

MINUTES OF THE 90th
OPERATION COORDINATION SUB-COMMITTEE MEETING
OF NERPC

Date : 04/10/2013 (Friday)

Time : 10:00 hrs

Venue : "Hotel Grand Starline", Guwahati.

The List of Participants in the 90th OCC Meeting is attached at **Annexure – I**

The meeting was started with welcome address by Shri S.K. Ray Mohapatra, MS I/C, NERPC. He welcomed Shri H.C. Phukan, CGM (LDC), AEGCL and thanked for his contribution to the forum. He highlighted the forum about the communication of Ministry of External Affairs regarding handing over of assets to POWERGRID in connection with Rangia – Motonga 132kV line, formulation of project proposal for funding from NLCPR (Central) for taking up renovation and rectification work in existing substations / generating stations of the region and the need for augmentation of transformation capacity in important substations, which can be covered under PoC. He informed the house that the minute of 14th TCC was circulated to all the NERPC members for approval as directed by Chairman, NERPC & Hon'ble Power Minister, Govt. of Tripura. The approval from OPTC, PTC, NTPC, POWERGRID and Govt. of Mizoram has been received so far. Some of the important decisions taken during the 14th TCC meeting like the setting up of SLDCs in four (4) states [Ar. Pradesh, Manipur, Mizoram and Nagaland] and upgradation /expansion of SCADA/EMS in other three (3) states; establishment of OPGW based communication link; and construction of 400 kV P.K. Bari – Surjamaninagar transmission line as regional project are for the benefit of the region. He requested the members of the constituents, particularly the constituent states of the region, to ensure that the minute is approved by the concerned authority at the earliest so that implementation of important decisions can be taken up without further delay. He also highlighted about the power scenario in the region and stated that during September 2013, all states, except Assam & Tripura, were in under drawal mode mainly due to load crash on account of heavy rain fall. He requested all the

constituents to actively participate in the discussion for fruitful outcome of the 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 89th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

S.E (O) informed that the minutes of 89th 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 September, 2013.

The Sub-committee confirmed the minutes of 89th 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 September, 2013.

The presentation as given by NERLDC is given as below:

ITEMS FOR DISCUSSION

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

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

- i) **Average frequency** during September, 2013 was 50.02 Hz as compared to 50.11 Hz in August, 2013

- ii) **Minimum frequency** in September, 2013 was 49.23 Hz as compared to 49.37 Hz recorded in the previous month.
- iii) **Maximum frequency** was 50.62 Hz (21.09.13) as compared to 50.64 Hz recorded in August, 2013.
- iv) **System frequency** remained within permissible range of 49.7 Hz to 50.2 Hz for 89.7 % of the time, below 49.7 Hz for 1.5 % and above 50.2 Hz for 8.9 % of the time as compared to 75.46 %, 1.08 % and 23.46 % respectively in the previous month.
- v) **Regional peak demand** in September, 2013 was 2164 MW as compared to 2158 MW in August, 2013, an increase of 0.28 % over the previous month.
- vi) **Regional peak availability** was 1987 MW as compared to 1920 MW in previous month, a decrease of 3.5 % over the previous month.
- vii) **Energy requirement** was 1142.56 MUs in September, 2013 compared to 1164.84 MUs in August, 2013, a decrease of 1.91 % over the previous month.
- viii) **Regional energy availability** was 1066.1 MUs compared to 1097.4 MUs in the previous month, a decrease of 2.85% over the previous month.
- ix) **Rise in demand met** was recorded in Manipur (5%), Assam (1%), Meghalaya (5%), Mizoram (5%) & Tripura (4%) over the previous month.
- x) **Drop in demand met** was recorded in Ar. Pradesh (7%) & Nagaland (3%) over the previous month viz. August, 2013.
- xi) **No Over Voltage** at 400 kV Sub-Station was observed
- xii) **No over Voltages** were observed at 220kV & 132 kV S/S.
- xiii) **No under Voltages** were observed at 400 kV S/S & 220 kV S/S.
- xiv) **No Under voltage** at 132kV S/S was observed.
- xv) **Regional Generation & Inter-regional Exchanges** during the month of September, 2013 compared to August, 2013 are given below:

SN	Parameter	September, 2013	August, 2013
REGIONAL GENERATION & INTER - REGIONAL EXCHANGES (in MU)			
1	Total Generation in NER (Gross)	942.806	936.2
2	Total Central Sector Generation (Gross)	587.285	575.12
	Total State Sector Generation (Gross)	355.521	361.08
3	Inter-Regional Energy Exchanges		
	(a) NER - ER	7.59	23.03
	(b) ER - NER	153.29	197.31
	(c) Net Import	145.71	174.28

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

State	A (<49.8 Hz)		B (<49.7 Hz)		C (<49.7 Hz) Persistent Overdrawal		Total	
	Aug'13	Sep'13	Aug'13	Sep'13	Aug'13	Sep'13	Aug'13	Sep'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.

During the 89th OCC meeting, OTPC representative informed that ONGC has carried out the cleaning of gas pipe line and filters are to be changed, which will be completed by 15.09.2013. He stated that after completion of work, OTPC will go for trial run again followed by integrated DLN tuning and PPA test.

The committee enquired about the faulty gas compressor and the safety of the plant to run with only single gas compressor.

GM, OTPC stated that the faulty gas compressor has already reached Hyderabad and the status is not known how long it will take to rectify the compressor. He requested all the constituents to help them in backing down their generation, if required, during the trial run of the plant.

The Committee decided that since lean hydro season is approaching, OTPC can avail the opportunity to complete trial run & PPA tests for declaration of CoD. However, based on real time operation NERLDC will look into the matter to accommodate the trial run operation of OTPC. NERLDC requested Generators & Constituents to co-operate for backing down of their generation, if required, for accommodating Palatana generation for testing purposes and declaration of CoD.

The status as given in 89th OCC meeting is given below:

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

400kV Balipara – Bongaigaon D/C line # 3 & 4 with FSC **-December, 2013**

Silchar- Imphal 400kV D/c line and substation at Imphal- March, 2014

Silchar- Melriat 400kV D/c line and substation at Malriat - June, 2014

Mariani – Mokokchung 220kV D/c line - March, 2014

Deliberation of the Committee

The 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 has 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.

The Sub-committee noted as above.

C.2 Independent third party audit of protection system:

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

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

During 89th OCC meeting, SE (O) stated that consolidated project proposal for funding through NLCPR (Central) are to be prepared for taking up renovation/rectification works. The proposal is to be submitted on behalf of the region to MoP with copy to DoNER. The upgradation/ 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) 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.

The Sub-committee noted as above.

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 – $4 \times 5 = 20$ MW, Assam – $4 \times 55 = 220$ MW, Meghalaya – $4 \times 15 = 60$ MW and Tripura – $4 \times 10 = 40$ MW) for all the four (4) stages.

Deliberation of the Committee

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. 1st Stage), 48.5Hz will be changed to 49.0Hz (i.e. 2nd Stage), 48.2Hz will be changed to 48.8Hz (i.e. 3rd Stage) and one more setting will also be introduced at 48.6Hz (i.e. 4th 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 & ii)**.

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 90th 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.

The status in respect following lines could not be updated due to absence of representative from Manipur and Nagaland

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

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

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

However, the representative of POWERGRID informed that as requested by Nagaland during 89th OCC meeting, a joint inspection was carried out to examine the alternative arrangement for evacuation of power and some additional information has been requested by POWERGRID for checking the technical feasibility of the proposal. He also 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.

The subcommittee also requested NERPC to take up the matter again with Manipur and Nagaland for early restoration of above lines.

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

- i. When both the ckts of 400 kV Palatana – Silchar lines trips, a signal will be generated from trip relays at Silchar
- ii. This signal should trip the CBs at Silchar end of 132 kV Silchar – Srikona D/C & 132 kV Silchar – Panchgram lines.
- iii. Subsequent to tripping of 132 kV Silchar – Panchgram line, the CB at Badarpur end of 132 kV Badarpur – Panchgram line should be tripped.

- iv. After these trippings an instant load of 80 MW will be relieved during off-peak hours & 130 MW will be relieved during peak hours which will prevent the system from cascade tripping
- v. Then manual demand disconnection/management should be imposed.

Case 3: 400 kV Silchar – Byrnihat line (with generation at Pallatana)

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

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

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

- i. When 400 KV Byrnihat – Silchar line trips, a signal will be generated from trip relays at Silchar.
- ii. This signal should trip the CB of 132 kV Silchar – Srikona D/C & 132 kV Silchar – Panchgram lines at Silchar.
- iii. Subsequent to tripping of 132 kV Silchar – Panchgram line, a signal will be generated from trip relay of 132 KV Silchar – Panchgram line. This signal should trip the CB at Badarpur of 132 kV Badarpur – Panchgram line.
- iv. After these trippings an **instant load relief** of around **95 MW in Peak Hours** which will prevent the system from cascade tripping.
- v. Then manual demand disconnection/management may be imposed, if necessary. Load reduction in 132 kV pocket is required for SPS under Case-I and the scheme has already been implemented by NERTS in line with discussion in OCC forum.

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

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

Deliberation of the Committee

The DGM, POWERGRID informed POWERGRID has already implemented SPS associated with all the above cases 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.

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	<u>ISLAND AT 48.80 Hz:</u> 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	<u>ISLAND AT 48.20 Hz:</u> Island comprising of generating units of AGTTP (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 AGTTP – Kumarghat	UFR-3 [At Kumarghat]	POWERGRID
		132 kV P K Bari – Kumarghat		

3	<p><u>ISLAND AT 47.90 Hz:</u> Isolation of NER from NEW grid at ER-NER boundary with rest of the generation and load of NER</p>	To be decided after system study
---	--	----------------------------------

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

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

Deliberation of the Committee

The subcommittee 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

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.

Deliberation of the Committee

The 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.

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 work will be completed in October, 2013.

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

The representative from DoP, Ar. Pradesh informed that installation of harmonic filters is likely to be completed by December 2013.

The Sub-committee noted as above.

C.10 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.

Deliberation of the Committee

The representative of 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 also 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.

The Sub-committee noted as above.

C.11 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%	<ul style="list-style-type: none"> • 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%	<ul style="list-style-type: none"> • 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%	<ul style="list-style-type: none"> • 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
5	Balipara SS	75%	<ul style="list-style-type: none"> • 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

SN	Station	Present Availability	Status / Action Plan
6	Badarpur SS	60%	<ul style="list-style-type: none"> • 1st Source: From Panchgram Sub Station at 11kV level. All the tappings already removed and present availability is around 80%. <i>ASEB may improve reliability</i> • 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. <i>ASEB may expedite the process</i>
7	Haflong SS	99%	<ul style="list-style-type: none"> • 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. <i>For Information</i>
8	Aizawl SS	99%	<ul style="list-style-type: none"> • 1st Source: From Lungnual SS of P&E, Mizoram at 11kV Level • 2nd Source: P&E, Mizoram informed that 2nd source is not available. Hence, POWERGRID will install 2nd DG Set (100/125kVA) & capitalize the same. <i>For Information</i>
9	Nirjuli SS	99%	<ul style="list-style-type: none"> • 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. <i>For Information</i>
10	Dimapur SS		<ul style="list-style-type: none"> • 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. <i>For Information</i>

SN	Station	Present Availability	Status / Action Plan
11	Ziro SS	99%	<ul style="list-style-type: none"> • 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. <p style="text-align: right;">For Information</p>

Deliberation of the Committee

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	2 nd station / auxiliary Transformer, fed from tertiary.	2 nd Main Transformer (Existing)
2	Balipara	2 nd station / auxiliary Transformer, fed from tertiary.	2 nd Main Transformer (Future)
3	Bongaigaon	2 nd station / auxiliary Transformer, fed from tertiary.	2 nd Main Transformer (Future)
4	Silchar	2 nd station / auxiliary Transformer, fed from tertiary.	2 nd Main Transformer (Existing)

5	Dimapur	1 st 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 stations & proposal of 2nd DG set at Haflong & 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.

The Sub-committee noted as above.

C.12 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) will be completed by October 15, 2013.

The Sub-committee noted as above.

C.13 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 75 th 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	

Deliberation of the Committee

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.

The Sub-committee noted as above.

C.14 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.

Deliberation of the Committee

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.

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

The Sub-committee noted as above.

D. NEW ITEMS

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 September-December, 2013 & January, 2014.

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

A. Peak Demand

SN.	State	Peak Demand (MW) Oct' 13	Peak Demand (MW) Nov' 13	Peak Demand (MW) Dec' 13	Peak Demand (MW) Jan' 14	Peak Demand (MW) Feb' 14
1	Ar. Pradesh	130	130	130	120	95
2	Assam	1350	1350	1350	1300	800
3	Manipur	130	130	130	120	105
4	Meghalaya	280	280	300	280	230
5	Mizoram	85	85	85	75	55
6	Nagaland	120	120	120	100	80
7	Tripura	250	260	260	230	155
	Region	2345	2355	2355	2245	1520

B. Peak Availability

SN.	State	Peak Availability (MW) Oct' 13	Peak Availability (MW) Nov' 13	Peak Availability (MW) Dec' 13	Peak Availability (MW) Jan' 13	Peak Availability (MW) Feb' 14
1	Ar. Pradesh	120	120	100	100	100
2	Assam	1050	1050	850	830	830
3	Manipur	110	115	110	110	110
4	Meghalaya	250	250	240	240	240
5	Mizoram	75	75	65	60	60
6	Nagaland	110	115	95	85	85
7	Tripura	170	150	180	160	160
	Region	1885	1875	1600	1585	1585

The Committee noted as above.

D.3 Generation Planning (ongoing and planned outages)

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

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 may discuss and approve the proposed shutdown by Generating Stations.

1. Extension of shutdown of GTG # 1- Refer to letter no. NEEPCO/AGBPP/DGM (E)/2012- 2013/T- 8/614 Dated: 19/08/2013. Due to non- issue of VISA by the Indian Embassy at Tokyo to the expert of Mitsubishi Corporation (MC) to be deputed as Inspection Technical Advisor (TA), the scheduled program of Inspection is delayed. Consequently, the complete program of overhauling is

delayed since the repairing activities can be carried out only after the inspection and decision by the Inspection TA. In view of the above the work program is to be rescheduled and planned to complete the overhauling works by 14th Sept 2013.

In the 89th OCC meeting, Sr. Manager, NEEPCO informed that the expert of Mitsubishi Corporation (MC) Inspection Technical Advisor (TA) could not reach site due to VISA problem and the scheduled program of Inspection got delayed. The unit is expected to be ready by September 2013.

Deliberation of the Committee

The representative of NEEPCO informed that the unit has been put back into service on 14th September 2013.

The Committee noted as above.

2. Shutdown of Complete Plant for 7(seven) days: For Revamp, Renovation & Modernization works of Gas Booster Station of AGBPP following works in the common area are to be attended-

A. Final gas line piping connection works (to be carried out by CEIPL):

- (a) Installation of Station inlet scrubber,
- (b) Installation of common engine fuel filter system
- (c) Installation of all gas flow meters.

B. Works to be carried out by Dresser Rand

- (a) Common discharge header modification,
- (b) Installation of 4nos of isolation valves in each individual unit with spectacle blind and spool piece.
- (c) Radiography/ hydro test, painting etc. for modified lines.

As such, shutdown of the complete Power Plant is required for seven days w.e.f. 23rd Oct to 30th 2013. At present, contribution to the Grid from the Plant is 180 MW depending on the ambient temperature. The actual date of shutdown may vary by a day or two depending on the arrival of man and materials at Site.

During the 89th OCC meeting, the Committee had agreed the complete shutdown of AGBPP plant of NEEPCO from 23.10.13 to 30.10.2013. However, during the above period, generation from other plants have to be maximized to meet the shortfall and NERLDC has to plan accordingly.

The Committee noted as above.

3. Shutdown of Khandong Unit #I for 5 months w.e.f. 01.11.2013 for R&M works:

The works involve:- replacement of stator with new one which has already been built up and tested at site, replacement of under water 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.

Deliberation of the Committee

The Sub-committee has approved the shutdown of Khandong Unit #I for 5 (five) months w.e.f. 20.11.2013.

The Committee noted as above.

4. Shutdown of Loktak Unit #III for 1 month w.e.f. 01.11.2013 for AMP works:

NHPC has proposed to avail shutdown of Loktak Unit #III from 01.11.2013 to 30.11.2013 (one month) for Annual Maintenance Works.

Deliberation of the Committee

The Sub-committee has approved the shutdown of Loktak Unit #III for 1 (one) month w.e.f. 10.11.2013.

The Committee noted as above.

D.4 Puja load in Tripura

Tripura have to receive about 150 MW power during Durga Puja w.e.f 10.10.13 to 19.10.13 from the Grid. That time own generation from Tripura may be 100MW. Demand has gradually increased since last April 2013. Necessary action for arranging additional power is being taken up. Open access for bi-lateral transaction may be 30 MW power from Me.ECL, 60MW from NVVN and 25 MW power from Mizoram. NERLDC may ensure necessary arrangement to meet 270 MW power during Puja by Tripura especially during 16.00 hrs to 24:00 hrs.

In 89th OCC meeting, DGM, NERLDC stated that purchase of power from Me.ECL may not be helpful to Tripura due to transmission constraints in 132 kV pocket. As

per the study carried out by NERLDC, Tripura can draw only 100 MW during peak hours of PUJA days. He stated that the quantum of power purchased by Tripura from Mizoram will be added up to their drawal quantum and so they should pursue with Mizoram to get maximum power from them. He also requested Tripura to adhere to their drawal quantum by avoiding over drawal for the safety and security of the grid.

The Sub-committee requested Tripura to pursue with Mizoram.

Deliberation of the Committee

The representative of Tripura again requested for about 150 MW of power from the Grid during Durga Puja w.e.f 10.10.13 to 19.10.13. The representative of Mizoram confirmed about selling of 25MW to Tripura during Durga Puja.

DGM, NERLDC reiterated that purchase of power from Me.ECL or any other source may not be helpful to Tripura due to transmission constraints in 132 kV pocket. As per the study carried out by NERLDC, Tripura can draw maximum upto 125MW (including 25MW of power purchased from Mizoram) from the grid in peak hours of the day during Durga Puja. He also requested Tripura to avoid over drawal and restrict the maximum drawal to 125MW.

The subcommittee requested Tripura to maintain the drawal not exceeding 125 MW and also to co-operate with NERLDC during Durga Puja for the safety and security of the grid. The Sub-committee also requested NERLDC to increase the maximum drawal capacity based on the real time operation.

The Committee noted as above.

D.5 Outage Planning Transmission elements

During 89th OCC meeting, the Sub-committee had requested all constituents of the region to submit the planned shutdown programme of the generating units / transmission elements for two months in advance for discussion i.e. for the **month of October & upto 30th November 2013**. The Sub-committee had also requested to all the agencies that shutdown period and timing granted in the OCC meeting should be strictly adhered to avoid difficulties in the operation of grid. 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 16:00 Hrs sharp. **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.**

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 29.09.13, the shutdown of 220kV BTPS-Salakati-D/C line was availed as per OCC approval from 08:00 hrs to 16:00 Hrs. But the lines were restored at 1859 Hrs. In the meantime 400kV Balipara - B'Gaon -D/C line tripped at 1626 Hrs resulting in isolation of NER Grid. If the shut down of 220kV BTPS-Salakati-D/C would have been returned on time then isolation could have been avoided. ***Hence timely return of shutdown should be strictly adhered to in future.***

The Sub-committee has also decided that since winter season is approaching, all the shutdown of transmission elements should be restored and transmission line should be charged by 15:00 Hrs sharp instead of 16:00 Hrs. The subcommittee again requested all constituents of the region to submit the planned shutdown programme of the generating units / transmission elements for two months i.e. for the period from 11th November, 2013 to 10th January, 2014 by 31st October, 2013 so that NERLDC can carry out required system studies before the next OCC meeting and also reiterated that 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. The subcommittee requested Assam and POWERGRID, in particular, to look into the matter seriously for the benefit of region and to avoid difficulty in real time operation of the grid.

After detail discussion the sub-committee approved the shutdown as proposed by POWERGRID, Assam (AEGCL) and NEEPCO for October/November, 2013 as given in Annexure - D.5 (i, ii & iii) respectively.

The Sub-committee noted as above.

D.6 Estimated Transmission Availability Certificate (TAC) for the month of September, 2013.

The Estimated Transmission System Availability for the month of September, 2013, furnished by PGCIL, is **99.9604%**. The detail outage data for calculation of Transmission System Availability furnished by PGCIL, is at **Annexure D.6**. NER constituents are requested to kindly communicate their views and observations, if any, by 28th October, 2013 so that Final TAC for the month of September, 2013 may be finalized by NERPC Secretariat.

The Sub-committee noted as above.

D.7 Major grid disturbances in the previous month (September, 2013)

As intimated by NERLDC, there was one major grid disturbance during the month of September, 2013 leading the isolation of NER from ER.

Members may kindly note.

D.8 Electricity Generation Targets for the year 2014-15

CEA vide letter dated 20.09.2013 has intimated that Annual exercise for assessment and finalization of generation targets and planned maintenance schedules of generating units for 2014-15 is being initiated. Accordingly, it is requested to make available the following inputs in regard to thermal generating units of your organization:

- i) The unit-wise yearly generation (with unit-wise monthly breakup) proposed during 2014-15 as per the format given in **Annexure D.8 (i)**, along with the fuel availability, the anticipated loss of generation on account of various reasons such as grid constraint, low schedule/reserve shutdown due to high cost, poor quality coal/lignite, if any, may also be furnished.
- ii) Details of unit-wise schedule of planned maintenance as approved by the respective RPCs, R&M proposed to be carried out during 2014-15 and considered for deciding the generation targets for various generating units may please be furnished as per format given in **Annexure D.8 (ii)**,

Since a large capacity addition is being planned during the current and next financial year, the details of IPP with whom State/Organization would be having Power Purchase Agreement may also be intimated in a separate sheet so that a realistic target is assessed and planned accordingly. The above inputs should reach NERPC latest by 25th October, 2013 or email to: **targetopmcea@gmail.com** latest by 31st October, 2013.

Deliberation of the Committee

The Sub-committee requested all the concern constituents to submit the above data at the earliest. Constituents agreed.

The Committee noted as above.

D.9 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.9**.

Deliberation of the Committee

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.

The Committee noted as above.

D.10 Under requisition and partial requisition (i.e. requisition below entitlement) by the constituents :

Constituents are submitting such requisitions for the same day in real time. Some of the constituents are even revising requisition several times in a day which leads to scheduling of ISGS to go below technical minimum level (declared by the ISGS). So a procedure needs to be devised say first-cum-first serve /pro-rate/ minimum

allowable requisition based on technical minimum of the particular ISGS to avoid generation schedule to go below technical minimum level.

Deliberation of the Committee

The issue has been discussed in Item C.7 above.

The Committee noted as above.

D.11 Technical minimum generation of ISGS gas plants:

ISGS plants are furnishing techno-commercial minimum generation levels of their plants instead of technical minimum level as per IEGC. In absence of this data NERLDC will have no option but to revise ISGS schedule in line with the requisition/revised requisition.

Deliberation of the Committee

The issue has been discussed in Item C.7 above.

The Committee noted as above.

D.12 Machine Data required for study of Islanding Schemes of NER:

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

- f. H : Machine Inertia Constant in p.u. on Machine Base (including turbine inertia)
- g. R : Governor Permanent Droop in p.u.
- h. D : Turbine Damping Factor/Co-efficient in p.u. on Machine Base
- i. P_{max}/Q_{max} : Maximum Generator Active/Reactive Power Output (in MW)
- j. P_{min}/Q_{min} : Minimum Generator Active/Reactive Power Output (in MW)

Note: Data in respect of Kathalguri already furnished.

Deliberation of the Committee

The Sub-committee requested all the concern constituents to submit the above data at the earliest. Constituents agreed.

The Committee noted as above.

D.13 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 details of CTs at both end of the lines such as Present Setting of CT Ratio, PSM Setting (for protection) and CT specification along with the design temperature/type of conductor. These details are required for optimal system studies solution.

Deliberation of the Committee

The Sub-committee requested all the concern constituents to submit the above data at the earliest. Constituents agreed.

The Committee noted as above.

D.8 Any other item:

i) Augmentation of transformation capacity in Sub-stations in NER:

Deliberation of the Committee

(a) 400/220kV Bongaigaon Sub Station:

During the discussion DGM, NERLDC & POWERGRID stated that the augmentation of existing transformation capacity of 1x315MVA, 400/220kV to 2x315MVA, 400/220kV at 400/220kV Balipara (PG) Sub Station is essential for enhancement of reliability. Outage of transformer can cause serious constraint /problem in feeding power to Assam.

The subcommittee agreed with the proposal for augmentation of existing transformation capacity of 1x315MVA, 400/220kV by 2x315MVA, 400/220kV at 400/220kV Balipara (PG) Sub Station. The matter will be taken up in TCC/RPC forum for approval.

The Sub-committee noted as above.

(b) 220/132kV, 160 MVA Transformer at Kopili Sub Station:

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. The

subcommittee also agreed with the proposal for replacement of existing 3x20MVA, 220/132kV transformer by 1x160MVA, 220/132kV transformer. The matter will be taken up in TCC/RPC forum for approval.

The Sub-committee noted as above.

- ii) **PoC Data**: All the DICs should furnish their data latest by 15.10.2013 in proforma as given by NERLDC for January – March, 2014 (i.e. the last Quarter of FY 2013-14).

The Committee noted as above.

- iii) **Mizoram** informed that the real time drawal of power by Mizoram 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.

Deliberation of the Committee

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.

The Committee noted as above.

D.9 Date & Venue of next OCC meeting

It is proposed to hold the 91st OCC meeting of NERPC in Arunachal Pradesh in second week of November, 2013. The exact date & venue will be intimated in due course.

The meeting ended with thanks to the Chair.

Annexure-I

List of Participants in the 90th OCC meeting held on 04/10/2013

SN	Name & Designation	Organization	Contact No.
1.	Sh. Tarik Mize, EE, SLDC	Ar. Pradesh	09436059758
2.	Ms. Oyi Nasi, AE, SLDC	Ar. Pradesh	08974938678
3.	Sh. H.C. Phukan, CGM, SLDC	Assam	09435559447
4.	Sh. J. K. Baishya, AGM, SLDC	Assam	09435041494
5.	Sh. A. K. Saikia, AGM, SLDC	Assam	09864116176
6.	No Representatives	Manipur	
7.	Sh. A. Kharpan, SE, Me. PTCL	Meghalaya	09436117802
8.	Sh. D.J. Lyngdoh, AEE, SLDC	Meghalaya	09863063375
9.	Sh. M. Mawlieh, AEE	Meghalaya	
10.	Sh. Lalrema, SE, SLDC	Mizoram	09436140353
11.	Sh. Zoramdina, AE, SLDC	Mizoram	08415901755
12.	No Representatives	Nagaland	
13.	Sh. Debabrata Pal, Sr. Mgr	Tripura	09436500244
14.	Sh. N. R. Paul, DGM (SO -I)	NERLDC	09436302723
15.	Sh. P.P. Bandopadhyay, DGM (So-II)	NERLDC	09436302725
16.	Sh. Anupam Kumar, Engineer	NERLDC	09436335379
17.	Sh. P. Kanungo, DGM	NERTS	09436302823
18.	Sh. Bhaskar Goswami, Sr. Mgr.	NEEPCO	09436163983
19.	Sh. D.Goswami, Sr.Mgr. (E/M)	NEEPCO	09435577655
20.	Sh. R. C. Singh, Mgr (E)	NHPC	09436894889
21.	Sh. Parshuram Saha, Advisor(O&M)	OTPC	08974728670
22.	Sh. S.K. Ray Mohapatra, MS I/C	NERPC	09818527857
23.	Sh.B. Lyngkhai, SE (O)	NERPC	09436163419
24.	Sh. S. M. Jha, EE (O)	NERPC	09831078162

UFR INSTALLED IN NORTH EAST

Sl. No	Name of States	Name of feeder where UFR Installed	Stage-wise & Frequency setting	Quantum of load relief	
				Peak Load (MW)	Off - Peak Load (MW)
1.	Ar. Pradesh	11 KV Banderdewa - Satyam Ispat	Stage - I (48.8 Hz)	3.5 MW	3.5 MW
			Stage - II (48.5 Hz)	3.5 MW	3.5 MW
			Stage - III (48.2 Hz)	3.5 MW	3.5 MW
2.	Assam	i) 132 KV Garmur (Jorhat - I)	Stage - I (48.8 Hz)	13 MW	8 MW
		ii) 220 KV Samaguri (Rupahi)		8 MW	6 MW
		iii) 132 KV Panchgram (Hailakandi)		7 MW	5 MW
		iv) 132 KV Dhaligoan (Chapaguri)		7.8 MW	4.5 MW
			Total of Stage - I	35.8 MW	23.5 MW
		i) 132 KV Depota (Jamaguri)	Stage - II (48.5 Hz)	8 MW	4 MW
		ii) 220 KV Mariani (Teok)		7 MW	5 MW
			Total of Stage - II	15 MW	9 MW
		220 KV Samaguri (Mirza)		20 MW	15 MW
3.	Manipur	33 KV Yurembam - Leimakhong	All 3 stages	3 MW	3 MW
4.	Meghalaya	33 KV NEHU - Happy Valley	Stage - I (48.8 Hz)	8 MW	5 MW
		33 KV Nongstoin - Mairang	Stage - II (48.5 Hz)	8 MW	5 MW
		33 KV Rongkhon - Garobadha	Stage - III (48.2 Hz)	10 MW	5 MW
5.	Mizoram	33/11 KV Lower SS at Zuangtui	Stage - I (48.8 Hz)	5.1 MW	3.1 MW
		33/11 KV Lower SS at Zuangtui	Stage - II (48.5 Hz)	5.1 MW	3.1 MW
		33/11 KV Lower SS at Mualpui	Stage - III (48.2 Hz)	5.1 MW	3.1 MW
6.	Nagaland	132/66/33 KV Mokokchung SS	Stage - I (48.8 Hz)	3 MW	3 MW
		132/66/33 KV Nagarjan SS	Stage - II (48.5 Hz)	3 MW	3 MW
		132/66/33 KV Kohima SS	Stage - III (48.2 Hz)	3 MW	3 MW
7.	Tripura	33 KV Mohan Pir Feeder	Stage - I (48.8 Hz)	8 MW	8 MW
		33 KV Badharghat Feeder	Stage - II (48.5 Hz)	7 MW	7 MW
		33 KV Durjoy Nagar Feeder	Stage - III (48.2 Hz)	7 MW	7 MW

Annexure - C. 3 (ii)

SN	Name of State	Total Quantum of Load Shedding required	Location where URF installed (Feeder's Name)	Stage	Load in each feeder	Quantum of Load shedding (MW) implemented	Additional quantum of load shedding required
1	Ar. Pradesh	20	At Satyam Ispat (11 KV Banderdewa - Satyam Ispat)	Stage - I (49.2 Hz)		3.5	1.5
			To be identified	Stage - II (49.0 Hz)		0	5
			To be identified	Stage - III (48.8 Hz)		0	5
			To be identified	Stage - IV (48.6 Hz)		0	5
2	Assam	220	At Gauripur (132 KV Dhaligoan - Gossaigoan - Gauripur)	Stage - I (49.2 HZ)	16	54.5	0
			At Sipajhar (132 KV Depota - Rowta - Sipajhar)		10		
			At Dhemaji (132 KV Gohpur - Nalkata - Dhemaji)		11		
			At Majuli (132 KV Nalkata - Majuli)		2.5		
			At Baghjap (132 KV Kahilipara - Chandrapur - Baghjap)		15		
			At Diphu (132 KV Samaguri - Sankardev - Diphu)	Stage - II (49.0 Hz)	11	61	0
			At Gohpur (132 KV Samaguri - B. Chariali - Gohpur)		8		
			At Rupai (132 KV Tinsukia - Rupai + AP Load)		17		
			At Jogighopa (132 KV Dhaligoan - Jogighopa)		7		
			At Sankardevnagar (132 KV Samaguri - Sankardevnagar)		18		

SN	Name of State	Total Quantum of Load Shedding required	Location where URF installed (Feeder's Name)	Stage	Load in each feeder	Quantum of Load shedding (MW) implemented	Additional quantum of load shedding required
2	Assam		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)		11		
			At Sishugram (132 KV Sarusajai - Sishugram)	45	57	0	
			At Ledo (132 KV Tinsukia - Ledo)	12			
3	Manipur	20	At Yurembam (33 KV Yurembam - Leimakhong)	Stage - I (49.2 Hz)		3	2
			To be identified	Stage - II (49.0Hz)		0	5
			To be identified	Stage - II (48.8Hz)		0	5
			To be identified	Stage - II (48.6Hz)		0	5
SN	Name of State	Total Quantum of Load Shedding required	Location where URF installed (Feeder's Name)	Stage	Load in each feeder	Quantum of Load shedding (MW) implemented	Additional quantum of load shedding required

4	Meghalaya	60	At Nangalbibra (33 KV Mendipathar - Nangalbibra)	Stage - I (49.2 Hz)	6.5	15	0
			At Rongkhon (33 KV Garobadha I - Rongkhon)		8.5		
			At Mawphlang (132/33 KV, 20 MVA Transformer)	Stage - II (49.0 Hz)		15	0
			At Khliehriat (132/33 KV, 20 MVA Transformer)	Stage - III (48.8 Hz)	12	15	0
			At Nongstoin (33 KV Nongstoin - Mairang)		3		
			At Mawlai (33 KV Mawlai - Nongthymmai)	Stage - IV (48.6 Hz)	7.5	15	0
			At NEHU (33 KV NEHU - Happy Valley)		7.5		
5	Mizoram	20	At Zuangtui (Feeder's Name to be given at Zuangtui)	Stage - I (49.2 Hz)		5.1	0
			At Mualpuii (Feeder's Name to be given at Mualpui)	Stage - II (49.0 Hz)		5.1	0
			To be identified	Stage - III (48.8 Hz)		0	5
			To be identified	Stage - IV (48.6 Hz)		0	5
SN	Name of State	Total Quantum of Load Shedding required	Location where URF installed (Feeder's Name)	Stage	Load in each feeder	Quantum of Load shedding (MW) implemented	Additional quantum of load shedding required
			At Mokokchung (11 KV Feeder of Mokokchung load)	Stage - I (49.2 Hz)		3	2

6	Nagaland	20	At Nagarjan (Feeder's Name to be given at Nagarjan)	Stage - II (49.0 Hz)		3	2
			At Kohima (Feeder's Name to be given at Kohima)	Stage - III (48.8 Hz)		3	2
			To be identified	Stage - IV (48.6 Hz)		0	5
7	Tripura	40	At Badharghat (33 KV Badarghat - Bishalghar)	Stage - I (49.2 Hz)	8.5	11	0
			At Badharghat (33 KV Badarghat - Takarjala)		2.5		
			At 66 KV Rabindra Nagar (33 KV Rabindra Nagar - Melaghar)	Stage - II (49.0 Hz)	6.5	10	0
			At 66 KV Rabindra Nagar (33 KV Rabindra Nagar - Kathalia)		3.5		
			At 79 Tilla (33 KV, 79 Tilla - Mohanpur)	Stage - III (48.8 Hz)	7.5	14.5	0
			At 79 Tilla (33 KV, 79 Tilla - Durjoy Nagar)		7		
			At 79 Tilla (33 KV, 79 Tilla - College Tilla)	Stage - IV (48.6 Hz)		12.5	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.

STATUS OF UFR IMPLEMENTATION IN NER

Stage	Load shed Required	Implemented	To be Implemented
Stage - I (49.2 Hz)	100 MW	94.5	5.5
Stage - II (49.0 Hz)	100 MW	88	12
Stage - III (48.8 Hz)	100 MW	83	17
Stage - IV (48.6 Hz)	100 MW	80	20
TOTAL	400 MW	345.5	54.5

POWER GRID CORPORATION OF INDIA LIMITED
OPERATION SERVICE DEPARTMENT, NERTS, SHILLONG
Exception Report

MONTH : SEPTEMBER-13

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage		
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/ Militant activities				Outage under categories of Deemed Available	
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.
RCN_AGARTALA # 1														
1	9/15/2013	10:12	9/15/2013	15:14	00 : 00		00 : 00		00 : 00		05 : 02	OSPD	SD by TSECL	
Sub-Total					00 : 00		00 : 00		00: 00		05 : 02			
RCN_AGARTALA # 2														
2	9/14/2013	10:32	9/14/2013	16:30	00 : 00		00 : 00		00 : 00		05 : 58	OSPD	SD by TSECL	
Sub-Total					00 : 00		00 : 00		00: 00		05 : 58			
AIZWAL_KUMARGHAT														
3	9/1/2013	16:01	9/1/2013	16:15	00 : 00		00 : 00		00 : 14		00 : 00	LNCC	SD taken for clearing bamboo leaning towards road in the span 137-38 from	
4	9/2/2013	10:56	9/2/2013	11:18	00 : 00		00 : 00		00 : 22		00 : 00	LNCC	SD taken for cutting of bamboo from uphill side in the span 104-05	
5	9/2/2013	12:25	9/2/2013	14:36	00 : 00		00 : 00		02 : 11		00 : 00	LNCC	SD taken for clearing of bamboo from uphill side in the span 107-08	
6	9/2/2013	16:31	9/2/2013	17:36	00 : 00		00 : 00		01 : 05		00 : 00	LNCC	SD taken for clearing bamboo leaning from uphill side in the span 147-48	
7	9/3/2013	9:05	9/3/2013	16:41	00 : 00		00 : 00		07 : 36		00 : 00	LNCC	SD taken for clearing forest trees leaning towards line	
8	9/11/2013	13:36	9/11/2013	15:08	01 : 32		00 : 00		00 : 00		00 : 00	OMST	SD for attending hotspot in Yph BPI stack	
9	9/12/2013	10:01	9/12/2013	14:04	04 : 03		00 : 00		00 : 00		00 : 00	OMST	For replacement of Rph CT at Aizawl	
10	9/18/2013	21:34	9/18/2013	21:43	00 : 00		00 : 00		00 : 09		00 : 00	LNCC	Tripped due to lightning	
11	9/19/2013	1:58	9/19/2013	2:36	00 : 00		00 : 00		00 : 38		00 : 00	SNCC	Flash over at AZL S/Y during heavy fog	
12	9/20/2013	2:42	9/20/2013	3:23	00 : 00		00 : 00		00 : 41		00 : 00	SNCC	Flash over at AZL S/Y during heavy fog	
13	9/21/2013	11:33	9/21/2013	15:03	00 : 00		00 : 00		03 : 30		00 : 00	SNCC	Bus SD taken by Aizawl for replacement of Post Insulators damaged by flashover during	
Sub-Total					05 : 35		00 : 00		16: 26		00 : 00			
AIZWAL_ZEMEBAK # 2														
14	9/21/2013	11:32	9/21/2013	14:52	00 : 00		00 : 00		03 : 20		00 : 00	SNCC	Bus SD taken by Aizawl for replacement of Post Insulators damaged by flashover during	
Sub-Total					00 : 00		00 : 00		03: 20		00 : 00			
BADARPUR-BADARPUR														

Page 1 of 6

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage		
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/ Militant activities				Outage under categories of Deemed Available	
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.
15	9/12/2013	10:42	9/12/2013	17:00	00 : 00		06 : 18		00 : 00		00 : 00	OMSU	SD taken by ASEP	
Sub-Total					00 : 00		06 : 18		00: 00		00 : 00			
BADARPUR_JRIBAM														
16	9/22/2013	12:49	9/22/2013	12:54	00 : 00		00 : 00		00 : 05		00 : 00	LNCC	Branch of a tree fell upon line near loc.186	
Sub-Total					00 : 00		00 : 00		00: 05		00 : 00			
BADARPUR_KHLIERIAT														
17	9/10/2013	13:10	9/10/2013	13:18	00 : 00		00 : 00		00 : 08		00 : 00	LNCC	Tripped due to heavy lightning with LA counter in at Badarpur	
18	9/12/2013	10:06	9/12/2013	10:06	00 : 00		00 : 00		00 : 00		00 : 00	LART	Successful A/R	
19	9/13/2013	9:45	9/13/2013	13:08	00 : 00		00 : 00		03 : 23		00 : 00	LNCC	ESD taken for clearing of a big tree inclining towards line in the span 150-151	
Sub-Total					00 : 00		00 : 00		03: 31		00 : 00			
BADARPUR_KUMARGHAT														
20	9/7/2013	10:59	9/7/2013	11:09	00 : 00		00 : 00		00 : 10		00 : 00	LMAC	Banana tree cut by villagers fell upon line	
Sub-Total					00 : 00		00 : 00		00: 10		00 : 00			
DIMAPUR_IMPHAL														
21	9/7/2013	10:16	9/7/2013	10:16	00 : 00		00 : 00		00 : 00		00 : 00	LART	Successful A/R	
22	9/10/2013	12:36	9/10/2013	15:28	00 : 00		00 : 00		02 : 52		00 : 00	LNCC	SD taken for replacement of Insulator string at loc 410,damaged by lightning	
Sub-Total					00 : 00		00 : 00		02: 52		00 : 00			
DOYANG_DIMAPUR # 1														
23	9/14/2013	12:20	9/14/2013	12:34	00 : 00		00 : 00		00 : 14		00 : 00	LNCC	tripped due to heavy lightning at DOY end	
24	9/20/2013	1:07	9/20/2013	1:40	00 : 00		00 : 00		00 : 33		00 : 00	LNCC	Tripped due to lightning	
Sub-Total					00 : 00		00 : 00		00: 47		00 : 00			
DOYANG_DIMAPUR # 2														
25	9/20/2013	1:02	9/20/2013	1:19	00 : 00		00 : 00		00 : 17		00 : 00	LNCC	Tripped due to lightning	
Sub-Total					00 : 00		00 : 00		00: 17		00 : 00			
GOHPUR_NIRJULI														
26	9/22/2013	8:37	9/22/2013	17:19	00 : 00		08 : 42		00 : 00		00 : 00	OMSU	SD taken for completion of of Rly Diversion work in the section 4,8	
27	9/23/2013	8:22	9/23/2013	17:27	00 : 00		09 : 05		00 : 00		00 : 00	OMSU	"	
Sub-Total					00 : 00		17 : 47		00: 00		00 : 00			
IMPHAL_IMPHAL														

Page 2 of 6

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage			
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/Militant activities				Outage under categories of Deemed Available		
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.	
28	9/3/2013	10:40	9/3/2013	10:56	00	00	00	16	00	00	00	00	00	OMSU	Fault in state system
29	9/25/2013	14:15	9/25/2013	14:20	00	00	00	05	00	00	00	00	00	OMSU	Fault in state downstream system
30	9/29/2013	14:32	9/29/2013	15:00	00	00	00	28	00	00	00	00	00	OMSU	Fault in state downstream system
Sub-Total					00	00	00	49	00	00	00	00	00		
JIRIBAM_AIZWAL															
31	9/4/2013	11:00	9/4/2013	13:27	00	00	00	00	02	27	00	00	00	LNCC	SD taken for clearing of bamboo from uphill side in the span 199-700
32	9/6/2013	14:16	9/6/2013	17:49	00	00	00	00	03	33	00	00	00	LMAC	Tree cut by viallagers fell upon line in the span 168-60
33	9/14/2013	4:29	9/14/2013	4:39	00	10	00	00	00	00	00	00	00	LEFT	Transient E/F
34	9/14/2013	16:09	9/14/2013	16:27	00	00	00	00	00	18	00	00	00	LNCC	Tripped due to lightning, Cu bond found burnt at loc 787
35	9/19/2013	1:58	9/19/2013	3:00	00	00	00	00	01	02	00	00	00	SNCC	Flash over at AZL S/Y during heavy fog
36	9/19/2013	12:30	9/19/2013	14:38	02	08	00	00	00	00	00	00	00	OMST	SD availed by AZL for replacement of BPI in S/Y
37	9/20/2013	2:42	9/20/2013	3:25	00	00	00	00	00	43	00	00	00	SNCC	Flash over at AZL S/Y during heavy fog
38	9/21/2013	11:35	9/21/2013	14:48	00	00	00	00	03	13	00	00	00	SNCC	Bus SD taken by Aizawl for replacement of Post Insulators damaged by flashover during
39	9/22/2013	12:05	9/22/2013	12:13	00	00	00	00	00	08	00	00	00	LMAC	Tree cut by miscreants near line
Sub-Total					02	18	00	00	11	24	00	00	00		
JIRIBAM_HAFLONG															
40	9/8/2013	23:20	9/8/2013	23:37	00	00	00	00	00	17	00	00	00	LNCC	Tripped due to heavy lightning
41	9/19/2013	15:29	9/19/2013	17:10	01	41	00	00	00	00	00	00	00	OMST	SD taken by HFG for attending hotspot in line Isolator
Sub-Total					01	41	00	00	00	17	00	00	00		
JIRIBAM_LOKTAI # 2															
42	9/2/2013	19:29	9/2/2013	19:34	00	05	00	00	00	00	00	00	00	LEFT	Transient E/F
43	9/18/2013	11:02	9/18/2013	14:31	00	00	00	00	03	29	00	00	00	LNCC	SD taken for clearing infringement leaning from uphill side between loc 147-164
44	9/20/2013	10:02	9/20/2013	13:21	00	00	00	00	03	19	00	00	00	LNCC	SD taken for clearing trees leaning from uphill side in the span 942-110
45	9/24/2013	3:55	9/24/2013	4:12	00	00	00	00	00	17	00	00	00	LNCC	Tripped on heavy lightning
Sub-Total					00	05	00	00	07	05	00	00	00		
KUMARGHAT_R_C NAGAR															
46	9/8/2013	8:20	9/8/2013	18:44	00	00	00	00	00	00	10	24	00	LCSD	SD taken for stringing work of 400KV Silchar-PK Part line

Page 3 of 6

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage			
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/Militant activities				Outage under categories of Deemed Available		
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.	
47	9/17/2013	1:52	9/17/2013	1:59	00	00	00	00	00	07	00	00	00	LNCC	Tripped on heavy lightning with LA counter iner at KGT.mtd
Sub-Total					00	00	00	00	00	07	10	24	00		
LOKTAI_IMPHAL # 2															
48	9/3/2013	10:40	9/3/2013	10:42	00	00	00	02	00	00	00	00	00	OMSU	Fault in state system
49	9/26/2013	9:41	9/26/2013	9:53	00	12	00	00	00	00	00	00	00	LEFT	Transient E/F
Sub-Total					00	12	00	02	00	00	00	00	00		
SALAKATI-GELEPHUG															
50	9/6/2013	1:04	9/6/2013	1:29	00	25	00	00	00	00	00	00	00	LEFT	Transient E/F
51	9/16/2013	17:55	9/16/2013	19:21	00	00	00	00	01	26	00	00	00	LNCC	A big tree fell upon line in the span 141-42
52	9/21/2013	5:10	9/21/2013	5:48	00	00	00	38	00	00	00	00	00	OMSU	Ammonoins tower members during storm
53	9/26/2013	23:55	9/27/2013	0:25	00	00	00	00	00	30	00	00	00	LNCC	Tripped dur fault in Bhutan Downstream system
54	9/28/2013	20:40	9/29/2013	12:08	00	00	00	00	15	28	00	00	00	LNCC	tripped due to lightning
54	9/28/2013	20:40	9/29/2013	12:08	00	00	00	00	15	28	00	00	00	LNCC	Tree branch fell in the span 142-43 during storm
Sub-Total					00	25	00	38	17	24	00	00	00		
NIRJULI-RANGANADI															
55	9/14/2013	9:55	9/14/2013	10:10	00	00	00	15	00	00	00	00	00	OMSU	Tripped due to fault in state T-line
56	9/21/2013	9:25	9/21/2013	9:48	00	00	00	00	00	00	00	23	00	OSPD	ESD taken by NEEPCO end
57	9/29/2013	9:24	9/29/2013	17:26	00	00	08	02	00	00	00	00	00	OMSU	Pylons of stae line fell near condn in the span 30-31
Sub-Total					00	00	08	17	00	00	00	23	00		
KOLASIB-AIZAWL															
58	9/19/2013	1:58	9/19/2013	2:45	00	00	00	00	00	47	00	00	00	SNCC	Flashover in AZL S/Y during heavy fog
59	9/20/2013	2:42	9/20/2013	3:39	00	00	00	00	00	57	00	00	00	SNCC	Flash over at AZL S/Y during heavy fog
60	9/21/2013	11:33	9/21/2013	15:03	00	00	00	00	03	30	00	00	00	SNCC	Bus SD taken by Aizawl for replacement of Post Insulators damaged by flashover during
Sub-Total					00	00	00	00	05	14	00	00	00		
RANGANADI-ZIRO															
61	9/10/2013	9:34	9/10/2013	9:37	00	00	00	03	00	00	00	00	00	OMSU	Downstream fault in state system
Sub-Total					00	00	00	03	00	00	00	00	00		
SILCHAR-SRIKONA-I #1															
62	9/2/2013	22:05	9/2/2013	22:13	00	00	00	08	00	00	00	00	00	OMSU	fault beyond POWERGRID jurisdiction

Page 4 of 6

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage		
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/Militant activities				Outage under categories of Deemed Available	
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.
Sub-Total					00 : 00		00 : 08		00 : 00		00 : 00			
SILCHAR-SRIKONA-II #2														
63	9/2/2013	22:05	9/2/2013	22:20	00 : 00		00 : 15		00 : 00		00 : 00		OMSU	fault beyond POWERGRID jurisdiction
Sub-Total					00 : 00		00 : 15		00 : 00		00 : 00			
IMPHAL-IMPHAL # 2														
64	9/19/2013	10:08	9/19/2013	10:16	00 : 00		00 : 08		00 : 00		00 : 00		OMSU	downstream fault in state system
Sub-Total					00 : 00		00 : 08		00 : 00		00 : 00			
BALIPARA_TEZPUR														
65	9/8/2013	10:51	9/8/2013	11:08	00 : 00		00 : 17		00 : 00		00 : 00		OMSU	Fault beyond POWERGRID line jurisdiction
66	9/24/2013	5:14	9/24/2013	5:50	00 : 00		00 : 36		00 : 00		00 : 00		OMSU	Fault in ASEB section
Sub-Total					00 : 00		00 : 53		00 : 00		00 : 00			
KATHALGURI_MARIANI														
67	9/25/2013	18:00	9/25/2013	18:20	00 : 00		00 : 00		00 : 20		00 : 00		LNCC	tripped on heavy lightning
68	9/25/2013	18:20	9/25/2013	19:01	00 : 00		00 : 00		00 : 41		00 : 00		GOVC	Line could not be synchronised at Kathalouri end due to voltage mismatch
Sub-Total					00 : 00		00 : 00		01 : 01		00 : 00			
MISA-KOPILI # 1														
69	9/20/2013	0:05	9/20/2013	0:34	00 : 00		00 : 00		00 : 29		00 : 00		LNCC	Tripped due to heavy lightning
Sub-Total					00 : 00		00 : 00		00 : 29		00 : 00			
SALAKATI_BTPS # 2														
70	9/29/2013	8:40	9/29/2013	18:59	00 : 00		00 : 00		00 : 00		10 : 19		LCSD	SD taken for facilitating stringing work of Silchar-Romession line
Sub-Total					00 : 00		00 : 00		00 : 00		10 : 19			
SALAKATI-BTPS # 1														
71	9/10/2013	10:08	9/10/2013	12:49	00 : 00		02 : 41		00 : 00		00 : 00		OMSU	SD availed by ASEB
72	9/29/2013	8:39	9/29/2013	18:58	00 : 00		00 : 00		00 : 00		10 : 19		LCSD	SD taken for facilitating stringing work of Silchar-Romession line
Sub-Total					00 : 00		02 : 41		00 : 00		10 : 19			
BALIPARA_BONGAIGAON # 1														
73	9/15/2013	8:01	9/15/2013	16:16	00 : 00		00 : 00		08 : 15		00 : 00		LNCC	SD taken for facilitating shifting of loc.288 on Pile
74	9/16/2013	9:01	9/16/2013	16:24	00 : 00		00 : 00		07 : 23		00 : 00		LNCC	SD taken for shifting of loc.288 on Pile foundation
75	9/29/2013	16:26	9/29/2013	16:42	00 : 00		00 : 00		00 : 16		00 : 00		LNCC	Tripped due to heavy lightning

Page 5 of 6

Sl. No.	Name of the Element		Ckt No		Duration of Outage and Attributable To						Category	Reason of Outage		
	Outage		Restoration		POWERGRID		Other Constituents		Sys.Const/Natural calamities/Militant activities				Outage under categories of Deemed Available	
	Date	Time	Date	Time	Hrs.	Mns.	Hrs.	Mns.	Hrs.	Mns.			Hrs.	Mns.
Sub-Total					00 : 00		00 : 00		15 : 54		00 : 00			
BALIPARA_BONGAIGAON # 2														
76	9/1/2013	10:17	9/1/2013	17:20	00 : 00		00 : 00		07 : 03		00 : 00		LNCC	SD taken for shifting work of loc.288 on Pile foundation
77	9/2/2013	9:03	9/2/2013	16:55	00 : 00		00 : 00		07 : 52		00 : 00		LNCC	"
78	9/7/2013	12:35	9/7/2013	12:35	00 : 00		00 : 00		00 : 00		00 : 00		LART	Successful A/R
79	9/13/2013	8:03	9/13/2013	18:51	00 : 00		00 : 00		10 : 48		00 : 00		LNCC	SD taken for facilitating shifting of loc.288 on Pile
80	9/14/2013	8:05	9/14/2013	15:54	00 : 00		00 : 00		07 : 49		00 : 00		LNCC	SD taken for facilitating shifting loc.288 on Pile
81	9/29/2013	16:26	9/29/2013	16:35	00 : 00		00 : 00		00 : 09		00 : 00		LNCC	Tripped due to heavy lightning
Sub-Total					00 : 00		00 : 00		33 : 41		00 : 00			
BALIPARA-RANGANADI # 2														
82	9/20/2013	9:07	9/20/2013	13:01	00 : 00		00 : 00		00 : 00		03 : 54		SCSD	SD taken for testing & commissioning of REL 670 relay
Sub-Total					00 : 00		00 : 00		00 : 00		03 : 54			
Grand Total					10 : 16		37 : 59		120 : 04		46 : 19			

Page 6 of 6

Planned maintenance Schedules including R & M activities.

A) R&M of Units likely to be completed during 2013-14 & 2014-15

Station Name	Unit No.	Capacity (MW)	R&M Schedule	
			From date	To date

B) Annual Overhaul/ Boiler overhaul

Station Name	Unit No.	Capacity (MW)	AOH Schedule	
			From date	To date

C) Capital Overhaul

Station Name	Unit No.	Capacity (MW)	COH Schedule	
			From date	To date

D) Other maintenance if not included above such as PG tests(new units and boiler inspection)

Station Name	Unit No.	Capacity (MW)	Schedule		Reason
			From date	To date	

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	KOPII	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