North Eastern Regional Power Committee

Agenda
For
105th OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 23rd January, 2015 (Friday)

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 104th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 104th meeting of Operation Sub-committee held on 5th December, 2014 at Dimapur were circulated vide letter No. NERPC/SE (O)/OCC/2014/3291-3326 dated 15th December, 2014.

No observations or comments were received from the constituents. The Sub-committee may discuss & confirm minutes of 104th OCCM of NERPC.

ITEMS FOR DISCUSSION

B. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING DEC, 2014

As per the data made available by NERLDC, the grid performance parameters for December, 2014 are given below:

NER PERFORMANCE DURING DECEMBER, 2014

	Energy Met (MU)			Energy Reqr. (MU)		
States	**Dec-14**	**Nov-14**	**% inc(+)/dec(-)**	**Dec-14**	**Nov-14**	**% inc(+)/dec(-)**
Ar. Pradesh	57	**54**	5.9	65.0	**65.0**	0.0
Assam	567	**634**	-10.6	680.0	**660.0**	3.0
Manipur	65	**67**	-4.0	65.0	**70.0**	-7.1
Meghalaya	159	**140**	14.0	175.0	**175.0**	0.0
Mizoram	39	**37**	5.3	40.0	**43.0**	-7.0
Nagaland	44	**62**	-28.8	60.0	**65.0**	-7.7
Tripura	81	**79**	3.5	120.0	**110.0**	9.1
Region	**1013**	**1072.98**	-5.6	**1205.00**	**1188.00**	1.4

	Demand Met (MW)			Demand in (MW)		
States	**Dec-14**	**Nov-14**	**% inc(+)/dec(-)**	**Dec-14**	**Nov-14**	**% inc(+)/dec(-)**
Ar. Pradesh	117	**116**	0.6	125	**125**	0.0
Assam	1204	**1250**	-3.7	1450	**1435**	1.0
Manipur	139	**138**	0.7	140	**140**	0.0
Meghalaya	367	**338**	8.6	370	**350**	5.7
Mizoram	86	**80**	7.5	90	**90**	0.0
Nagaland	123	**115**	7.0	125	**120**	4.2
Tripura	210	**222**	-5.4	250	**270**	-7.4
Region	**2170**	**2125**	2.1	**2460**	**2525**	-2.6

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Dec-14**	**Nov-14**
Total Generation in NER (Gross)	833	862.57
Total Central Sector Generation (Gross)	555	597.24
Total State Sector Generation (Gross)	278	265.33
Inter-Regional Energy Exchange		
(a) NER-ER	16.61	13.31
(b) ER-NER	236.90	220.76
© Net Import	220.29	207.45

AVERAGE FREQUENCY (Hz)

Month---->	**Dec-14**	**Nov-14**
	% of Time	% of Time
Below 49.9 Hz	23.02	15.29
Between 49.9 to 50.05 Hz	48.96	53.97
Above 50.05 Hz	28.02	30.74
Average	49.98	50
Maximum	50.58	50.42
Minimum	49.54	49.58

From the above table, it is seen that energy requirement met (MU) of the region decreased from the previous month, whereas requirement of energy increased from the previous month.

C.1 Synchronization of Palatana Module -I

During 104th OCC meeting, representative from OTPC informed that CoD of Unit-II is expected to be commissioned by December 2014.

The Sub-committee would like to review the status of commissioning of second unit of OTPC at Pallatana, first unit of NTPC at Bongaigoan, following Transmission lines of POWERGRID and substation at Azara of Assam. The status as informed by OTPC, NTPC, Assam and POWERGRID is as follows:

SN	Items	Status as given in 104th OCC Meeting	Status as on 105th OCC
1	Trial operation and CoD of Unit -II of Palatana	OTPC Unit-II is running- IDLN tuning for 10 days from December 2nd week then trail run for 15 days from end of December, 2014.	
2	Trial operation and CoD of Unit -I of NTPC at Bongaigoan	Trial operation and CoD of Unit -I of NTPC at Bongaigoan completed on 29th Nov, 2014. Expected COD by March, 2015	
2	400KV D/C Silchar - Melriat line	June, 2015	
3	400KV D/C Silchar - Imphal line	December, 2014	
4	220KV D/C Mariani (New) – Mokokchung	December, 2014	
5	400KV D/C Byrnihat-Bongaigaon line	December, 2014	

Concerned constituents may kindly intimate the status.

C.2 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:

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 OCC Sub-committee continuously review the status of implementation of the scheme and the status as intimated in the 99th OCC Meeting is given below:

Case I & Case IV: Already implemented.

Case II & III: GM, OTPC stated that implementation of SPS -2 & 3 mentioned above was discussed in detail and the scheme was finalized in the meeting held with BHEL at Palatana on 17.01.2014. Subsequently some modification has been carried out by BHEL and same will be circulated to all. The offer of BHEL is intimated by OTPC but the required schematic diagram as agreed in the 97th OCC meeting is unavailable.

OTPC had requested POWERGRID to look into following issues:

(a) SPS at OTPC end should not be modified with commissioning of 2nd Circuit of Silchar _ Bongaigaon 400kV line. ***It is agreed in earlier OCC meetings that the SPS associated with Palatana need to be reviewed including enhancement of load shedding and NERLDC was requested accordingly to review the SPS on 99th OCC meeting.***

(b) Trip command from two different sources should be available to desynchronize the machine to avoid unwanted tripping of generating Unit when the generation is more than 200MW. During 93rd OCC meeting, subcommittee had suggested OTPC for getting input from Circuit breakers at both ends of the line (Silchar & Byrnihat) through communication link and to discuss the matter with POWERGRID.

(c) Two out of three logics [i.e. inputs from circuit breaker (s), master trip relay (s) etc.] shall be utilized for de-synchronization of Gas Turbines. During 93rd OCC meeting, subcommittee had suggested OTPC to discuss the matter with POWERGRID.

Enhancement of quantum of load relief during SPS operation: The matter was deliberated in last OCC meeting and it was decided to convene meeting of identified committee for the review of SPS schemes to ensure higher load relief as well as changes to be incorporated in the schemes in view of changes in network topology. ***Further OTPC informed the house the status of SPS-3 [NERLDC is of the opinion that the elaborate scheme furnished by M/s BHEL may not be necessary and tripping of the identified CB will be serve the purpose.*** In addition the SPS-3 requires to be upgraded to incorporate addition of Silchar-Azara 400 kV line.

The matter was studied and deliberated by the system study group of NERPC on 14.10.2014 at NERLDC, Shillong. The minutes are reproduced below: -

1. Lumshnong – Khliehriat will be disconnected and Lumshnong will be fed from Panchgram

Once Palatana trips, then Lumshnong S/s will be tripped and a load relief of 15 MW may be expected.

2. Dharmanagar - P.K. Bari will remain disconnected and Dharmanagar & Dullavcherra will be fed from Silchar S/S radially.

Once Palatana trips, then 132kV Sichar-Dullavcherra feeder will be tripped at Silchar End through SPS and relief of 14 MW load can be achieved.

DGM, NERTS informed the members that the incorporation of tripping of 132kV Sichar - Dullavcherra feeder in SPS-1 & SPS-2 will be completed by November 2014.

The Sub-committee requested POWERGRID to complete the wiring for all the cases above in co-ordination with OTPC and also requested OTPC to extend all help to POWERGRID if necessary.

The above suggestions may be reviewed by system study committee as and when required.

Concerned constituents may kindly intimate the status.

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:

The OCC regularly review the status of UFR based load shedding in the region. The following details are confirmed in 104th OCC meeting.

Assam & Nagaland: UFRs based load shedding for 220MW & 20MW have been implemented by both the States. However, UFR operation and amount of load relief reports are to be sent to NERLDC regularly. Assam & Nagaland agreed to do the needful.

Manipur: Informed that UFRs based load shedding for all the four stages have been implemented, the feeders name and the exact amount of load relief would be furnished soon. Relays have been tested and reports are sent to NERLDC. UFR operation and amount of load relief reports will be sent to NERLDC regularly.

Tripura: UFRs based load shedding for Stages I & II have been implemented. Tendering is done for Stages II & IV and M/s Alstom is awarded for implementation. It is expected to implement Stages II & IV by January, 2015.

Meghalaya: UFRs based load shedding for Stages I, II & III completed. 4th stage implementation process is held up due to law and order problem in Garo Hills. Reports of UFR operations are sent regularly to NERLDC.

Arunachal Pradesh: During 103rd OCC meeting, EE, SLDC informed that Stage - I is completed. Stage - II is under consideration and may be expected by December 2014. Stage - III and Stage - IV may be expected to be completed by March 2015. It was informed that Ar. Pradesh had furnished the feeder's name of Stage II, III & IV. The status could not be updated since no representative from Ar. Pradesh was present.

Mizoram: EE, SLDC, Mizoram informed that UFR based load shedding for Stages I has been completed. Stage - II is under consideration which may be expected to be implemented by December 2014. Stage - III & IV is likely to be completed by February, 2015. Mizoram is sending the UFR reports regularly for the implemented stages.

SE(O) informed that as per guidelines by CEA its mandatory to inspect at least one third of UFRs in the region during the year. In view of the above, inspection will be carried out in the month of January, 2015. The itinerary will be intimated in due course.

Concerned constituents may kindly intimate the status.

C.4 Lines under long outages

During the 101st OCC meeting, the issue for restoration of these lines was reviewed by the committee and the status was as follows:

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

Manipur representative informed that towers are faulty in locations 90 and 91 due to constructions railway line and road by Ministry of Railway and BRTF. Compensation for the same is awaited from the 2 parties and repairing work may be completed after 2 months from receipt of the compensations.

During 104th OCC meeting, Manipur representative stated that the line would be completed by end of December 2014.

Manipur may like to inform the status.

C.5 CT Ratio of Transmission Lines in NER:

During 102nd OCC meeting, CT ratios of transmission lines of NER are to be enhanced for enhancement of transfer capability & reliable grid operation. List of these transmission lines are available in minutes of 102nd OCCM of NERPC.

During 103rd OCC meeting, OTPC and NEEPCO informed that the works pertaining to them have been completed and the same has been sent to NERLDC.

During 104th OCC meeting, DGM, NERTS stated that NERLDC should first study the load-ability and quantum of the power flow requires on each line so that concerned utilities can upgrade the required CT for the particular line instead of

generalizing the issue. Moreover, NERLDC should clearly specify if the proposed ratings of the CTS are assessed on the basis of metering core or protection core. NERLDC confirmed that the ratios are based on load-ability of lines and hence based on metering core.

The Sub-committee requested NERLDC to prepare the fresh list of feeders where load-ability of the line is necessary for enhancement along with corresponding CT ratio.

NERLDC may kindly intimate the status.

C.6 Furnishing Geographic Co-ordinates of Nodes of NER Grid:

Power Maps of NER states are being developed by CBIP. To represent nodes of NER Grid in power maps, Co-ordinates of **existing Nodes, Nodes under construction** & **identified future Nodes** (66 kV & above) of NER Grid are required. Power Utilities of NER are requested to furnish latitude & longitudes of Nodes of NER Grid.

Power Maps of NER states are being developed by CBIP. To represent nodes[S/S and Power Station] of NER Grid in power maps, Co-ordinates of existing Nodes, Nodes under construction & identified future Nodes (66 kV & above) of NER Grid are required. Power Utilities of NER are requested to furnish latitude & longitudes of Nodes of NER Grid. DoP, Arunachal Pradesh, AEGCL and Me. PTCL have not furnished the data of the nodes as per **Annexure – C.6** till date. The maps are developed by CBIP for all India and the same will be made available to our constituents once finalized which will be good source of data for everybody.

The above constituents have agreed to furnish the information as per format of NERLDC soon.

Concerned constituents may kindly intimate the status.

C.7 Single Line Diagram of Sub-stations, Switching Stations & Power Stations of NER:

During 104th OCC meeting, NERLDC informed that NEEPCO, NHPC, Ar. Pradesh, Assam, Manipur, Meghalaya, Nagaland & Tripura have not furnished geographical co-ordinates of the nodes as per **Annexure – C.7.**

Now NERLDC informed that POWERGRID, OTPC, NHPC (except Lower Subansiri), NTPC & DoP, Arunachal Pradesh (except Pasighat), P&E, Mizoram (except Sihmuii), Me. PTCL (except as per list at **Annexure – C.7**), DoP, Nagaland (except as per list at Annexure IV), TSECL (as per list at **Annexure – C.7**) have furnished. Single Line Diagrams of nodes of AEGCL (except as per list at **Annexure – C.7**) have been collected from DPR for rectification of Protection System. NEEPCO (as per list at **Annexure – C.7**), NHPC (for Lower Subansiri), DoP, Arunachal Pradesh (for

Pasighat), AEGCL (as per list at **Annexure – C.7**), MSPCL (as per list at Annexure IV), Me. PTCL (as per list at **Annexure – C.7**), P&E, Mizoram (for Sinhmui), DoP, Nagaland (as per list at Annexure IV), and TSECL (as per list at **Annexure – C.7**) are requested to furnish Single Line Diagram of nodes as these diagrams are required for system studies, outage coordination etc.

Constituents may kindly furnish the information at the earliest.

C.8 Finalization of Annual Load Generation Balanced Report (LGBR) for peak as well as off-peak scenarios and the Annual outage plan for 2015-2016 by 31.12.2014 as per IEGC:

As per IEGC, each SLDC shall submit LGBR for its control area, for peak as well as off-peak scenario, **by 31st October** for **the next financial year**, to respective RPC Secretariat. The annual plans for managing deficits/surpluses in respective control areas shall clearly be indicated in the LGBR submitted by SLDCs.

As per IEGC, all SEBs/STUs, Transmission Licensees, CTU, ISGS, IPPs, MPPs and other generating stations shall provide to the respective RPC Secretariat their proposed outage plan in writing for **the next financial year** by **31st October of each year**. These shall contain identification of each generating unit/transmission line/ICT etc., the preferred date for each outage and its duration and where there is flexibility, the earliest start date and latest finishing date.

During 104th OCC meeting, SE (O) informed that draft LGBR for 2015-2016 has been prepared by NERPC. He requested all the constituents to go through the draft LGBR attached at **Annexure – C.8** and give their comments/observations at the earliest so that the same can be finalized by **31.12.2014**. He further requested that all the generators and transmission utilities to give their plan shutdown for FY 2015-16.

Constituents may please intimate the status & discuss.

C.9 Latest status of FGMO/RGMO implementation in different generating stations:

To update the available record of FGMO/RGMO implementation in NER it is requested that the latest unit-wise status of implementation of FGMO/RGMO in different Central & State sector generating stations may please be furnished to NERLDC at the earliest.

During 104th OCC meeting, NERLDC highlighted the present status available with them as attached at **Annexure – C.9**, members agreed to send the updated status to NERLDC at the earliest.

Constituents may please furnish the above information.

C.10 Submission of list of feeders connected to essential load:

As per clause no 5.8.c of IEGC, essential loads are to be restored on priority during restoration process. Constituents of NER are requested to furnish list of feeders connected to essential load at the earliest to incorporate in next version of Black start & Restoration Procedures of NER.

During 104th OCC meeting, all SLDCs were requested to prepare restoration procedure in respect of concerned states and intimate essential loads to be restored on priority to NERLDC at the earliest.

Constituents may please furnish the above information.

C.11 Progress Report of Ongoing Projects:

Progress reports of ongoing generation and transmission projects of NER need to be communicated to NERLDC by all constituents on monthly basis as per format. The progress of different elements are necessary for incorporation in Operational Feedback and other reports as also for preparation of Base Case for system study in NER. Accordingly, constituents are requested to furnish the progress report of their elements by 10th of every month for the previous month.

Currently, only NTPC, NEEPCO and Me. PGCL are furnishing monthly progress report of elements on regular basis.

During 104th OCC meeting, members agreed to send the required information as per format attached at ***Annexure – C.11***

NERLDC may intimate the status.

C.12 Formats for new unit expected to be commissioned within 2 months:

Information related to new units which are expected to be added/ commissioned within next 2 months needs to be furnished to NERLDC by concerned utilities as per format at Annexure below.

The technical data are necessary for preparation of Base Case for system study in NER (NEEPCO is requested to furnish the information/data of AGTPP Unit 5 & 6 and Monarchak Unit I & II) which may be furnished as per **Annexure-C.12 (i) & (ii).**

During 104th OCC meeting, the Sub-committee requested all those utilities, who are likely to commission their new units/elements within next two months, to apply in the prescribed format **C.12 (i) & (ii).**

NERLDC may intimate the status.

C.13 Requisition of ERS:

During 103rd OCC meeting, Assam has intimated that they are planning to procure 8 (eight) numbers of ERS for their transmission networks. The procurement will be funded from PSDF as discussed during the meeting with Member (Power System), CEA on 10.11.2014.

The forum requested all the constituents to furnish to NERPC the requirement at the earliest so that the consolidated requirements of NER can be sent to CEA.

In the meantime, ERS requisition has been received from Assam, Ar. Pradesh, Manipur, Mizoram, Nagaland & Meghalaya.

During 104th OCC meeting, the Sub-committee requested NERPC to work out the methodology regarding ERS requisition sent by the constituents so that the consolidated scheme can be put up to CEA for funding from Central Government as intimated by Member Secretary, NERPC.

NERPC may kindly intimate the status.

C.14 SPAR for Loktak HEP:

NHPC informed that Single Phase Auto-reclosure scheme is going to be installed at Loktak -Jiribam – II and Loktak – Imphal –II feeders in the month of January, 2015. Shutdown of Sub-station at Loktak is required during this time and the exact date will be intimated after getting the date from M/S AREVA (T&D) Ltd.

During 104th OCC meeting, representative from NHPC informed that once M/S AREVA confirms the date of visit, necessary shutdown will be sought for from NERPC and the work is likely to be carried out in January, 2015.

NHPC may kindly intimate the status.

C.15 Requirement of Reactor at Balipara & Bongaigoan:

After commissioning of 400 kV Bongaigaon-New Siliguri III & IV and 400 kV Balipara- Bongaigaon III & IV, persistent high voltage is being observed at Ranganadi for which some 400 kV lines have to be opened to control over-voltage. It is thus proposed to install Bus-reactor at Balipara in order to keep all lines in service. System study is being carried out to assess the requirement of Reactive Compensation which will be circulated in 104th OCC Meeting.

DGM, NERLDC informed that high voltage is observed at Bongaigaon, Balipara & RHEP resulting in opening of 400 kV lines on daily basis to contain over voltage and hence they proposed to install one number 125 MVAR Reactor each at Bongaigaon & Balipara so that opening of lines can be avoided.

During 104th OCC meeting, the Sub-committee requested NERLDC to carry out the system studies to justify the requirement and if necessary the issue can be taken up in the coming Standing Committee meeting.

During the 4th SCM held at Guwahati on 13.12.2014, the issues have been discussed and it was agreed for installation of 125 MVAR Bus Reactors by POWERGRID at Balipara and Bongaigaon.

NERPC may kindly highlight the discussion in the 4th Standing Committee meeting.

C.16 Monthly MU requirement & availability of each state of NER as per format:

The following figures of state wise MU requirement and availability were taken from draft LGBR 2014-15 of NERPC. State wise MU requirement and availability for these months are to be checked. Constituents may kindly verify if the above data are correct.

Requirement:

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	65	55	48	66	70
Assam	690	615	570	640	745
Manipur	70	55	51	65	65
Meghalaya	195	175	175	165	170
Mizoram	41	35	40	40	40
Nagaland	60	55	50	60	60
Tripura	125	120	120	115	125
NER	**1246**	**1090**	**1054**	**1151**	**1275**

Availability:

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	40	31	40	50	57
Assam	439	385	413	520	554
Manipur	56	47	47	66	69
Meghalaya	133	111	110	146	188
Mizoram	36	31	32	43	49
Nagaland	32	27	31	47	43
Tripura	137	112	150	197	211
NER	**873**	**744**	**823**	**1069**	**1171**

C.17 Monthly MW requirement & availability of each state of NER:

The following figures were taken from LGBR 2014-15 of NERPC. These figures are to be reviewed.

A. Peak Demand in MW

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	130	130	120	138	138
Assam	1380	1235	1320	1371	1382
Manipur	150	135	140	132	148
Meghalaya	390	385	360	400	400
Mizoram	79	78	84	85	85
Nagaland	130	120	119	120	120
Tripura	245	235	260	280	300
NER	**2455**	**2318**	**2403**	**2526**	**2573**

B. Peak Availability in MW

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	110	101	100	115	126
Assam	835	816	826	961	990
Manipur	109	105	106	127	129
Meghalaya	246	192	200	266	335
Mizoram	75	71	70	86	92
Nagaland	70	66	64	101	87
Tripura	275	272	270	374	377
NER	**1719**	**1623**	**1636**	**2030**	**2136**

C. Off Peak Demand in MW (08:00 Hrs)

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	72	72	70		
Assam	856	766	800		
Manipur	90	81	80		
Meghalaya	234	231	232		
Mizoram	51	51	50		
Nagaland	78	72	74		
Tripura	159	153	155		
NER	**1465**	**1426**	**1461**		

D. Off Peak Availability in MW (08:00 Hrs)

Name of State	Jan15	Feb15	Mar15	Apr15	May15
Ar. Pradesh	107	100	101		
Assam	817	796	799		
Manipur	102	98	97		
Meghalaya	240	216	220		
Mizoram	73	69	70		
Nagaland	68	64	65		
Tripura	271	268	270		
NER	**1465**	**1611**	**1622**		

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

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

Generating Station	Units running	MW	MU	Reservoir
Khandong				
Kopili				
Kopili-II				
Ranganadi			Subject to inflow	
Doyang				
Loktak				
AGBPP			-	-
AGTPP			-	-

Hydro generation planning for lean hydro period - On the onset of winter season reservoir levels in all the hydro stations have started depleting. Specially level of Loktak reservoir is very low and requires immediate reduction of generation. NERPC issued one letter to NHPC in this respect but no action is noticed. Proper planning is required to utilize the available water for entire lean hydro period, say upto May, 2015.

The Committee may discuss and approve the proposed shutdown by Generating Stations.

D.2 Water level and spillage data of Hydro Stations

Historical data of reservoir level & spillage data of hydro stations are not available with NERLDC. This information is sometimes asked by various authorities. To facilitate in making a database for the same, all concerned are requested to furnish the available information to NERLDC as early as possible.

During 101st OCC meeting, DGM, NERLDC informed that the format was sent to all the constituents for necessary submission of data. However, till date no constituents have submitted the data to NERLDC.

During 103rd OCC meeting, the Sub-committee once again requested all the constituents to furnish the data as per format given below to NERLDC at the earliest.

Water level format:

Year		FRL		MDDL	
Station	Month	Date	Water level	Generation in MU	Water utilized in cumecs

Water spillage format:

Year	Station					
Date	Inflow in cumecs	Status of spillage (Spilling/ Not spilling)	Duration		Total	
			From (Hrs.)	To (Hrs.)	Hrs.	Month

The Sub-committee once again requested all the constituents to furnish the data to NERLDC at the earliest.

D.3 Outage Planning Transmission elements

It was agreed in the 99th OCC meeting that shutdown will be availed only after approval is given by the OCC forum. It was also agreed that deferment/revision of outages elements other than already approved in OCC will be henceforth put/displayed in the website of NERPC (**under Operational Activities/OCC Approved shutdown**) as per CERC regulations/ CEA guidelines etc for ensuring smooth & secure grid operation.

Furnishing request of shut down of the element, which was approved by NERPC, by Indenting Agency (ISTS licensees/STUs/Generating Companies) to NERLDC: Planned shutdown approved by NERPC shall be considered for implementation by NERLDC on D-3 basis. If an outage is to be availed on say 10th of the month, the shutdown availing agency would reconfirm to NERLDC on 7th of the month by 10:00 Hr. This practice is necessary to ensure optimal capacity utilization and the time required for associated system study/coordination by/amongst RLDC/NLDC.

NERLDC informed that it has been observed that utilities are insisting for according approval for the shutdowns of elements which were approved in earlier OCC meeting without discussing/raising the proposals in latest OCC thereby colliding with the latest approved shutdown on many occasions resulting in system contingency. It is requested to put up afresh the proposals of shutdowns approved

in earlier OCC but could not be availed in the current OCC so that the same can be reviewed.

The sub-Committee may kindly discuss and approve the transmission line outages proposed by Constituents for January - February, 2015 as enclosed at Annexure- D.3.

D.4 Metering Error in Inter-Regional Lines:

During the 23rd CC Meeting, the issue of metering error has been discussed in detailed which are reproduced below:

NERLDC are yet to receive correct SEM readings from Bongaigaon for Bongaigaon-New Siliguri D/C lines. Same is status with Balipara-Bongaigaon D/C also where correct readings from both ends are yet to be received. A time drift status has been received from Bongaigaon duly signed by POWERGRID personnel and we can see time drift of 12 hours 23 minutes and 16 minutes respectively in two circuits of new inter-regional Bongaigaon-New Siliguri lines. Reading from meters with such drift is useless and will have no meaning.

Bongaigaon end meter reading of NPTC-Bongaigaon line showing negative polarity.

The forum felt that no seriousness from any quarter has been taken care to address the issue.

No pre-commissioning check at all before installation of meters which have been insisted many times.

Only option would be to take New Siliguri end reading in current week and in such case loss of the section will be loaded to NER and will have commercial implications.

Non-receipt of readings has created serious constraint in computation of data. Last week, even New Siliguri reading was not available and it has become a nightmare nowadays.

These are all violations of decision taken in CCM.

NERPC may look into it and take appropriate action.

NERLDC may be advised how to proceed with data processing, computation in such cases.

All concerned may be suitably appraised regarding lapses, commercial implications. If necessary, special meeting may be convened to address metering issues.

During 104th OCC meeting, DGM, NERTS informed that both the SEMs at Bongaigaon end of 400 KV Bongaigaon-New Siliguri D/C lines have been replaced DGM, NERLDC informed that correct reading pertaining to 400 KV Balipara - Bongaigaon D/C has not been received till date. Time drifts have also been noticed.

He stated that this is a matter of great concern. Moreover, installation of meters at NTPC end of 400 kV Bongaigaon(PG)- NTPC D/C line is still pending.

In addition, Kopili end SEM of Kopili-Misa III feeder is not giving correct reading since quite some time in-spite of NEEPCO is taking-up the matter repeatedly.

AGM, NTPC also stated that DCD at Bongaigoan has not been provided by NERTS.

DGM, NERTS stated that location for installation of SEMs/DCDs is under the jurisdiction of NERLDC and hence constituents should take up the matter with them accordingly.

SE(O) informed that during the 23rd CC Meeting 35 + 50 more SEMs/DCDs have been agreed to be procured by NERTS, once the meters are received by them installation will be done accordingly. Moreover, it was decided that NERTS has to check the meters before installation so that readings can be taken effectively.

Now, NERLDC intimated that there are many SEM related issues being faced in NER and we have been discussing these in OCC as well as CCM. Please refer item 8.5 of minutes of 23rd. CCM (attached) where there are many time bound activities. In the meeting, NERLDC made a presentation highlighting metering issues.

The deadline for resolution no. 3 has already elapsed but we have no information about requisite action taken.

If the actions are not taken as per decision, we shall land into more trouble.

To take care of this, it is proposed that NERPC may convene a monthly meeting on metering issues where NERTS, NERLDC and constituents may be present. We can review status of various issues on regular basis.

If we do not take action urgently, there might be serious problem in accounting having huge financial implication.

Members may kindly discuss.

D.5 20th Transmission Planning:

SE (O) NERPC informed that a joint Standing Committee meeting on Power System Planning for all regions was convened by Chairperson, CEA on 22nd September, 2014 at NRPC, New Delhi. In the meeting the 20-year Transmission Perspective Plan (2014-34) for all the five regions were discussed.

He requested that the following information/data is currently required from each State/Utility of each region may kindly be furnished at the earliest.

Sl. No	Plan	By end of 12th Plan (upto 2017)			By end of 13th Plan (upto 2022)		
State/Utility:							
1	Peak Demand (MW)						
2	Demand Behaviour (profile for season-wise & Annual)	Summer (Peak & Off-peak)	Monsoon (Peak & Off-peak)	Winter (Peak & Off-peak)	Summer (Peak & Off-peak)	Monsoon (Peak & Off-peak)	Winter (Peak & Off-peak)
3	Generation Project target schedule						
4	Transmission Projects (220 kV & above) target schedule						
5	Transformer Capacity addition (220/132 kV & above) target schedule						

D.6 Low Voltage at Loktak (Manipur) & Mizoram:

During 104th OCC meeting, representative from Loktak informed that low voltage still persist in Loktak sub-station and requested the forum to look into the matter.

The Sub-Committee requested NHPC to install the capacitor bank in order to arrest the low voltage.

Meanwhile, NHPC vide letter dated 30.12.2014 has intimated that still low voltage is persisting. They also mentioned that Loktak power station is trying to feed maximum MVAR up to the extent of the capability of generator and on 29.12.2014 they have to run their second unit unscheduled to meet the reactive power requirement by injecting maximum MVAR, but after all effort the grid voltage was found to be in order of 90kV or even lower sometimes.

Due to low grid voltage on 30.12.2014, the generating unit tripped on excitation fault and Loktak power station is not able to run the generating unit as per schedule.

Further, NERLDC informed that severe low voltage problem at Imphal (PG), Loktak and nodes of Manipur system has been observed during outage of 132 kV Dimapur – Imphal line or 132 kV Loktak – Jiribam line. It was informed by P&E, Mizoram that low voltage problem at nodes of Mizoram system has been observed.

It is required to install capacitor banks in 33 kV nodes of Manipur & Mizoram system to improve voltage profile of these nodes. Study results for installation of capacitor banks at nodes of Manipur & Mizoram system are attached at **Annexure-D.6.**

For information of members of Manipur and Mizoram

D.7 Automatic Demand Management Scheme (ADMS):

NER states are supposed to implement Automatic Demand Management Schemes in their respective control areas for automatic disconnection of loads in case of exigencies, in line with IEGC stipulations in clause-5.4.2(d). The matter was raised and deliberated in 101st OCC meeting. So far no intimation received from the States regarding the action taken in this respect. A presentation on the subject was supposed to be arranged by NERPC.

During 104th OCC meeting, the issue has been discussed in detailed and the Sub-committee advised constituents to file the petition to Hon'ble CERC stating the difficulties faced by them in implementation of ADMS

Members may kindly discuss.

D.8 Enhancement of Load-ability of lines:

As per Transmission Planning Criteria of CEA, Panther and Zebra conductor should be able to carry current upto 400 and 600 Amps approximately [Ambient /Max Conductor capacity 40º/75º respectively]. The equivalent AAAC conductor would also be capable more or less the same loading if not more. However it is observed that the lines mentioned at **Annexure – D.8 (I**) are under loaded, vis a vis above limits, due to restriction imposed by terminal equipment[CT and protection element]. The capacity of the lines is required to be enhanced as per Transmission Planning Criteria of CEA by arranging appropriate terminal equipment for safe, secure & economic operation of NER Grid. Study results for peak hours under various conditions/scenario are attached as per **Annexure – D.8 (II).**

Members may kindly discuss.

D.9 Assessment of Inter State Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor:

As per Clause No. 4.1 of 'Detailed Procedure for Relieving Congestion in Real Time Operation', SLDC shall assess TTC, TRM and ATC on it's inter-state transmission corridor considering a mesh intra-state corridor for import or export of power with the Inter-state Transmission system (ISTS).

SLDCs of NER are accordingly requested to assess the above on monthly basis, 5 months in advance (eg: TTC/TRM/ATC for the month of November to be calculated by 15th of July), for further assessment of TTC, ATC and TRM of NER –ER corridor by NERLDC/NLDC and for assessment of TTC / ATC for a group of control areas, individual control areas within the region and state-control-area to state-control-area by NERLDC, whenever required.

SLDCs are requested to send study results for Peak (Export & Import) & Off Peak (Export & Import) along with assumptions in details and 6 nos *.sav case files (Base Case for Peak & Off Peak, Off Peak & Peak Export & Off Peak & Peak Import) to

NERLDC by 15th of the month for the fifth month. All India *.sav case files have been sent to SLDCs which may be used while computing TTC, ATC & TRM for their state control area.

Members may kindly discuss.

D.10 Restoration Procedure of NER Grid:

The "Restoration Procedure of NER Grid" has been finalized & uploaded in NERLDC website. In this connection a seminar on restoration procedure will be organized by NERLDC in Guwahati on 4th February, 2015. All the SLDCs are requested to give small presentations (10-20 minutes) in the seminar regarding their own system for the knowledge of all other utilities. All the utilities of NER are requested to please nominate at least two participants, for the Seminar, who are associated with the system operation.

Members may kindly discuss.

D.11 Consent for STOS bilateral transaction:

It has been observed in several occasions that the consent for bilateral transaction is being given by STU or Commercial departments of State utilities instead of SLDC as per regulation. This is creating confusions and Nodal RLDCs are hesitating to process the applications. All concerned are requested to kindly ensure consent for SLDC only.

Members may kindly discuss.

D.12 High loading of 400/220 kV, 315 MVA ICT at Bongaigoan:

It has been observed that 400/220 kV, 315 MVA ICT at Bongaigaon is highly loaded at peak hours. In case of tripping of this ICT, Capital area, Dhaligaon area & Samaguri area of Assam & Nangalbibra area of Meghalaya & part of North Bengal & Bhutan system may be collapsed. To ensure safe, secure & reliable operation of this areas of NER, SPS based load shedding in above areas of NER is to be designed. AEGCL & Me. PTCL are requested to identify load which can be disconnected through this SPS after tripping of this ICT. Study results are attached at **Annexure – D.12.**

Members may kindly discuss.

D.13 SPS for AGTPP after commissioning of Pallatana (2nd Module), Monarchak and AGTPP (new units):

It has been observed from study results that after commissioning of Palatana 2nd Module, Monarchak Unit I & II and AGTPP Unit 5 & 6, 132 kV AGTPP – Kumarghat, 132 kV Monarchak – Udaipur, 132 kV Baramura – Teliamura & 132 kV Teliamura-Ambassa lines will be highly loaded. In case of tripping of 132 kV AGTPP - Kumarghat line, following lines will be overloaded;

a. 132 kV Monarchak - Udaipur : 72 MW
b. 132 kV Dhalabil - Agartala : 84 MW
c. 132 kV Dhalabil - Kamalpur : 79 MW
d. 132 kV Baramura - Teliamura : 88 MW
e. 132 kV Teliamura - Ambassa : 86 MW
f. 132 kV PK Bari - Kumarghat : 92 MW
g. 132 kV PK Bari - Ambassa : 81 MW
h. 132 kV PK Bari - Kamalpur : 76 MW

To contain loading of the above lines, two units of AGTPP needs to be tripped on SPS. Study results are attached at **Annexure – D.13.**

Members may kindly discuss.

D.14 Overdrawal by States:

It is observed that whenever Palatana trips NER beneficiaries overdraw which is understandable for short period considering Palatana is the biggest Unit in the region. However one or two States continue to overdraw more 100% over long period of time despite various reminders from NERLDC putting the whole Grid in jeopardy. As a chain is as strong as the weakest link, indiscipline by one or two States could negate the whole good works done by majority of the States who have taken suitable actions to remain within schedule. All stake holders once again requested to corporate with NERLDC in the matter and maintain grid discipline in the overall interest.

Members may kindly discuss.

D.15 Furnishing of Technical & Commercial Data for Computation of PoC Charges & Losses for 1st Quarter of 2015-16 (April – June, 2015):

As per provisions of the CERC (Sharing of Inter State Transmission Charges and Losses) Regulations, 2010, the following data are required for Computation of PoC Charges & Losses for 1st Quarter of 2015-16 (Apr'15 to Jun'15)

1. Technical details of new transmission elements and generating units which are expected to commence commercial operation during Apr15 to Jun15 as per **Format – D.15 (II)**

2. Yearly Transmission Charges as per Format **Format – D.15 (I)**

3. Nodal Generation information and forecast withdrawal data as per Format **Format – D.15 (III)**

The detailed data formats for the data submission are available on the website of Implemented Agency i.e. NLDC in MS Excel format and may be downloaded from the following link :-

http://posoco.in/transmission pricing/formats

Filled up formats may be sent in soft copy to NLDC through e-mail to implementingagency@powergrid.co.in or implementingagency@posoco.in. A written communication confirming the furnishing of data by e-mail to NLDC may also be sent.

Implementing Agency letter in this regard has been issued and is attached herewith.

For information and needful action of members

D.16 Estimated Transmission Availability Certificate (TAC) for the month of December, 2014.

The Estimated Transmission System Availability for the month of December, 2014, furnished by PGCIL, is **99.9820%.** The detail outage data for calculation of Transmission System Availability furnished by PGCIL, is at **Annexure D.16.** NER constituents are requested to kindly communicate their views and observations, if any, by 28th January, 2015 so that Final TAC for the month of December, 2014 may be finalized by NERPC Secretariat.

Procedure for calculation of Transmission system availability factor for a month as per CERC Regulation 2014-19.

The OCC/PCC forum has agreed the procedure for calculation and mechanism to be submitted by the utilities and NERLDC/NERPC will adhere to the earlier decision while finalizing and certification of TAC.

Further, in respect of Availability verification of ISTS elements, it is requested that POWERGRID & NETC may furnish DR outputs and relay indication at both ends of a transmission line for every tripping case. Also, the justifications pertaining to tripping may be furnished in excel format sorted date and time wise. In Case tripping due to lightning stroke appropriate evidence in form of DR/ Lightening counter increment/certification by concerned station may be provided.

During 104th OCC meeting, POWERGRID raised the issue of delay in issuing of TAC by NERPC and requested to modify the time frame so that TAC can be issued on time.

After detailed deliberation the time frame for issuing of TAC for December, 2014 is given below:

1. NERTS/NETC should furnish the TAC data for December, 2014 along with reasons/justifications latest by 07.01.2015. However, NERLDC may provide the additional outage data latest by 03.01.2015.
2. Matter shall be discussed in OCC meeting scheduled to be held in January, 2015

3. NERPC will circulate though mails to all the constituents to study and give their comments/observations by 27/28th January, 2015.

4. NERLDC will verify the data of December, 2014 by 30/31, January, 2015 after receiving comments/observations from constituents.

5. NERPC will finally issue the TAC for December, 2014 by first week of February, 2015.

6. NERTS/NETC may give their opinions/observations if any in the OCC meeting to be held on February, 2015.

This time frame will be followed for all TACs in future.

For kind information.

However, NERLDC informed that NERTS has not furnished TAC data of even October and November, 2014 till now which was supposed to be submitted in 104th OCC in December first week.

During 104th OCC meeting in item no. D-16, it was decided that NERTS will submit TAC data for December, 2014 along with reasons/justifications latest by 07.01.2015.

It may kindly be appreciated that such irregular submission of information with inordinate delay will cause delay in further processes. It has been emphasized on many occasions to submit data on monthly basis so as to streamline the process but no action has been taken till now.

Members may kindly be discussed.

Any other item:

Date and Venue of next OCC

It is proposed to hold the 106th OCC meeting of NERPC on second week of February, 2015. The exact venue will be intimated in due course.

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Annexure C.6

Sl. No.	Name of Substations/ Power Stations	Geographical Coordinates	
		Latitude	Longitude
I. अरुणाचल प्रदेश / Arunachal Pradesh			
1	Pasighat		
II. असम / Assam			
1	Barnagar		
2	BRPL		
3	Ghoramari		
4	□PC□Jagiroad		
5	□PC□Panchgram		
6	Star Cement		
7	CALC□M		
III. मेघालय / Meghalaya			
1	Ampati		
2	CMCL		
3	Greystone		
4	GVIL Cement		
5	□ill Cement		
6	JUD Cement		
7	Lad Nongkrem		
8	Maithan		
9	MCL		
10	Mega Carbide		
11	Mendipathar		
12	MPL		
13	Mustem		
14	Nalari		
15	Sai Prakash		
16	Shyam Century		
17	Trishul		

Annexure C.7

Sl. No.	Name of Substations/ Power Stations
I. नीपको / NEEPCO	
1	AGBPP
2	AGTPP
3	Doyang
4	Kameng
5	Khandong
6	Khupi
7	Kopili
8	Monarchak
9	Pare
10	Ranganadi
11	Tuirial
II. एनएचपीसी / NHPC	
1	Lower Subansiri
III. अरुणाचल प्रदेश / Arunachal Pradesh	
1	Pasighat
IV. असम / Assam	
1	Bihaiting
2	BRPL
3	BTPS
4	Ghoramari
5	HPC,Jagiroad
6	HPC,Panchgram
7	Jawaharnagar GIS
8	Sonabil
9	Sonapur
10	Star Cement
11	CALCOM
12	Umranshu
V. मणिपुर / Manipur	
1	Chandel
2	Churachandpur
3	Hundung

Sl. No.	Name of Substations/ Power Stations
V. मणिपुर / Manipur	
4	Imphal (Yurembam)
5	Jiribam
6	Kakching
7	Karong
8	Kongba
9	Ningthoukhong
10	Rengpang
11	Thanlon
12	Yaingangpokpi
VI. मेघालय / Meghalaya	
1	Adhunik Cement
2	Ampati
3	CMCL
4	Greystone
5	GVIL Cement
6	Hill Cement
7	JUD Cement
8	Lad Nongkrem
9	Leshka
10	Lumsnong
11	Maithan
12	MCL
13	Mega Carbide
14	Mendipathar
15	MPL
16	Mustem
17	Nalari
18	New Umtru
19	Sai Prakash
20	Sonapani
21	Shyam Century
22	Trishul

Sl. No.	Name of Substations/ Power Stations
VI. मेघालय / Meghalaya	
23	Umiam St I
VII. मिज़ोरम / Mizoram	
1	Sinhmui
VIII. नागालैंड / Nagaland	
1	Chumukedima
2	Dairy Farm
3	Ganeshnagar
4	Mon
5	Nagnimora
6	Nito Farm
9	Power House
10	Tizit
11	Tuensang
12	Tuli
14	Zunheboto
IX. त्रिपुरा / Tripura	
1	Amarpur
2	Badarghat
3	Bagafa
4	Baramura
5	Baxanagar
6	Belonia
7	Bishramganj
8	Gokulnagar (Bishalgarh)
9	Gumti
10	Jatanbari
11	Ompi
12	Rabindranagar
13	Rokhia
14	Sabroom
15	Satchand
16	Teliamura (Gamaitilla)

Annexure- C.8

DRAFT

ABSTRACT OF STATEWISE/SYSTEMWISE/CONSTITUENTWISE PEAK DEMAND- vs- AVAILABILITY
IN NORTH EASTERN REGION FOR THE PERIOD FROM APRIL-2015 TO MARCH-2016

(ALL FIGURES IN MW & NET)

SL.NO	P A R T I C U L A R S	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16
1	ARUNACHAL PRADESH												
	i) NET MAX DEMAND	138	138	133	133	138	143	139	128	128	133	133	143
	ii) NET POWER AVAILABILITY- Own Source	2	2	2	6	6	6	4	4	2	2	2	2
	- Central Sector	113	123	147	142	136	137	132	114	111	106	108	115
	iii) SURPLUS(+)/DEFICIT(-)	-23	-12	17	16	5	0	-2	-10	-14	-25	-22	-25
2	ASSAM												
	i) NET MAX DEMAND	1371	1382	1439	1469	1510	1428	1408	1464	1479	1407	1259	1408
	ii) NET POWER AVAILABILITY- Own Source	211	211	271	271	271	271	271	211	211	211	211	211
	Central Sector	751	779	893	880	842	848	853	772	744	713	720	767
	iii) SURPLUS(+)/DEFICIT(-)	-410	-392	-275	-318	-397	-309	-284	-481	-524	-484	-328	-430
3	MANIPUR												
	i) NET MAX DEMAND (OWN)	132	148	138	143	149	149	154	149	149	165	148	154
	ii) NET POWER AVAILABILITY- Own Source	5	5	5	5	5	5	5	5	5	5	5	5
	- Central Sector	121	124	149	157	153	152	151	127	128	119	120	126
	iii) SURPLUS(+)/DEFICIT(-)	-6	-19	17	19	10	9	2	-16	-15	-41	-23	-22
4	MEGHALAYA												
	i) NET MAX DEMAND	400	400	400	400	395	400	410	420	425	425	420	410
	ii) NET POWER AVAILABILITY- Own Source	50	110	121	216	244	265	183	109	83	69	70	55
	Central Sector	216	225	257	254	244	246	248	224	215	206	208	221
	iii) SURPLUS(+)/DEFICIT(-)	-134	-65	-22	70	93	111	21	-87	-127	-150	-142	-134
5	MIZORUM												
	i) NET MAX DEMAND	85	85	90	90	90	90	90	95	85	85	85	95
	ii) NET POWER AVAILABILITY- Own Source	14	17	20	25	25	25	20	15	15	14	13	12
	Central Sector	72	75	88	88	84	84	84	74	72	68	70	74
	iii) SURPLUS(+)/DEFICIT(-)	1	7	18	23	19	19	14	-5	2	-2	-2	-9
6	NAGALAND												
	i) NET MAX DEMAND	120	120	120	135	130	135	140	130	130	135	125	135
	ii) NET POWER AVAILABILITY- Own Source	9	12	15	20	20	20	15	10	10	9	8	7
	Central Sector	92	75	88	88	84	84	84	74	72	68	70	74
	iii) SURPLUS(+)/DEFICIT(-)	-19	-33	-17	-27	-26	-31	-41	-46	-48	-58	-47	-54
7	TRIPURA												
	i) NET MAX DEMAND	280	300	300	305	305	300	340	295	275	270	260	300
	ii) NET POWER AVAILABILITY- Own Source	94	109	109	114	114	114	114	114	109	109	109	109
	Central Sector	265	268	287	289	284	285	284	269	267	260	263	268
	iii) SURPLUS(+)/DEFICIT(-)	78	77	96	98	93	99	58	88	101	99	112	77
8	NORTH EASTERN REGION												
	i) NET MAX DEMAND	2526	2573	2619	2675	2716	2644	2681	2680	2670	2620	2430	2644
	ii) SIMULTANEOUS MAX.DEMAND	2477	2523	2568	2623	2663	2592	2629	2627	2618	2568	2383	2592
	CONSIDERING 1.02 AS DIVERSITY FACTOR												
	iii) NET POWER AVAILABILITY- Own Source	385	466	543	657	685	706	612	468	435	419	418	401
	Central Sector	1630	1670	1909	1898	1828	1836	1836	1654	1610	1540	1559	1645
	SURPLUS(+)/DEFICIT(-)	-512	-437	-166	-120	-203	-101	-233	-557	-625	-661	-453	-598

DRAFT

ABSTRACT OF STATEWISE/SYSTEMWISE/CONSTITUENTWISE ENERGY REQUIREMENT- vs- AVAILABILITY
IN NORTH EASTERN REGION FOR THE PERIOD FROM APRIL-2015 TO MARCH-2016

(ALL FIGURES IN MU & NET)

SL.NO	P A R T I C U L A R S	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	TOTAL 2014-15
1	ARUNACHAL PRADESH													
	i) NET ENERGY REQUIREMENT	66	70	67	67	72	72	72	67	67	67	57	72	816
	ii) NET ENERGY AVAILABILITY- Own Source	5	5	4	6	6	6	6	4	4	3	3	4	56
	- Central Sector	45	52	64	83	80	73	60	50	46	44	39	44	679
	iii) SURPLUS(+)/DEFICIT(-)	-16	-13	1	22	14	7	-6	-13	-17	-20	-14	-24	-81
2	ASSAM													
	i) NET ENERGY REQUIREMENT	640	745	790	845	845	840	800	675	690	700	625	725	8920
	ii) NET ENERGY AVAILABILITY- Own Source	116	128	148	178	184	180	154	133	132	106	96	103	1658
	- Central Sector	404	426	487	570	554	516	490	438	430	414	375	422	5523
	iii) SURPLUS(+)/DEFICIT(-)	-120	-191	-156	-97	-106	-144	-157	-104	-128	-180	-155	-201	-1738
3	MANIPUR													
	i) NET ENERGY REQUIREMENT	65	65	70	75	75	75	75	75	75	80	65	70	865
	ii) NET ENERGY AVAILABILITY- Own Source	4	4	4	4	4	4	4	4	4	4	4	4	43
	- Central Sector	62	65	75	97	97	92	86	76	72	68	58	64	911
	iii) SURPLUS(+)/DEFICIT(-)	1	4	8	26	26	20	15	4	0	-9	-3	-3	89
4	MEGHALAYA													
	i) NET ENERGY REQUIREMENT	165	170	160	170	170	165	180	190	200	210	180	185	2145
	ii) NET ENERGY AVAILABILITY- Own Source	29	64	70	128	145	153	109	63	50	41	37	32	921
	- Central Sector	117	124	141	166	162	151	144	129	126	121	109	122	1612
	iii) SURPLUS(+)/DEFICIT(-)	-19	18	51	124	137	139	73	2	-25	-48	-33	-30	388
5	MIZORUM													
	i) NET ENERGY REQUIREMENT	40	40	40	42	42	40	45	45	42	43	37	44	500
	ii) NET ENERGY AVAILABILITY- Own Source	6	10	10	11	11	10	10	7	6	7	6	7	100
	- Central Sector	37	39	45	55	54	50	46	41	39	37	34	38	514
	iii) SURPLUS(+)/DEFICIT(-)	2	9	15	24	23	20	11	2	4	1	3	1	115
6	NAGALAND													
	i) NET ENERGY REQUIREMENT	60	60	65	65	65	65	65	65	65	65	65	65	770
	ii) NET ENERGY AVAILABILITY- Own Source	1	4	6	12	16	16	12	8	5	4	3	2	89
	- Central Sector	46	39	45	55	54	50	46	41	39	37	34	38	524
	iii) SURPLUS(+)/DEFICIT(-)	-12	-18	-14	2	5	1	-7	-16	-21	-24	-28	-25	-157
7	TRIPURA													
	i) NET ENERGY REQUIREMENT	115	125	125	130	130	130	130	120	130	135	110	135	1512
	ii) NET ENERGY AVAILABILITY- Own Source	28	35	31	34	35	32	36	30	34	35	22	34	385
	- Central Sector	169	176	181	200	198	190	189	177	179	175	159	175	2167
	iii) SURPLUS(+)/DEFICIT(-)	83	86	87	104	103	92	94	87	83	75	71	74	1039
8	NORTH EASTERN REGION													
	i) NET ENERGY REQUIREMENT	1151	1274	1316	1394	1399	1387	1367	1237	1269	1300	1139	1296	15528
	ii) NET ENERGY AVAILABILITY- Own Source	190	248	272	373	400	401	330	248	234	199	171	185	3253
	- Central Sector	879	920	1037	1226	1200	1121	1061	951	931	896	807	903	11931
	iii) SURPLUS(+)/DEFICIT(-)	-82	-106	-7	205	201	135	25	-38	-104	-205	-160	-209	-344
	MU/DAY	38	41	44	45	45	46	44	41	41	42	41	42	43

Annexure-C.9

Unit Wise RGMO Status Details (Participating in RGMO)

Sl No	Utility	Power Station to be under RGMO	Hydro/ Thermal	Unit No	Capacity	Declared by Plant that Unit under RGMO		Telemetry Status
						PARTICIPATING	PARTICIPATING Response/Test Not Observed	
NORTH EASTERN REGION								
104	NEEPCO	RHEP	H	1	135	YES	Not tested	ok
105				2	135	YES	Not tested	ok
106				3	135	YES	Not tested	ok
107		KOPILI	H	1	50	No		ok
108				2	50	No		ok
109				3	50	No		ok
110				4	50	No		ok
111		KHANDONG	H	1	25	No		ok
112				2	25	No		ok
113		KOPILI STG-II	H	1	25	No		ok
114		DOYANG	H	1	25	No		ok
115				2	25	No		ok
116				3	25	No		ok
117	ASEB	LANGPI	H	1	50	No		Not Available
118				2	50	No		Not Available
	MeECL	UMIUM STG III	H	1	30	No		0k
				2	30	No		0k
		UMIUM STG IV	H	1	30	YES	Not tested	0k
				2	30	YES	Not tested	0k
		MLHEP	H	1	42	YES	Not tested	Not Available
				2	42	YES	Not tested	Not Available
NORTH EASTERN REGION-ISGS								
211	NHPC	LOKTAK	H	1	35	No		ok
212				2	35	No		ok
213				3	35	No		ok
IPP								

Annexure D.8.I

Line Loading Enhancement Requirement

Sl No	Name of Transmission Line	Transmission Line/ Generator under outage	Contingency
1	132 kV AGTPP – Agartala I	132 kV AGTPP - Kumarghat	N-1 : 132 kV AGTPP -Agartala II
	132 kV AGTPP – Agartala II	132 kV AGTPP - Kumarghat	N-1 : 132 kV AGTPP -Agartala I
2	132 kV AGTPP – Kumarghat	132 kV AGTPP – Agartala I	N-1 : 132 kV AGTPP -Agartala II
3	132 kV Badarpur – Jiribam	Nil	N-1 : 400 kV Silchar - Azara
4	132 kV Badarpur – Khliehriat	Nil	N-1 : 400 kV Silchar - Azara
5	132 kV Badarpur – Khliehriat	Palatana & 400 kV Silchar- Azara	N-1 : 400 kV Silchar - Byrnihat
6	132 kV Badarpur – Panchgram	Nil	N-1 : 132 kV Badarpur - Silchar D/C
7	132 kV Badarpur – Kolasib	132 kV Jiribam - Aizawl	N-1 : 132 kV Kumarghat - Aizawl
8	132 kV Dimapur – Imphal	Nil	N-1 : 132 kV Loktak - Jiribam
9	132 kV Dimapur – Imphal	Nil	N-1 : 132 kV Loktak - Jiribam
10	132 kV Jiribam – Aizawl	132 kV Aizawl - Kolasib	N-1 : 132 kV Kumarghat - Aizawl
11	132 kV Khandong – Khliehriat I	Nil	N-1 : 132 kV Khandong - Khliehriat II
	132 kV Khandong – Khliehriat II	Nil	N-1 : 132 kV Khandong - Khliehriat I
12	132 kV Khliehriat(PG) – Khliehriat I	Nil	N-1 : 132 kV Khliehriat (PG) – Khliehriat II
	132 kV Khliehriat(PG) – Khliehriat II	Nil	N-1 : 132 kV Khliehriat (PG) – Khliehriat I
13	132 kV Killing – EPIP II -I	Nil	N-1 : 132 kV Killing – EPIP II -II
	132 kV Killing – EPIP II -II	Nil	N-1 : 132 kV Killing – EPIP II -I
14	132 kV Kopili – Khandong I	Nil	N-1 : 132 kV Kopili - Khandong II
	132 kV Kopili – Khandong II	Nil	N-1 : 132 kV Kopili - Khandong I
15	132 kV Kumarghat – Aizawl	132 kV Kolasib - Aizawl	N-1 : 132 kV Jiribam - Aizawl
16	132 kV Loktak – Jiribam	Nil	N-1 : 132 kV Dimapur - Imphal S/C and
17	132 kV Loktak – Jiribam	Nil	N-1 : 132 kV Dimapur - Imphal
18	132 kV Loktak – Imphal	Nil	N-1 : 132 kV Loktak - Ningthoukong
19	132 kV Loktak – Ninghoukong	Nil	N-1 : 132 kV Loktak - Imphal
20	132 kV Palatana – Udaipur	Nil	N-1 : 132 kV Palatana - Surjamaninagar
21	132 kV Palatana – Surjamaninagar	Nil	N-1 : 132 kV Palatana - Udaipur
22	132 kV Ranganadi – Nirjuli	Nil	Nil
23	132 kV Silchar – Srikona I	Nil	N-1 : 132 kV Silchar - Srikona II
	132 kV Silchar – Srikona II	Nil	N-1 : 132 kV Silchar - Srikona I

Annexure D.8.I

Sl No	Name of Transmission Line	Transmission Line/ Generator under outage	Contingency
24	132 kV BTPS – Dhaligaon I	Nil	N-1 : 132 kV BTPS – Dhaligaon II
	132 kV BTPS – Dhaligaon II	Nil	N-1 : 132 kV BTPS – Dhaligaon I
25	132 kV Balipara – Depota	Nil	Nil
26	220 kV Mariani(AS) – Misa	220 kV Mariani(PG) - Misa	Nil
27	220 kV Misa – Samaguri I	Nil	N-1 : 220kV Misa-Samaguri II
	220 kV Misa – Samaguri II	Nil	N-1 : 220kV Misa-Samaguri I
28	220 kV AGBPP – Mariani	220 kV AGBPP - Tinsukia I & II	N-1 : 220 kV AGBPP-Mariani(PG)