling, EE (T)	Nagaland	09436000098
27.	Sh. Rokobeito Iralu, SDO (T)	Nagaland	09436832020
28.	Sh. B. Debbarma, DGM (SOD)	Tripura	09436450501
29.	Sh. M. Debbarma, Sr. Mgr	Tripura	09436188355
30.	Sh. N. R. Paul, DGM (SO –I)	NERLDC	09436302723
31.	Sh. Kaling Jongkey, Dy. Mgr. (So-I)	NERLDC	09436994401

32.	Sh. P. Kanungo, DGM	NERTS	09436302823
33.	Sh. A.K. Das, CM, Nirjuli	NERTS	09402278181
34.	Sh. S. Dutta, Dy. Mgr. Nirjuli	NERTS	09436255251
35.	Sh. B. Pratap, AE, Ziro	NERTS	09856083595
36.	Sh. D.Goswami, Sr.Mgr. (E/M)	NEEPCO	09435577655
37.	Sh. Tanya Taji, Sr.Mgr. (E/M)	NEEPCO	09436042053
38.	Sh. Jayanta Deka, Manager (E)	NEEPCO	09859372294
39.	Sh. Sunder Moni Moha, Dy. Mgr.	NEEPCO	09436898604
40.	Sh. R. C. Singh, Mgr (E)	NHPC	09436894889
41.	Sh. Parshuram Saha, Advisor(O&M)	OTPC	08974728670
42.	Sh. Smruti Ranjan Das, Mgr. (E)	OTPC	09612400784
43.	Sh. S.K. Ray Mohapatra, MS I/C	NERPC	09818527857
44.	Sh.B. Lyngkhoi, SE (O)	NERPC	09436163419
45.	Sh. S. M. Jha, EE (O)	NERPC	09831078162

Annexure - C. 3 (i)

SN	Name of State	Total Quantum of Load Shedding required(MW)	Location where URF installed (Feeder's Name)	Stage	Load in each feeder (MW)	Quantum of Load shedding implemented (MW)	Additional quantum of load shedding required (MW)
1	Ar. Pradesh	**5**	**At Satyam Ispat** (11 KV Banderdewa - Satyam Ispat)	**Stage - I (49.2 Hz)**	3.5	**3.5**	**1.5**
		5	To be identified	**Stage - II (49.0 Hz)**		**0**	**5**
		5	To be identified	**Stage - III (48.8 Hz)**		**0**	**5**
		5	To be identified	**Stage - IV (48.6 Hz)**		**0**	**5**
		20				3.5	16.5
2	Assam	**55**	**At Gauripur** (132 KV Gossaigoan - Gauripur)	**Stage - I (49.2 HZ)**	16	**54.5**	**0**
			At Sipajhar (132 KV Rowta - Sipajhar & 132 KV Rangia - Sipajhar)		10		
			At Dhemaji (132 KV Nalkata - Dhemaji)		11		
			At Majuli (132 KV Nalkata - Majuli)		2.5		
			At Baghjap (132 KV Chandrapur - Baghjap)		15		
		55	**At Diphu** (132 KV Sankardev Nagar- Diphu)	**Stage - II (49.0 Hz)**	11	**61**	**0**
			At Gohpur (132 KV B. Chariali - Gohpur)		8		
			At Rupai (66 KV Tinsukia - Rupai) To be included under stage -III (48.8 Hz)- as it is covered under Isalanding Scheme - I		17		
			At Jogighopa [132 KV Dhaligoan - Jogighopa (APM)]		7		

			At Sankardevnagar (132 KV Samaguri - Sankardevnagar)		18		

SN	Name of State	Total Quantum of Load Shedding required(MW)	Location where URF installed (Feeder's Name)	Stage	Load in each feeder (MW)	Quantum of Load shedding implemented (MW)	Additional quantum of load shedding required (MW)
2	Assam	**55**	**At Gossaigoan** (132 KV Dhaligoan - Gossaigoan)	**Stage - III (48.8 Hz)**	7	**59**	**0**
			At Rowta (132 KV Depota - Rowta)		18		
			At Chandrapur (132 KV Kahilipara - Chandrapur)		12		
			At Nalkata (132 KV Gohpur - Nalkata)		11		
			At Bokakhat (132 KV Jorhat - Bokakhat) Covered under Isalanding Scheme - I		11		
		55	**At Sishugram** (132 KV Sarusajai - Sishugram & 132 KV Rangia - Sishugram)	**Stage - IV (48.6 Hz)**	45	**57**	**0**
			At Ledo (132 KV Tinsukia - Ledo) Covered under Isalanding Scheme - I		12		
		220				231.5	0
3	Manipur	**5**	**At Yurembam** (33 KV Yurembam - Leimakhong)	**Stage - I (49.2 Hz)**	3	**3**	**2**
		5	**To be identified**	**Stage - II (49.0Hz)**		**0**	**5**

		5	**To be identified**	**Stage - III (48.8Hz)**		**0**	**5**
		5	**To be identified**	**Stage - IV (48.6Hz)**		**0**	**5**
		20				3	17
SN	**Name of State**	**Total Quantum of Load Shedding required(MW)**	**Location where URF installed (Feeder's Name)**	**Stage**	**Load in each feeder (MW)**	**Quantum of Load shedding implemented (MW)**	**Additional quantum of load shedding required (MW)**
4	Meghalaya	**15**	**At Nangalbibra** (33 KV Mendipathar - Nangalbibra) Existing	**Stage - I (49.2 Hz)**	6.5	**15**	**0**
			At Rongkhon (33 KV Garobadha I - Rongkhon)		8.5		
		15	**At Mawphlang** (132/33 KV, 20 MVA Transformer)	**Stage - II (49.0 Hz)**	15	**15**	**0**
		15	**At Khliehriat** (132/33 KV, 20 MVA Transformer)	**Stage - III (48.8 Hz)**	12	**15**	**0**
			At Nongstoin (33 KV Nongstoin - Mairang) Existing frequency setting (48.5Hz) is to be Changed to 48.8 Hz		3		
		15	**At Mawlai** (33 KV Mawlai - Nongthymmai)	**Stage - IV (48.6 Hz)**	7.5	**15**	**0**
			At NEHU (33 KV NEHU - Happy Valley) Existing frequency setting (48.8Hz) is to be Changed to 48.6 Hz		7.5		
		60				60	0

5	Mizoram###	**5**	**At Khwiva abd Bukupui 132kV substations**	**Stage - I (49.2 Hz)**	5.09	**5.09**	**0**
		5	**At Zuangtui lower substations**	**Stage - II (49.0 Hz)**	5.31	**5.31**	**0**
		5	**At Zuangtui upper substations and 33kV Tlangnum substation**	**Stage - III (48.8 Hz)**	5.1	**5.1**	**5**
		5	**At Zuangtui lower substations and 33kV Chwnpui substation**	**Stage - IV (48.6 Hz)**	5.2	**5.2**	**5**
		20				20.7	10
SN	**Name of State**	**Total Quantum of Load Shedding required(MW)**	**Location where URF installed (Feeder's Name)**	**Stage**	**Load in each feeder (MW)**	**Quantum of Load shedding implemented (MW)**	**Additional quantum of load shedding required (MW)**
6	Nagaland	**5**	**At Mokokchung** (11 KV Feeder of Mokokchung load) Existing frequency setting (48.8Hz) is to be Changed to 49.2 Hz	**Stage - I (49.2 Hz)**	3	**3**	**2**
		5	**At Nagarjan** (Feeder's Name to be given at Nagarjan) Existing frequency setting (48.5Hz) is to be Changed to 49 Hz	**Stage - II (49.0 Hz)**	3	**3**	**2**
		5	**At Kohima** (Feeder's Name to be given at Kohima) Existing frequency setting (48.2Hz) is to be Changed to 48.8 Hz	**Stage - III (48.8 Hz)**	3	**3**	**2**
		5	**To be identified**	**Stage - IV (48.6 Hz)**		**0**	**5**
		20				9	11

7	Tripura	**10**	**At Badharghat** (33 KV Badarghat - Bishalghar) Existing frequency setting (48.5Hz) is to be Changed to 49.2 Hz Covered under Isalanding Scheme - II	**Stage - I (49.2 Hz)**	8.5	**11**	**0**
			At Badharghat (33 KV Badarghat - Takarjala) Covered under Isalanding Scheme - II		2.5		
		10	**At 66 KV Rabindra Nagar** (33 KV Rabindra Nagar - Melaghar) Covered under Isalanding Scheme - II	**Stage - II (49.0 Hz)**	6.5	**10**	**0**
			At 66 KV Rabindra Nagar (33 KV Rabindra Nagar - Kathalia) Covered under Isalanding Scheme - II		3.5		
		10	**At 79 Tilla** (33 KV, 79 Tilla - Mohanpur) Existing frequency setting (48.8Hz) Covered under Isalanding Scheme - II	**Stage - III (48.8 Hz)**	7.5	**14.5**	**0**
			At 79 Tilla (33 KV, 79 Tilla - Durjoy Nagar) Existing frequency setting (48.2Hz) is to be Changed to 48.8 Hz Covered under Isalanding Scheme - II		7		
		10	**At 79 Tilla** (33 KV, 79 Tilla - College Tilla) Covered under Isalanding Scheme - II	**Stage - IV (48.6 Hz)**	12.5	**12.5**	**0**
		40				48	0

Note: **The inbuilt UFR of existing Numerical Relay at identified locations (at 132 KV level) of Assam, Meghalaya & Tripura can be used for above purpose. Existing UFR can also be shifted to new locations, wherever required.**

In respect of Ar. Pradesh, Manipur, Mizoram & Nagaland: Setting of existing UFR needs to be changed in case they use the same

Feeder. (i.e. 48.8 Hz to be set to 49.2 Hz for Stage - I), (48.5 to be set to 49.0 Hz for Stage - II) & (48.2 Hz to 48.8 Hz for Stage - III)
Feeder is to be identified at the earliest for remaining quantum of load shedding of other stages of 48.8 Hz & 48.6 Hz.

The details regarding feeder details and location etc. will be discussed in next OCC, as the representative of Mizoram was absent

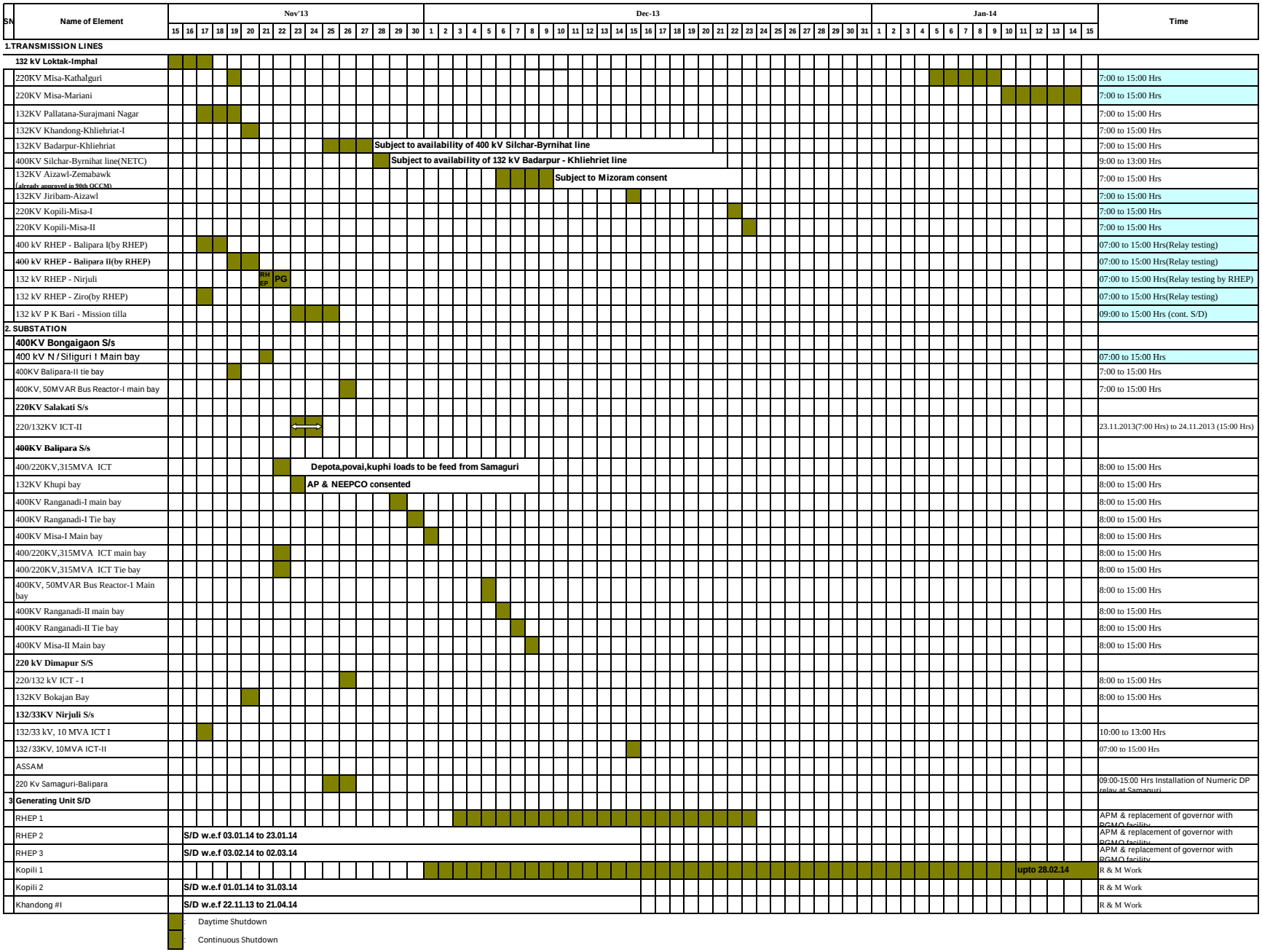
STATUS OF UFR IMPLEMENTATION IN NER

Stage	Load shed Required (MW)	Implemented (MW)	To be Implemented (MW)
Stage - I (49.2 Hz)	100	95.09	4.91
Stage - II (49.0 Hz)	100	94.31	5.69
Stage - III (48.8 Hz)	100	96.60	3.40
Stage - IV (48.6 Hz)	100	89.70	10.3
TOTAL	400	375.70	24.30

ANNEXURE - D.4

APPROVED LIST OF SHUTDOWN OF ELEMENTS FOR THE PERIOD 15.11.2013 TO 15.01.2014

SN	Name of Element	Time
	1.TRANSMISSION LINES	
	132 kV Loktak-Imphal	
	220KV Misa-Kathalguri	7:00 to 15:00 Hrs
	220KV Misa-Mariani	7:00 to 15:00 Hrs
	132KV Pallatana-Surajmani Nagar	7:00 to 15:00 Hrs
	132KV Khandong-Khliehriat-I	7:00 to 15:00 Hrs
	132KV Badarpur-Khliehriat	7:00 to 15:00 Hrs
	400KV Silchar-Byrnihat line(NETC)	9:00 to 13:00 Hrs
	132KV Aizawl-Zemabawk (already approved in 90th OCCM)	7:00 to 15:00 Hrs
	132KV Jiribam-Aizawl	7:00 to 15:00 Hrs
	220KV Kopili-Misa-I	7:00 to 15:00 Hrs
	220KV Kopili-Misa-II	7:00 to 15:00 Hrs
	400 kV RHEP - Balipara I(by RHEP)	07:00 to 15:00 Hrs(Relay testing)
	400 kV RHEP - Balipara II(by RHEP)	07:00 to 15:00 Hrs(Relay testing)
	132 kV RHEP - Nirjuli	07:00 to 15:00 Hrs(Relay testing by RHEP)
	132 kV RHEP - Ziro(by RHEP)	07:00 to 15:00 Hrs(Relay testing)
	132 kV P K Bari - Mission tilla	09:00 to 15:00 Hrs (cont. S/D)
	2. SUBSTATION	
	400KV Bongaigaon S/s	
	400 kV N / Siliguri I Main bay	07:00 to 15:00 Hrs
	400KV Balipara-II tie bay	7:00 to 15:00 Hrs
	400KV, 50MVAR Bus Reactor-I main bay	7:00 to 15:00 Hrs
	220KV Salakati S/s	
	220/132KV ICT-II	23.11.2013(7:00 Hrs) to 24.11.2013 (15:00 Hrs)
	400KV Balipara S/s	
	400/220KV,315MVA ICT	8:00 to 15:00 Hrs
	132KV Khupi bay	8:00 to 15:00 Hrs
	400KV Ranganadi-I main bay	8:00 to 15:00 Hrs
	400KV Ranganadi-I Tie bay	8:00 to 15:00 Hrs
	400KV Misa-I Main bay	8:00 to 15:00 Hrs
	400/220KV,315MVA ICT main bay	8:00 to 15:00 Hrs
	400/220KV,315MVA ICT Tie bay	8:00 to 15:00 Hrs
	400KV, 50MVAR Bus Reactor-1 Main bay	8:00 to 15:00 Hrs
	400KV Ranganadi-II main bay	8:00 to 15:00 Hrs
	400KV Ranganadi-II Tie bay	8:00 to 15:00 Hrs
	400KV Misa-II Main bay	8:00 to 15:00 Hrs
	220 kV Dimapur S/S	
	220/132 kV ICT - I	8:00 to 15:00 Hrs
	132KV Bokajan Bay	8:00 to 15:00 Hrs
	132/33KV Nirjuli S/s	
	132/33 kV, 10 MVA ICT I	10:00 to 13:00 Hrs
	132/33KV, 10MVA ICT-II	07:00 to 15:00 Hrs
	ASSAM	
	220 Kv Samaguri-Balipara	09:00-15:00 Hrs Installation of Numeric DP relay at Samaguri
3	**Generating Unit S/D**	
	RHEP 1	APM & replacement of governor with RGMO facility
	RHEP 2	APM & replacement of governor with RGMO facility
	RHEP 3	APM & replacement of governor with RGMO facility
	Kopili 1	R & M Work
	Kopili 2	R & M Work
	Khandong #I	R & M Work



: Daytime Shutdown

: Continuous Shutdown

POWER GRID CORPORATION OF INDIA LIMITED

OPERATION SERVICE DEPARTMENT, NERTS, SHILLONG

Exception Report of ICT

MONTH : OCTOBER-13

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To								Category	Reason of Outage
					POWERGRID		Other Constituents		Sys.Const/Naturalc alamities/ Miltant activities		Outage under categories of Deemed Available			
					Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.		
ICT_KOPILI (160 MVA)			**# 2**											
1	09/10/2013	08:30	09/10/2013	13:06	00	00	00	00	00	00	04	36	SCSD	SD taken for facilitating commissioning of 5MVA NEEPCO Xfmer
Sub-Total					00	00	00	00	00	00	04	36		
ICT_MISA(315MVA)			**#2**											
2	07/10/2013	09:37	07/10/2013	16:58	00	00	00	00	00	00	07	21	SCSD	Statutory tests on ICT as post commissioning requirement
3	28/10/2013	11:35	28/10/2013	12:57	01	22	00	00	00	00	00	00	OMST	ESD taken for statutory tests in ICT
Sub-Total					01	22	00	00	00	00	07	21		
ICT_BALIPARA (315MVA)														
4	17/10/2013	10:04	17/10/2013	10:32	00	28	00	00	00	00	00	00	OSPT	SD taken fopr switching over of Bph unit to Rph unit
5	27/10/2013	10:05	27/10/2013	10:29	00	24	00	00	00	00	00	00	OSPT	for switchover from spare to Bph unit
Sub-Total					00	52	00	00	00	00	00	00		
Grand Total					**02**	**14**	**00**	**00**	**00**	**00**	**11**	**57**		

Annexure-D.7

Sl. No.	Substation	Voltage ratio (kv)	Transformer No.	Capacity in MVA	Controlled Bus	Tap Step(%)	Total tap Positions	Nominal Tap	Present Tap posn.	OFFPEAK suggested	PEAK suggested	Remarks
1	Balipara	400/220	1	315	400KV	1.25	17	9	10	NO+1	NO	Change taps
2		220/132	2	50	220KV	1.25	17	9	9	NO	NO	Change taps
3	Bongaigaon	400/220	1	315	400KV	1.25	17	9	12	NO+2	NO	Change taps
4	Salakati	220/132	1	50	132KV	1.25	17	13	16	NO	NO+1	Change taps
5		220/132	2	50	132KV	1.25	17	13	16	NO	NO+1	Change taps
6	Dimapur	220/132	1	100	132KV	1.25	17	13	12	NO+1	NO+1	Change taps
7		220/132	2	100	132KV	1.25	17	13	12	NO+1	NO+1	Change taps
8	Misa	400/220	1	315	400KV	1.25	17	9	5	NO+2	NO+1	Change taps
9		400/220	2	315	400KV	1.25	17	9	5	NO+2	NO+1	Change taps
10	RHEP	400/220	1	360	400KV	1.25	17	9 A,9B, 9 C	10	NO	NO	Change taps
11		400/220	2	360	400KV	2.5	17	9 A,9B, 9 C	10	NO	NO	Change taps
12	KOPILI	220/132	1	60	132KV	2.5	17	5	5	Not in service	Not in service	Change taps
13		220/132	2	160	132KV	1.25	17	13	13	NO-1	NO+1	Change taps
14	Sarusajai	220/132	1	100	132KV	1.25	17	13	10	NO	NO+2	Change taps
15		220/132	2	100	132KV	1.25	17	13	12	NO	NO+2	Change taps
16		220/132	3	100	132KV	1.25	17	13	11	NO	NO+2	Change taps
17	Samaguri	220/132	1	50	132KV	1.25	17	13	12	NO	NO+1	Change taps
18		220/132	2	50	132KV	1.25	17	13	12	NO	NO+1	Change taps
19		220/132	3	50	132KV	1.25	17	13	12	NO	NO+1	Change taps
20	Mariani	220/132	1	100	220KV	1.25	17	13	13	NO+1	NO+1	Change taps
21		220/132	2	100	220KV	1.25	17	13	13	NO+1	NO+1	Change taps
22	Tinsukia	220/132	1	50	220KV	1.25	17	13	16	NO	NO	Change taps
23		220/132	2	50	220KV	1.25	17	13	16	NO	NO	Change taps
24	BTPS	220/132	HT 1819/13078	160	220KV	1.25	17	9b	9b	NO+1	NO	Change taps
25		220/132	6004522	80	220KV	1.25	17	9b	9b	NO+1	NO	Change taps
26	Agia	220/132	T8265/4	50	132KV	1.25	23	13	14	NO	NO-1	Change taps
27	Boko	220/132	T09286/1	50	132KV	1.14	17	13	14	NO	NO	Change taps
28	NTPS(Local)	220/132	A.T. No. 1	50	132KV	1.25	17	13	15	NO	NO	Change taps
29		220/132	A.T. No. 2	50	132KV	1.25	17	13	15	NO	NO	Change taps
30	Killing	400/220	1	315	220KV	1.25	17	9	9	NO	NO	-
31		400/220	2	315	220KV	1.25	17	9	9	NO	NO	-
32		220/132	5083/1	160	220KV	1.25	17	9	9	NO	NO	-
33		220/132	5083/1	160	220KV	1.25	17	9	9	NO	NO	-
34	Silchar	400/132	1	200	220KV	1.25	17	9	9	NO	NO	-
35		400/132	2	200	220KV	1.25	17	9	9	NO	NO	-

***NO = Nominal Tap Position**