North Eastern Regional Power Committee

MINUTES OF THE 111st OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date: 15/07/2015 (Wednesday)

Time **:** 10:00 hrs

Venue **:** "Hotel Pragati Manor", Guwahati.

The List of Participants in the 111st OCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 111st OCC meeting. He expressed the satisfaction regarding the full participation by the members in OCC Sub-committee but once again mentioned that attendance in other Sub-committee is not satisfactory. He stated that all the Sub-committee meetings of NERPC are very important and unless full participation from the constituent members, the issues could not be discussed and resolved. He further stated that the issue of non-participation by the members may be highlighted in the coming TCC/RPC meetings if situation will not be improved. He again requested that all the pending issues should be discussed in thread bear and get it resolved and not to be repeated again and again. He requested all the members to actively participate in the discussion for fruitful outcome of the meeting.

Thereafter, Member Secretary requested Shri B. Lyngkhoi to take up the agenda items for discussion.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 110th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

SE(O) informed that the minutes of 110th meeting of Operation Sub-committee held on 17th June, 2015 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2015/4556-4591 dated 26th June, 2015.

Tripura requested for amendment in **Item No. C.1** - regarding evacuation of Monarchak GBPP of NEEPCO & wanted to incorporate the same as below:

Recorded:

In present scenario with present line, evacuation of power from Monarchak has no problem and the 132kV Monarchak – Surjamaninagar will be completed by December, 2015.

Amendment to be Recorded:

Sr. Manager, TSECL stated that with present scenario, evacuation of power from Monarchak is not a problem, but problem may occur during winter season when the State demand falls. In that condition 132kV Agartala-Dhalabil & 132kV Baramura-Gamaitila will be highly over loaded. Situation will worsen if AGTPP combined cycle plant with additional – 46-52 MW generation and 400kV P.K. Bari – Silchar (charged at 132kV) is added to the system and hence alternative line has to be constructed to address the problem.

After detailed discussion, the sub-committee requested Tripura to send the agenda for above issue so that the issue can be discussed in the next TCC/RPC meetings.

Since no other comments/observations were received from the constituents, the Sub-committee confirmed the minutes of 110th OCCM of NERPC.

I T E M S F O R D I S C U S S I O N

B.1. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING JUN, 2015

As per the data made available by NERLDC, the grid performance parameters for June, 2015 are given below:

NER PERFORMANCE DURING JUNE, 2015

	Energy Met (MU)		w.r.t. May,15 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. May,15 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In June, 15
States	**Jun-15**	**May-15**		**Jun-15**	**May-15**		
Ar. Pradesh	37	**37**	0.0	39	**56**	-30.8	-5
Assam	687	**668**	2.8	736	**798**	-7.7	-7
Manipur	59	**60**	-1.7	61	**69**	-11.9	-4
Meghalaya	130	**130**	-0.6	137	**143**	-4.6	-5
Mizoram	36	**37**	-1.7	37	**40**	-6.7	-3
Nagaland	62	**61**	0.4	63	**62**	+1.6	-2
Tripura	105	**93**	12.6	108	**118**	-8.3	-3
Region	**1116**	**1087**	**2.6**	**1181**	**1287**	**-8.2**	**-6%**

States	Demand Met (MW)		w.r.t. May,15 % inc (+) /dec (-)	Demand in (MW)		w.r.t. May,15 % inc (+) /dec(-)	% inc (+) /dec (-) of Demand vs met. In June, 15
	Jun-15	**May-15**		**Jun-15**	**May-15**		
Ar. Pradesh	108	**109**	-0.9	110	**138**	-20.6	-2
Assam	1324	**1260**	5.1	1395	**1382**	0.9	-5
Manipur	147	**153**	-3.9	149	**160**	-7.1	-1
Meghalaya	295	**295**	0.0	302	**400**	-24.6	-2
Mizoram	81	**84**	-3.6	82	**85**	-4.1	-1
Nagaland	120	**112**	7.1	123	**120**	2.5	-2
Tripura	249	**254**	-2.0	249	**300**	-16.9	0
Region	**2190**	**2185**	**0.2**	**2356**	**2573**	**-8.4**	**-7%**

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Jun-15**	**May-15**
Total Generation in NER (Gross)	1095	860
Total Central Sector Generation (Gross)	762	570
Total State Sector Generation (Gross)	334	290
Inter-Regional Energy Exchange		
(a) NER-ER	48.30	6.76
(b) ER-NER	114.83	276.34
© Net Import	66.53	269.58

AVERAGE FREQUENCY (Hz)

Month---->	**Jun-15**	**May-15**
	% of Time	% of Time
Below 49.9 Hz	9.2	15.82
Between 49.9 to 50.05 Hz	64.17	64.74
Above 50.05 Hz	26.63	19.44
Average	50.01	49.98
Maximum	50.55	50.55
Minimum	49.56	49.55

Deliberation of the Sub-Committee

NERLDC gave presentation on Grid Performance of NER during June, 15. NERLDC informed that Assam sold 182 MU and imposed loading shedding of 65 MU during the month June, 15. It was observed that Assam was selling power vis a vis imposing load shedding in their area. AEGCL informed that they have to impose load shedding sometimes due to real time downward revision of ISGS generation. NERLDC requested to SLDCs of NER to furnish load shedding & category-wise shortfall figures in MW as well as MU on daily basis with reasons for sending these data to MOP, CEA and NERPC etc.

The Summary of Messages issued by NERLDC for the constituents of NER for the Month of June, 2015 is given as below:

Constituents	Deviation Violation Message			Zero crossing Violation Message			Frequency Violation Message		
	Alert	Emergency	Total	Alert	Emergency	Total	Alert	Emergency	Total
AP	0	2	**2**	5	29	**34**	6	2	**8**
Assam	15	53	**68**	4	11	**15**	7	3	**10**
Manipur	0	0	**0**	2	6	**8**	4	2	**6**
Meghalaya	0	2	**2**	1	4	**5**	1	0	**1**
Mizoram	0	1	**1**	2	20	**22**	6	2	**8**
Nagaland	0	1	**1**	0	11	**11**	5	3	**8**
Tripura	2	22	**24**	2	4	**6**	4	1	**5**
AGBPP	0	0	**0**	0	0	**0**	0	1	**1**
AGTPP	0	0	**0**	0	0	**0**	0	0	**0**
RHEP	0	0	**0**	0	0	**0**	0	0	**0**
KOPILI	0	0	**0**	0	0	**0**	0	0	**0**
KHANDONG	0	0	**0**	0	0	**0**	0	0	**0**

The Sub-committee noted as above.

FOLLOW UP ACTION

C.1 Status of Generating Units, Transmission Lines in NER:

The Sub-committee also reviewed the status of commissioning first unit of NTPC at Bongaigaon, Transmission lines of POWERGRID. The status as informed by NTPC, NEEPCO and POWERGRID is as follows:

SN	Items	Status as given in 111st OCC Meeting	Status as on 110th OCC
1	Trial operation and CoD of Unit -I of Bongaigoan TPS of NTPC	Trial Run of Unit -# I was successfully carried out on 22nd June, 2015. COD is expected by December, 2015	Expected Date for Synchronization of Unit -# I by 30th June, 2015. COD is expected by December, 2015

2	400/220kV, 2x315 MVA ICT of NTPC at Bongaigaon	August, 2015 NTPC requested NERPC to write to their management about the urgency of commissioning of above ICT.	July, 2015
3	Trial operation and CoD of STG –I & II of AGTPP of NEEPCO (2 x 25.5 MW)	Trial Run for STG-II 22.07.2015. STG-I trial run with one boiler is August, 2015.	COD for STG – II: End of June, 2015. COD for STG – I: July/ August, 2015.
4	Trial operation and CoD of Monarchak GBPP of NEEPCO	Metering, telemetry, machine data, Connectivity agreement to be signed soon by Tripura. Synchronization depends upon availability of gas. December, 2015 Refer to TCC	Connectivity agreement to be signed soon by Tripura. Tripura informed that with present line, evacuation of power from Monarchak has no problem and the 132 kV Monarchak – Surjamaninagar will be completed by December, 2015.
5	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	November, 2016 April, 2017	-
6	Pare HEP of NEEPCO (2 x 55 MW)	June, 2016	-
7	400KV D/C Silchar - Melriat line of PGCIL	December, 2015	December, 2015
8	800KV HVDC Bishwanath Chariali – Agra of PGCIL	July, 2015	20 KM stringing is left. June/July, 2015
9	132kV Rangia - Salakati of PGCIL	June, 2016	-
10	132kV Monarchak – Surjamaninagar D/C of TSECL	December, 2015	-
11	400/132 kV, 2nd 125 MVA ICT at Palatana	June, 2016	-

The Sub-committee noted as above.

C.2 CT Ratio of Transmission Lines & Loadability in NER:

During 107th OCC meeting, DGM, NERLDC informed that the list of feeders for enhancement of loadability and present CT ratio available with them was circulated with earlier minutes. He requested constituents to check the list and update the status pertaining to them and also to intimate about the terminal equipments if the load could carry as per the CT ratio.

Further, DGM, NERLDC informed that now the loadability has to be complied as per the operational guidelines issued by NRCE, of CEA. He requested all the constituents to go through these guidelines and give their comments in the next OCC meeting. The NRCE guideline is circulated along with Agenda of OCC.

During 110th OCC meeting, the Sub-committee has requested NERLDC to compile the loadability of all the ISTS lines in tabular format considering NRCE and the present loading as per NERLDC, CT ratio etc., so that constituents can update their data accordingly. NERLDC agreed.

Deliberation of the Sub-Committee

DGM (SO-II), NERLDC informed that NERLDC has already compiled the list in tabular format as suggested by the Sub-committee considering Planning Criteria, January, 2013 & NRCE and these figures are attached at **Annexure – C.2.**

It was requested to NERLDC to circulate the chart of load-ability of ISTS lines of NER under different criteria to all transmission utilities of NER for verification. It was requested to transmission utilities of NER to furnish the design temperature of conductor used in ISTS lines owned by transmission utilities. It was also requested to transmission utilities of NER that current setting of relay of new ISTS line should be based on NRCE criteria at 20 degree centigrade.

The Sub-committee requested all the constituents to go through the list prepared by NERLDC and up-grade the loadability accordingly. In case constituents cannot comply with above loadability, they should clearly specify the reason so that the matter can be discussed again.

The Sub-committee noted as above.

Action: All Utilities

C.3 (a) Up-gradation of CT ratio of 132 kV Gelephu - Salakati line to 600/1 A at Salakati:

NERLDC informed that NLDC, Bhutan have requested to upgrade CT ratio of 132 kV Gelephu - Salakati line to 600/1 A at Salakati for evacuation of Dagachu power through ER Grid of Bhutan in case of contingency in Western Grid of Bhutan. They have already upgraded CT ratio of 132 kV Gelephu - Salakati line to 600/1 at Gelephu. They requested NERTS, POWERGRID to upgrade CT ratio of 132 kV Gelephu - Salakati line to 600/1 at Salakati at the earliest.

Deliberation of the Sub-Committee

NERLDC informed that Bhutan has not changed the CT Ratio and they wanted shut down for the purpose. Accordingly, it has been decided to accord shut down of 132 kV Salakati – Gelephu line on 29.07.15 for carrying out the job of CT Ratio changing to 600/1A simultaneously by Bhutan and POWERGRID at both ends (i.e. Salakati & Gelephu).

The Sub-committee noted as above.

Action: NERLDC / NERPC to accord shut down for carrying out the job by NERTS & Bhutan

C.3 (b) Load-ability of 132 kV Lumshnong - Panchgram line:

NERLDC informed that it has been observed from system study that 132 kV Badarpur – Khliehriat line will be highly loaded in case of 700 MW Palatana generation. To reduce the loading of 132 kV Badarpur – Khliehriat line, 132 kV Lumshnong – Panchgram Line is to be connected in loop. However, it has been seen that loading of 132 kV Lumshnong – Panchgram Line will be around 80 MW in case of tripping of 132 kV Badarpur – Khliehriat line. Hence, loading capacity of 132 kV Lumshnong – Panchgram Line is to be enhanced.

The issue was discussed during 98th, 99th, 100th, 101st & 102nd OCC meetings.

The Sub-committee had directed AEGCL and MeECL to take up the necessary action during above Sub-committee meetings.

Deliberation of the Sub-Committee

EE (MRT), MePTCL had informed during the 35th PCC meeting that DPR for Meghalaya portion had already been forwarded to competent authority for approval and action will be taken up soon after the approval.

AGM, Assam requested Meghalaya to send the DPR to them so that they also have to prepare the DPR in line with Meghalaya. Meghalaya agreed.

The Sub-committee suggested Assam & Meghalaya to resolve the issue bilaterally and inform the status of progress to the forum.

The Sub-committee noted as above.

Action: Assam & Meghalaya

C.3 (c) Enhancement of existing Transformation capacity of 2 x 200MVA Transformer at 400/132/33kV at Silchar S/S:

NERLDC informed that it has been observed that in most of times the loading of 2X200MVA exceeds more than full load capacity of one no. of 200MVA ICT. Under such circumstance, the N-1 Criterion is not fulfilled.

If the loading pattern of ICTs remain at higher side in long term, 3rd ICT will be required for safe, secure & reliable operation of Southern Part of NER.

Deliberation of the Sub-Committee

NERLDC gave presentation on requirement of additional 400/132 kV, 200 MVA ICT at Silchar in case of tripping of any existing ICT at Silchar. NERLDC informed that most of times, loading of 400/132 kV, 2x200 MVA ICT at Silchar is more than 200 MW. Moreover, loading of these ICTs will be increased after commissioning of 132 kV Silchar – P K Bari I & II line & 132 kV Silchar – Melriat I & II lines. Under this condition, southern part of NER grid consisting of Tripura, Manipur, South Assam & Mizoram systems may be insecure. It is requested to install one more 400/132 kV, 200 MVA ICT at Silchar for safe, secure & reliable operation of southern part of NER Grid.

After detailed deliberation, the Sub-committee unanimously agreed to proposal for installation of 3rd ICT at Silchar S/S and requested NERPC to take up the matter to next RPC for necessary approval of putting up the issue to next standing committee meeting.

The Sub-committee noted as above.

Action: NERPC

C.4 Single Line Diagram of Sub-stations, Switching Stations & Power Stations of NER:

During 110th OCC meeting, the Sub-committee requested NERLDC to compile the list of SLDs to be submitted by constituents in tabular format. Accordingly, NERLDC has furnished the latest status of SLDs as given below:

Status of submission of data related to Single Line Diagram of Sub-stations			
Sl No	***Name of Constituent***	***Data Submitted***	***Remarks***
1	***DoP, Ar. Pradesh***	*Yes*	
2	***AEGCL***	*Partially*	*Bihaiting, BRPL, Ghoramari, HPC, Jagiroad, HPC, Panchgram, Star Cement & CALCOM not submitted*
3	***MSPCL***	*Yes*	
4	***MePTCL***	*Partially*	*Sai Prakash not submitted*
5	***P&E Deptt, Mizoram***	*Yes*	
6	***DoP, Nagaland***	*Yes*	
7	***TSECL***	*Yes*	
8	***POWERGRID***	*Yes*	
9	***NEEPCO***	*Partially*	*Khandong & Khupi not submitted*
10	***NTPC***	*Yes*	
11	***NHPC***	*Yes*	
12	***OTPC***	*Yes*	

Deliberation of the Sub-Committee

After detailed deliberation, the Sub-committee had decided that above information should be sent by all the utilities to NERLDC/NERPDC latest **by 24.07.2015**. All constituents agreed.

The Sub-committee noted as above.

Action: All Utilities as above.

C.5 Latest status of FGMO/RGMO implementation in different generating stations:

To update the available record of FGMO/RGMO implementation in NER it was requested that the latest unit-wise status of implementation of FGMO/RGMO in

different Central & State sector generating stations may please be furnished to the NERLDC at the earliest as per format given by them**.**

During 109th OCC meeting, DGM (SO-I), NERLDC then intimated and briefed about the latest CERC Petition No. 84/MP/2015 relating to inadequate operation of FGMO/RGMO. He informed that the Commission has directed all the constituents to file the following details/clarification through Affidavit latest by 12.06.2015:

1. Frequency Response Characteristics (FRC) Report of their respective control areas for poor/negative response from their control areas clearly bringing out the generator wise response in MWs, in percentage of ideal response and scheduled MW during both (14.01.15 & 25.04.15) the frequency excursions for all generators of the state.
2. Seek the reasons from the generators who have shown poor or no response as per their respective grid code/Grid code or negative response to the frequency excursions.

During 110th OCC meeting, Assam, Meghalaya & NEEPCO informed that affidavit had already been filed by them to the Hon'ble Commission.

The Sub-committee requested NHPC to file an affidavit to CERC at the earliest. NHPC informed that they will look into the matter and take necessary action soon.

Deliberation of the Sub-Committee

FGMO of Unit III & Unit IV of Kopili implemented. NHPC informed that work for implementation of FGMO will commence from 22.07.2015 for 15 days and requested the forum to grant the shutdown if required during commissioning of FGMO.

SE(O), requested NHPC to inform to CERC about their plan of installing FGMO and get the exemption from the Hon'ble CERC during the period where FGMO was not in place. NHPC agreed.

The Sub-committee noted as above.

Action: NHPC

C.6 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.

During 110th OCC meeting, the Sub-committee requested NERLDC to compile the list of feeders connected to essential load to be submitted by constituents in tabular format. Accordingly, NERLDC has furnished the latest status of SLDs as given below:

Status of submission of data related to list of feeders connected to essential load			
Sl No	***Name of Constituent***	***Data Submitted***	***Remarks***
1	*DoP, Arunachal Pradesh*	*Yes*	*Arunachal Pradesh shall furnish the essential load in 33 kV level*
2	*AEGCL*	*Yes*	
3	*MSPCL*	*Yes*	*Manipur partly furnished furnish the essential load in 33 kV level*
4	*MePTCL*	*Yes*	
5	*P&E Deptt, Mizoram*	*Yes*	*Mizoram shall furnish the essential load in 33 kV level*
6	*DoP, Nagaland*	*Yes*	
7	*TSECL*	*Yes*	

Deliberation of the Sub-Committee

After detailed deliberation, the Sub-committee had decided that above information should be sent by all the remaining constituents above to NERLDC/NERPDC latest **by 24.07.2015**. All constituents agreed.

The Sub-committee noted as above.

Action: Arunachal Pradesh, Manipur & Mizoram.

C.7 Progress Report of Ongoing Project:

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.

During 110th OCC meeting, the Sub-committee requested NERLDC to compile the list of Progress Report of ongoing projects to be submitted by constituents in tabular format. Accordingly, NERLDC has furnished the latest status as given below:

Status of submission of Progress Report of Ongoing Projects			
Sl No	***Name of Constituent***	***Data Submitted***	***Remarks***
1	***DoP, Arunachal Pradesh***	*Submitted for April & May'15*	*Details as per format not submitted*
2	***AEGCL***	*Submitted for Feb'15*	
3	***APGCL***	*Submitted for Mar'15*	*Status not submitted*
4	***MSPCL***	*Submitted for April'15*	
5	***MePTCL***	*Submitted for May'15*	
6	***MePGCL***	***Not submitted***	
7	***P&E Deptt, Mizoram***	*Submitted for Mar'15*	
8	***DoP, Nagaland***	***submitted***	
9	***TSECL***	*Not as per format*	*April & May'15 to be submitted in format*
10	***POWERGRID***	***submitted***	
11	***NEEPCO***	*Submitted regularly for each month*	
12	***NTPC***	*Submitted regularly for each month*	
13	***NHPC***	***Not submitted***	
14	***OTPC***	-	*Status of 2nd ICT at Palatana to be submitted*

Deliberation of the Sub-Committee

NHPC requested NERLDC/NERPC to take up the matter with corporate office regarding progress report of Subansiri Lower HEP.

Meghalaya stated that above information will be sent before 24.07.2015

The Sub-committee noted as above.

Action: NHPC & Meghalaya.

C.8 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 were accordingly requested to assess the above on monthly basis, 5 months in advance (e.g. 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.

After detailed deliberation during 110th OCC meeting, since there was no progress in the matter, the Sub-committee decided that all constituents should return all the dongles & laptops to NERLDC/NERPC at the earliest so that the same could be handed over to concerned officers who are carrying out the above study and also the new key will be provided by NERLDC/NERPC. The Sub-committee requested NERPC to write a letter to all the constituents to return the above materials at the earliest so that necessary action could be taken by NERLDC. Training to new incumbent will be provided by NERLDC during System Studies (SS) meeting of NERPC.

Deliberation of the Sub-Committee

NERLDC requested SLDCs of NER once again for submission of study results of peak & off peak scenarios related to assessment of TTC, TRM & ATC on respective Inter State Transmission Corridor on monthly basis for 5th month by 15th of the month by them. NERLDC requested to identify the persons of each SLDC of NER who will conduct system study of their system.

The names of following officers who are carrying out the system studies were furnished by the constituents.

Constituent	Name of Nodal Officer	Contact No	Email id:
Ar. Pradesh	Domo Kamduk	09707380294	sldcitnagar@gmail. com
Assam	Navojit Patir	09612950771	
Manipur	S.J. Kumar Sharma	09436144113	sldcmanipur@gmail.com
Mizoram	Zoramdina	09774285158	sldc_mizoram@ rediffmail.com
Meghalaya	D.J. Lyngdoh	09863063375	davidjeremy123@yahoo.co.in
Nagaland			
Tripura	Mrinal Paul	09436137022	mrinalpaulnit@gmail.com

The Sub-committee noted as above and requested Nagaland to nominate the concerned officer at the earliest.

Action: Nagaland

C.9 Installation of Bus Reactor at Ranganadi:

During 110th OCC meeting, the requirement of bus reactor at Ranganadi S/S had already been decided by the sub-committee. However, NEEPCO has to confirm the availability of space so that the matter can be placed in next RPC for necessary approval and taking up the issue to next Standing Committee meeting of CEA for further study and approval.

Deliberation of the Sub-Committee

After detailed deliberation, the Sub-committee requested NEEPCO to inform about the availability of space so that the matter can be put up to next RPC for necessary approval of putting up the issue to next standing committee meeting. Meanwhile, the Sub-committee also requested NERLDC to carry out the system studies if installation of reactor at Ranganadi is required in future to contain the over voltage.

The Sub-committee noted as above.

Action: NEEPCO & NERLDC

C.10 Installation of 2nd 125MVA, 400/132kV ICT at Pallatana:

NERLDC informed that at present, there is only one no. of 125 MVA, 400/132kV ICT at Pallatana through which Tripura System is connected. The N-1 Criterion of CEA is not fulfilled and in case of outage of the ICT the connectivity with Tripura system gets lost. The issue was deliberated in 110th OCC meeting and the Sub-committee requested OTPC to install one more ICT for redundancy.

Meanwhile, Tripura informed that about 100MW surplus power to Bangladesh is likely to take place by December, 2015. So adequate & reliable power availability at Tripura's bus is immediately needed to be ensured.

Deliberation of the sub-Committee

DGM, OTPC informed that procurement of one 125MVA ICT is under process and the same is likely to be completed by June, 2016.

The Sub-committee noted as above

Action: OTPC

C.11 Installation of dedicated auxiliary power supply arrangement at Pallatana:

It has been observed that in various occasions the Generation of Pallatana interrupted due to disturbance in Auxiliary Power Supply taken from Tripura system. OTPC informed that their transformation capacity in existing dedicated auxiliary power supply is limited to 16MVA and so, a part of auxiliary load is connected to Tripura system.

During 110th OCCM, the Sub-committee suggested OTPC to enhance Unit Auxiliary Transformer (UAT) capacity for dedicated station auxiliary power supply arrangement.

Deliberation of the sub-Committee

OTPC informed that they will explore the capacity enhancement of Unit Auxliary Transformer (UAT) for dedicated station auxiliary power supply & final report will be submitted shortly.

DGM, OTPC informed that consultant has already been engaged to look into the matter and the status will be informed accordingly.

The Sub-committee noted as above

Action: OTPC

C.12 Conversion of line reactors of 400kV Balipara – Bongaigaon I&II to switchable line Reactors at Balipara & Bongaigoan:

DGM (AM), NERTS informed that conversion of line reactor of Balipara-Bongaigaon – I & II to switchable line reactor, the procurement of switching equipments is under progress and it may take atleast 6 (six) months to complete the above work. The tentative date is November, 2015.

The Sub-committee suggested that the status of the progress of this work will be monitored on monthly basis.

Action: NERTS

C.13 Second In-feed for NER-ER Corridor:

During 110th OCC meeting, SE(O) informed that the above joint visit of NERPC, POWERGRID and NTPC was carried out on 23.05.2015 and various input were given to ABB to carry out the feasibility of connecting one of the circuits of each 400kV Balipara – Bongaigaon and 400kV Bongaigaon – Siliguri to create second node with ER.

ABB informed that they will carry out site visit shortly to study the feasibility.

Deliberation of the Committee

GM, NERTS suggested that ABB should explore the options of feasibility of using AIS as well as GIS and send these options to Standing Committee for comments/observations.

ABB has already submitted tentative layout. However, ABB will carry out site visit shortly to finalize the layout.

The Sub-committee requested NERTS to extend help to NTPC and ABB in this regard so that the scheme can be placed to next TCC/RPC meetings.

The Sub-committee noted as above.

Action: NTPC & NERTS

C.14 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 LGBR 2015-16 of NERPC.

Requirement:

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	67	72	72	72	67
Assam	730	730	720	710	700
Manipur	75	75	75	75	75
Meghalaya	130	140	150	180	190
Mizoram	42	42	42	43	43
Nagaland	75	70	70	72	72
Tripura	120	125	120	130	110
NER	**1239**	**1254**	**1249**	**1282**	**1257**

Availability:

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	89	86	74	61	50
Assam	635	640	630	600	605
Manipur	101	101	85	79	70
Meghalaya	250	280	274	260	220
Mizoram	66	65	54	50	40
Nagaland	65	63	64	56	60
Tripura	206	205	192	194	190
NER	**1412**	**1440**	**1373**	**1300**	**1235**

- *These data required for preparation of various reports.*

C.15 Monthly MW requirement & availability of each state of NER:

A. Peak Demand in MW

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	133	138	143	143	128
Assam	1469	1510	1480	1455	1400
Manipur	143	149	149	154	149
Meghalaya	330	330	330	330	350
Mizoram	90	90	85	85	90
Nagaland	135	130	135	130	135
Tripura	275	275	285	300	280
NER	**2675**	**2717**	**2677**	**2682**	**2592**

B. Peak Availability in MW

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	148	143	145	145	127
Assam	1251	1253	1264	1210	1200
Manipur	162	159	159	160	140
Meghalaya	440	440	440	420	350
Mizoram	113	109	105	105	95
Nagaland	108	104	104	110	100
Tripura	403/230	398/230	403/230	403/230	403/230
NER	**2461**	**2514**	**2570**	**2600**	**2445**

**Tripura indicates 272/230 if Pallatana available/if not available*

A. Off Peak Demand in MW (0800 Hr)

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	73	76	72	76	70
Assam	905	920	830	950	900
Manipur	93	97	75	95	97
Meghalaya	220	217	165	226	231
Mizoram	55	55	42	55	59
Nagaland	81	78	70	80	78
Tripura	197	201	202	214	184
NER	**1624**	**1644**	**1374**	**1696**	**1439**

B. Off Peak Availability in MW (0800 Hr)

Name of State	Jul15	Aug15	Sep15	Oct15	Nov15
Ar. Pradesh	110	108	79	76	60
Assam	1047	1047	900	930	850
Manipur	136	136	97	111	95
Meghalaya	423	440	420	400	350
Mizoram	92	100	55	70	65
Nagaland	96	95	81	71	60
Tripura	230	230	194	240	240
NER	**2134**	**2156**	**1626**	**1898**	**1720**

The Sub-committee noted as above.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

The availability of hydro stations of NEEPCO/NHPC are as follows:

Plants	Reservoir Level in meters (as on 15/06/15)	MU Content	Present DC (MU)	No of days as per current Generation
Khandong + Kopili STG II	720.85	27.61	(1.08+0.504) 1.584	17
Kopili	607.23	(81 + 4*27.61) 191.44	2.304	83
Doyang	306.6	1.3	0.0468	28
Loktak	766.48	9.33	0.21	44

The sub-committee discussed and approved the proposed shutdown of NEEPCO & OTPC and the same has been uploaded in the website of NERPC.

Further, Sr. Manager, NEEPCO informed that GAIL has planned to take shutdown of their pipelines for a period of 15 (fifteen) days and during this time there will be no generation from AGTPP. The exact date will be intimated to NERPC/NERLDC to give the consent.

DGM, OTPC also requested to take shutdown of one module for IDLN tuning and bushing replacement and the exact date will be intimated to NERPC/NERLDC.

The Sub-committee requested OTPC to avail their shutdown after AGTPP is brought back to service.

The sub-committee noted as above.

D.2 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.

Deliberation in the meeting

The sub-Committee discussed and approved the proposals received from the constituents regarding transmission elements for July - August, 2015 and the same has already been uploaded in website of NERPC. Also the committee has decided that no shutdown will be entertained henceforth unless discussed in OCC meeting, except on emergency basis.

D.3 Status of SLDCs in NER:

The status of setting-up of SLDC as informed by POWERGRID during 111st OCC meeting is given below:

SN	Name of State	Status as given in 111st OCC Meeting
1.	Ar. Pradesh	POWERGRID informed that Building is being identified by Ar. Pradesh. However some internal works viz., partition, AC installation etc. are yet to complete. EE, SLDC stated that it would be better for POWERGRID to carry out all the works including partition, AC fitting etc., along with building & equipments and intimate the final cost as it would not be possible for them to carry out minor works separately by them.

		Deliberation: POWERGRID informed that as discussed with DoP, Ar. Pradesh, partitioning works/AC installation are in the scope of SLDC. Further, they informed that Ar. Pradesh is to confirm the readiness of internal works of temporary building and also the permanent building, since Alstom has been asked to start site acceptance test/commissioning by 16.08.15 After detailed deliberation EE, SLDC agreed to take up the matter with competent authority for installation of AC, partition, internal works from their end. But he requested POWERGRID to carry out earthing work on their behalf. GM, NERTS stated that contract with Alstom have not been included above works and earthing, however, he agreed to look into the matter for making earthing work.
2.	Manipur	POWERGRID informed that Building is completed and handed over to Alstom in last week of June, 2015. Commissioning activity is in progress and the SLDC is likely to be completed by August, 2015 and permanent set up will be commence from 1st week of November, 2015
3.	Mizoram	Building has been identified, but the same has not been handed over to POWERGRID to carry out the work. POWERGRID requested the forum to take up the matter with highest Authority of Govt. of Mizoram so that the work can be started up. NERPC has already written to Govt. of Mizoram to hand over the building at the earliest. The reply is awaited. ***Deliberation:*** POWERGRID informed that date of completion of vacation of building meant for SLDC and also the partition works has to be intimated by them at the earliest and to hand over the building to Alstom; since Alstom has been asked to start the work from September, 2012. Mizoram representative informed that building is almost vacated and requested POWERGRID to inspect the building at the earliest.
4.	Nagaland	Construction of Building is going on but the progress is very slow. Nagaland has informed that the building is likely to be completed in August, 2015. POWERGRID requested the forum to take up the matter with highest Authority of Govt. of Nagaland so that the work can be started up. EE, SLDC also endorsed the view of Ar. Pradesh and requested POWERGRID to carry out all the furnishing works including partition, AC fitting etc., along with building & equipments and intimate the final cost. He also requested POWERGRID to have a bilateral discussion and finalize the issue with them. NERPC has already written to Govt. of Nagaland to hand over the building at the earliest. The reply is awaited.

		Deliberation: POWERGRID informed that DoP, Nagaland had confirmed the completion & handing over of primary/priority rooms by October, 2015. Other rooms will be handed over by December, 2015. Alstom has been asked to start the work by November, 2015. Further, POWERGRID informed partitioning works/AC installation are in the scope of SLDC only and requested Nagaland to carry out the above works on their own at the earliest.

The status of Renovation/up-gradation of SLDC as informed by POWERGRID is given below:

SN	Name of State	Status as given in 110th OCC Meeting
2.	Assam	R&M works is in progress and the scheme is likely to be completed by August, 2015
4.	Tripura	R&M works is in progress and the scheme is likely to be completed by August, 2015
7.	Meghalaya	R&M works is in progress and the scheme is likely to be completed by August, 2015.

The Sub-committee noted as above.

D.4 Updated Power Maps of NER States, June 2015 (Draft):

Power maps of NER and States of NER June 2015 has been prepared. Updated Power maps of NER and States of NER June 2015 is e-mailed to regional entities of NER and also available in NERLDC website.

This document will be finalized by 20th June, 2015. The document is password protected. Password may be collected from SOII department of NERLDC.

Deliberation in the meeting

DGM (SO-II), NERLDC informed that Power Maps of NER & states of NER was updated and the same was uploaded in the website of NERLDC. The Password was informed to constituents during the meeting.

The Sub-committee noted as above.

D.5 Updated Operating Procedures of NER July 2015 (Draft)

Operating Procedures of NER July 2015 has been updated and e-mailed to regional entities of NER and also available in NERLDC website. Power utilities of NER were requested to submit their comment and suggestion for this document by 15th July, 2015 as this document has to be finalized by 31st July, 2015.The document is password protected and Password is available with SOII department of NERLDC.

Deliberation in the meeting

The Sub-committee once again requested all the Power utilities of NER to submit comment and suggestion for this document by 25th July, 2015; else, the same will be finalized by NERLDC accordingly.

As per clause no 5.1.g of IEGC, detailed operating procedures for each state grid shall be developed and maintained by the respective SLDC. Latest status of approval of these documents from OCC forum of NERPC is as follow:-

Sl No	Description	Status of approval from OCC forum of NERPC
1	Operating Procedure of Ar. Pradesh 2015	Not submitted
2	Operating Procedure of Assam 2015	Not submitted
3	Operating Procedure of Manipur 2015	Not submitted
4	Operating Procedure of Meghalaya 2015	Not submitted
5	Operating Procedure of Mizoram 2015	Not submitted
6	Operating Procedure of Nagaland 2015	Not submitted
7	Operating Procedure of Tripura 2015	Not submitted

The Sub-committee requested all the Power utilities of NER to submit Draft Operating Procedure of the State by 31st August, 2015 for approcval of the forum.

D.6 Nomination of Nodal Officers for Disaster Management:

All the SLDCs of NER were requested to update the details of Nodal Officer for Disaster Management for onward submission to NLDC

In the 109th OCC meeting, the Sub-committee requested NERPC to write to all the Heads of SLDCs and Power utilities of NER to furnish the name and contact number of Nodal Officer for above Disaster Management.

Accordingly, NERPC had written to all the constituents to nominate the nodal officer for Disaster Management as suggested by the Sub-committee, but the reply is awaited.

Deliberation in the meeting

During the 110th OCC meeting, the name of Nodal Officer along with contact number furnished by some constituents is given as below:

DISASTER MANAGEMENT - LIST OF CONTACT DETAILS OF NODAL OFFICERS/SECOND IN COMMAND- 2015

Region/SLDC	Name	Designation	Tel. Nos.	Mobile No.	Fax No.	E-mail Address
NERLDC						
Nodal Officer	V Kaikhochin	DGM(SL)	0364-2535710	9436302712	0364-2537470	kaikhochin@gmail.com
Second in Command	A Mallick	DGM(SO-2)	0364-2535481	9436302720	0364-2537470	amaresh65@gmail.com
Arunachal Pradesh SLDC						
Nodal Officer	N. Perme,	EE, SLDC		9436288643		sldcitnagar@gmail.com
Second in Command	Domo Kamduk,	JE				
Assam/ AEGCL SLDC						
Nodal Officer	Tirtha Sharma					
Second in Command	Biman Borah					
Manipur SLDC						
Nodal Officer	M. Budha Chandra Sharma	GM, Transmission	03852451172 / 03852447278	9436020911	Nil	sldcmanipur@yahoo.com & sldcmanipur@gmail.com
Second in Command	S. Joykumar Sharma	OSD(Tech)/SLDC	03852451172 / 03852447278	9612950771	Nil	-Do-
Meghalaya/ MeSEB SLDC						
Nodal Officer	Mr. T. Gidon	EE SLDC		9774479956	0364-2551967	sldc.shg@gmail.com, gidon@rediffmail.com
Second in Command	Mr.R. War	EE (T&T), Division, Umiam		9436103088	0364-2550020	rupertwar@gmail.com

Mizoram SLDC						
Nodal Officer	Vanlalrema	SE, SLDC		9436140353		sldc_mizoram@rediffmail.com
Second in Command						
Nagaland SLDC						
Nodal Officer	Er. Atoho Jakhalu	Executive Engineer	03862-230117	9436002696	03862-230118	sldc.ngl@gmail.com
Second in Command	Roko Iralu,	SDO		9436832020		
Tripura SLDC						
Nodal Officer	U. Debbarman	DGM, SLDC				uddharan.agt@gmail.com
Second in Command	Mrinal Paul	Manager		9436137022	-	mrinalpaulnit@gmail.com
NERTS						
Nodal Officer	A. Patir	GM		9436302529		apatir@gmail.com
	P. Kanungo	DGM		9436302823		kanungo_p@yahoo.com
NEEPCO						
Nodal Officer	B. Goswami	Sr. Mgr.		9436163983		bhaskargoswami@rediffmail.com
Second in Command	Joypaul	Sr. Mgr.		943557772	-	joypal_roy@rediffmail.com
NHPC						
Nodal Officer	R.C.Singh	Manager		9436894889		
Second in Command	Sajid Akhtar	Manager		9436678603		
NETC						
Nodal Officer						
Second in Command						
NTPC						
Nodal Officer	J. Bhattacharya	AGM		9435720036		
Second in Command	S. Das	AGM				
OTPC						
Nodal Officer	N. Gupta	Manager		9774233426		
Second in Command	P.P.	Manager				

The Sub-committee requested all the remaining Utilities to nominate the name & contact number of Nodal Officer for Disaster Management at the earliest.

Action: Remaining Power Utilities

D.7 Identification of Nodal Officers for Weather related issues:

POSOCO has recently signed an MOU with IMD through which critical Weather data will be made available to System Operators by IMD. Accordingly SLDCs of NER were requested to identify two nodal officers for weather related issues and furnish the details to NERLDC by 30th June, 2015 for sharing the weather related data. All SLDCs of NER were further requested to finalize the list of stations (including power stations) for which weather parameters are required (nearby city name, district name & state name are to be provided) and to furnish list of officers desiring to avail SMS facility during extreme weather conditions (priority-wise list to be provided at each level with contact details).

Deliberation in the meeting

The name of Nodal Officer along with contact number furnished by some constituents is given as below:

Constituent	Name of Nodal Officer	Contact No	Email id:
Ar. Pradesh	N. Perme, EE, SLDC	9436288643	sldcitnagar@gmail. com
	A.K Yadav, JE(E) SLDC	9436666226	-Do-
Assam	Tirtha Sharma, DGM		
	Biman Borah, AGM		
Manipur	M. Budha Chandra Sharma		sldcmanipur@gmail.com
	S. Joykumar Sharma		-Do-
Mizoram			
Meghalaya	F.E. Kharshiing, SE, SLDC	9612170657	sldc.shg@gmail.com
	R. Majaw, SE, MRT	9436110871	
Nagaland	Jakhalu, EE, SLDC /Roko Iralu, SDO	9436002696 9436832020	
Tripura	Debrata Paul, Sr. Manager/Mrinal Paul, Manager	9436500244 9436137022	d_pal1966@rediffmail.com mrinalpaulnit@gmail.com

The Sub-committee requested all the remaining SLDCs to nominate the name & contact number of Nodal Officer for Weather Management at the earliest.

Action: Remaining Power Utilities

D.8 Power cut / Load Shedding:

SE(O), informed that CEA has been pressurizing NERPC to furnish the above data urgently. He informed that Chairperson, CEA himself is monitoring these reports to find out simultaneous All India Peak Demand and Demand Met figures. He requested all the constituent States that Hourly Power Cuts and Load shedding- State wise and Region wise may kindly be sent urgently. The format is attached at ***Annexure – D.8.***

In-spite of repeated request to all the constituents only Assam, Meghalaya & Tripura has given the information.

Deliberation in the meeting

The Sub-committee requested all the remaining constituents to furnish the above data to NERPC at the earliest for onward transmission to CEA/MoP.

Action: Remaining NER States.

D.9 Persistent over voltage at Palatana:

NERLDC informed that it has been observed that bus voltage at Palatana is persistently remaining above the upper limit of IEGC band which is not desirable from system operation point of view. The 80 MVAR bus reactor installed at Palatana has not yet been put in service. OTPC is requested to take action for early operation of the Reactor so that the same can be used for maintaining voltage at desired level.

DGM, OTPC stated that reactor is in healthy condition still they had sent a communication to NERLDC seeking clearance for charging. NERLDC informed that they look into the matter and revert back to OTPC.

Further, OTPC is also requested to restore the 125 MVA ICT, which is under long outage for strengthening connectivity of Tripura system which will help to control voltage to certain extent.

The Sub-committee requested OTPC & NERLDC to resolve the issue for early charging of faulty 125 MVA ICT and 80MVAR reactor.

Deliberation in the meeting

DGM, OTPC informed that oil filtration is under progress and the reactor will be put into service by 24.07.2015.

The Sub-committee noted as above.

Action: OTPC

D.10 Furnishing Monthly Auxiliary Consumption in MU for Power stations:

NERLDC informed that various MIS reports on the matter are prepared mainly based upon normative value. To make the reports more practical and accurate all power stations are requested to furnish station-wise monthly Auxiliary Consumption in MU for the previous month by the first working day of the succeeding month.

Deliberation in the meeting

NERLDC submitted the current status which is tabulated as below

Status of submission of Monthly Auxiliary Consumption in MU for Power stations			
Sl No	***Name of Constituent***	***Data Submitted***	***Remarks***
1	***AEGCL***	*Submitted for April & May'15*	
2	***MePTCL***	*Submitted for April & May'15*	
3	***P&E Deptt, Mizoram***	***Not submitted***	
4	***DoP, Nagaland***	***Not submitted***	
5	***TSECL***	***Not submitted***	
6	***NEEPCO***	*Submitted for April & May'15*	
7	***NTPC***	-	***To be submitted from June'15***
8	***NHPC***	*Submitted for May'15*	***To be submitted for April'15***
9	***OTPC***	*Submitted for April & May'15*	

The Sub-committee requested all the remaining Power Utilities to furnish the information latest by 24.07.2015.

Action: All remaining Power Utilities.

D.11 RE integration:

NERLDC informed that grid integration of infirm renewable energy sources is a major challenge facing the sector today. Hon'ble CERC has come out with draft amendments of IEGC, DSM & REC mechanism. To address this issue, NLDC has

prepared questionnaire related to issues of Scheduling, Metering & Settlement followed in each state of NER.

Deliberation in the meeting

DGM (SO-I), NERLDC informed that above information in questioners format had already been mailed to all the constituents and requested them to comply at the earliest. NERLDC also intimated the status of submission of the questionnaire by various States / utilities which is tabulated below:

States/ utilities	Status of Submission	Remarks
Arunachal Pradesh	Yes	Full
Assam	Yes	Partial
Manipur	Yes	Full
Meghalaya	Yes	Full
Mizoram	No	By 24.07.2015
Nagaland	Yes	
NEEPCO	No	By 24.07.2015

The Sub-committee requested all the remaining constituents to furnish the above information to NERLDC latest by 24.07.2015.

Action: Assam, Mizoram & NEEPCO.

D.12 Requirement of additional regional spare Transformers & Reactors:

During 108th OCC Meeting requirement of additional spare Transformers & Reactors in NER against central section transmission system was discussed. Accordingly, critical spares are proposed as below:

SN	Equipment			Remarks
	Rating	In Service	Proposed Spare	
1.	220/132 kV, 160 MVA Transformer	1 no in Service & 3 nos. to be installed	1	2 (two) Nos units at each at Balipara & Kopili. Spare shall be positioned at Kopili SS.
2.	132/33 kV, 50 MVA, 3-Phase Transformer	2 nos. to be installed	1	2 (two) Nos units at Nirjuli SS. Spare shall be positioned at Nirjuli SS.

3.	400/132/33 kV, 200 MVA, 3-Phase Transformer	2	1	2 Nos units at Silchar SS. Spare shall be positioned at Silchar SS.
4.	400/220/33 kV, 315 MVA, 3-Phase Transformer	1 no in Service & 2 nos. to be installed	1	1 no. in service at Misa. 1 no each will be installed at Balipara & Bongaigaon
5.	400 kV 80 MVAR Reactor	3	1	2 Nos units at Bongaigaon & 1 No unit at Balipara SS. Spare shall be positioned at Bongaigaon SS.
6.	400 kV 63 MVAR Reactor	18	1	1 no. Spare already available

Deliberation in the meeting

All constituents agreed to the above proposal and requested NERPC to put up the above proposal in the next TCC/RPC for approval.

Meanwhile, Assam requested NERPC to take the matter to RPC meeting for proving 100MVA 220/132kV Regional spare transformer at Dimpur SS for necessary installation at Samaguri SS on returnable basis.

The Sub-committee noted as above.

Action: NERPC

D.13 Preventive shifting of 400kV towers of 400kV Balipara-Ranganadi #1&2 line along the river Dikrong with pile foundation to avoid threat of collapse of line in every year:

During 110th OCC Meeting DGM (AM), NERTS informed that the river course of Dikrong River where the discharge of Ranganadi Generation is done changes frequently due to lower bed depth and higher scouring depth. As a result, every year one to two towers become endangered due to erosion of soil on account of wayward river course change. Action is required to be taken for preventive shifting of balance 10 nos. of 400kV towers along the river to pile and book the same under PoC Mechanism.

After detailed deliberation, the sub-committee agreed and asked POWERGRID to provide details for necessary approval of RPC. Accordingly the detail provided is given below:

1. Recently, the Tower Loc. No. 41 (DA+0) of the 400kV D/C Ranganadi - Balipara Transmission line became vulnerable due to erosion of river Dikrong as a result of sudden flash flood. Initially, prior to flash flood the tower was at a distance of about 250 Mtrs from Dikrong river bank until the first week of June'15. However, sudden flash flood in the river Dikrong started eroding the bank towards the tower location and by 10th of June'15, the river had eroded approx. 200 meters of the river bank near Loc. No. 41 reducing the clearance w.r.t. river to 50 meter approx. It was at this stage that temporary bank protection measures in the form of bamboo porcupine packed with sand filled gunny bags has been taken up by site. The river has been found to have changed its course substantially towards the tower Loc. No. 41 with siltation on the opposite bank. As a result of high current & rapid pace of erosion the clearance between the river & the tower has been reduced to 25 Mtr only as on date. Considering this criticality, one of the circuits has already been shifted on ERS as immediate preventive measure. Now, in order to prevent collapse of tower the location is to be shifted to Pile Foundation as a permanent measure.

2. It is to be mentioned that the course of Dikrong River where discharge of Ranganadi Generation is done, changes every year during Monsoon due to Lower River bed depth and higher scouring depth. In fact, every year / alternate year one or two towers become vulnerable and till now, we have already shifted Location No. 42, 43 and 44 to pile. Further, at present, Location No. 45, 58 & 66 is under shifting to pile.

3. Considering unpredictable river course change of Dikrong and importance of 400kV D/C Ranganadi - Balipara Transmission line being sole evacuation path of Ranganadi Generation as well as power supply path to Arunachal Pradesh, it is essential to shift all the balance 10 nos. of 400kV towers along the River Dikrong to Pile foundation as preventive measure. The balance Locations are 39B, 40, 41, 46, 47, 48, 49, 59, 65 & 67. This is in addition to locations 45, 58 & 66 for which construction of pile foundation is in progress.

Deliberation in the meeting

All constituents agreed to the above proposal of POWERGRID and requested them to prepare the consolidated list of endangered towers so that the same can be placed in the next TCC/RPC for approval.

Action: NERTS, POWERGRID.

D.14 Approval of Transmission tariff for ATS "Asset –I: HVDC portion and combined Asset-II, AC portion under North East-Northern/Western Inter connector Project in NE-Western/Northern Region:

Assam informed that all members are aware that the transmission system associated with North East-Northern/Western Interconnector-I Project was conceived connecting the NE Region directly through HVDC network with Northern and Western Region with the aim of evacuation of surplus power from Subansiri Lower HEP and Kameng HEP. Already power from these two projects has been allocated by MOP to NER, North and Western regions. So far need of the NER is concerned the region does not have the requirement of such costly HVDC network. As per original arrangement the investment cost of NER portion transmission network up to Bishwanath Chariali is to be shared by all Beneficiaries of NER as well as outside NER who avails share from these Generating projects and that for the rest portion from Bishwanath Chariali to Agra is to be shared by Northern and Western Regions on 50:50 basis.

Of late the hearing of transmission tariff petition of Power grid on this network is over and the tariff under POC mechanism is to be finalized by CERC. AS per original

invest approval the cost of HVDC portion was to be borne by Northern and Western Region for whom the network was conceived and built.

Assam requested the Forum to deliberate on the issue and ask Power grid and RLDC/ NLDC to highlight whether the POC mechanism of tariff fixation is to be implemented as per the original investment plan or otherwise. If necessary the NERPC may take up the issue with CERC.

Deliberation in the meeting

After detailed deliberation, the Sub-committee unanimously agreed that above Regulation should not be passed by CERC unless the views of the NER constituents are put forward and discussed thoroughly. Members requested NERPC to intimate to Hon'ble CERC the decision taken constituents and also the matter should be placed in the next TCC/RPC for further deliberation.

Action: NERPC.

D.15 Requirement of new lines for evacuation of power from 4x21+ 2x25.5 MW AGTPP:

NERLDC informed that it has been observed that many lines of Tripura System & lines of POWERGRID in this area will be highly loaded in case of tripping of any critical line in this area & these lines may trip subsequently resulting total collapse of Tripura System.

Deliberation in the meeting

SE(O) informed that the issue has been discussed in detailed during the 4th Standing Committee of CEA, the forum had decided that the 8 km long Agartala GBPP – Agartala S/s (State) 132 kV D/c line may be re-strung by POWERGRID with high capacity HTLS conductor.

NERLDC gave presentation on requirement of new line for safe evacuation of power from **4x21+2x25.5 MW AGTPP.** NERLDC informed that critical lines of POWERGRID & TSECL will be highly loaded in case of tripping of any of these lines &this will result into total collapse of Tripura & AGTPP System. To address this issue, line from AGTPP to P K Bari at 132 kV level is required.

After detailed deliberation, the Sub-committee requested NERLDC to put up the agenda item to Standing Committee of CEA with detailed study report in prior consultation with CTU. Subsequently, the issue will be taken up to next TCC/RPC meeting for necessary approval / endorsement.

The Sub-committee noted as above.

Action: NERLDC

D.16 State Estimator not giving graceful solution and issues with Real Time Contingency (RTCA):

NERLDC informed that State Estimator is not giving graceful solutions due to poor availability of analog/digital data due to non-reporting of so many RTUs of AEGCL, Tripura and Meghalaya. RTCA is not converging which is very important for on line study of real-time power system. Constituents are requested to take serious actions to improve data availability as the non-reporting RTUs / non-availability of telemetry data are monitored at the highest level.

Deliberation in the meeting

DGM (SO-II), NERLDC stated that most of analog & digital data are not reporting at NERLDC for which State Estimator is not giving graceful solution and is a problem for RTCA. System operators at NERLDC are facing problem for real time operation due to problem of State Estimator & RTCA. It is requested to all the constituents of NER to rectify the problem at the earliest so that better result of state estimator can be obtained.

GM, NERTS informed that due to setting up/up-gradation of SLDCs in the region most of the RTUs are not reported properly. Further, he informed that integration is a big issue from new system to the existing SCADA system and stated that the matter is being taken up on priority and hopefully by end of August, 2015 this issue will be resolved.

The Sub-committee noted as above.

Action: NERTS

D.17 Various Report/Data submission by Power Station:

NHPC informed that data and report are being submitted to NERLDC on regular basis on previous days. It has been seen that various email/ Tele Call received by the Power station from utilities that the report/ data has not been received by them. After investigation it was found that this was mistaken due to presence of so many email ids of the utilities. So it is important that the consolidated data bank is required by the utilities which clearly mention the data bank is required, their frequency, format if applicable and the concern email ids and contact nos. The same may be discussed in the meeting.

Deliberation in the meeting

All constituents endorsed the view of NHPC and expressed that the same problem was faced by them in sending the data to NERLDC.

To address this issue, NERLDC have opened an e-mail account on g-mail for the constituents of NER. Constituents of NER are requested to e-mail to concerned utility for their requirement from this e-mail id. From sent mail, mail body & attachment can be accessed by other utilities also. User name & password will be sent to Constituents of NER shortly. It is informed that user name & password of this account for constituents of NER only and not for others.

After detailed deliberation, the Sub-committee requested the constituents to send to all email address of NERLDC and concerned issue should be re-directed to corresponding division within NERLDC.

The Sub-committee noted as above.

D.18 Estimated Transmission Availability Certificate (TAC) for the month of June, 2015:

NETC and NERTS, POWERGRID have submitted TAC data of June, 2015 in the first/second week of July, 2015. This will enable issuance of verification by NERLDC and certification by NERPC on monthly basis within stipulated time frame. Both NETC and NERTS were advised to follow the agreed time schedule in future to avoid accumulation of reports and corresponding delay.

D.19 UCC Meeting:

During the 21st UCC meeting held on 29.12.2014, the forum opined that in view of Up-gradation/Expansion Project of SCADA/EMS to all States in NER having full fledged SLDCs, it is pertinent that NERPC should take the leading role and co-ordinate the UCC meeting in future like OCC, PCC etc., & since various issues are sometimes needed to be resolved at higher level. In this regard, POWERGRID intimated that such meetings were being co-ordinate by NRPC in Northern Region.

Deliberation in the meeting

All constituents agreed that UCC meeting which is presently coordinated by NERLDC should be a part of Sub-committee meeting of NERPC and necessary for amendment of Conduct of Business Rules (CBR) of NERPC may be endorsed in the next TCC/RPC meeting.

The Sub-committee noted as above.

Action: NERPC

D.20 OPGW Link against MW Vacation Project-Revision in names/length of Links:

a) The issue of Microwave links installed under ULDC schemes were vacated as per directive of GOI and OPGW links are established in lieu of MW networks with approval of competent forum was discussed in detailed during the 21st UCC Meeting. Further, keeping in view urgency of different connectivity requirement (upcoming SLDC, redundancy of NERLDC to SLDC& Connectivity with AP & others etc) in NER & non availability of lines , there have been a few changes & the link paths have been proposed to be revised with in time intimation to UCC forum (relevant page attached). Original 1163km of OPGW supply & 1145km of erection which has been revised now to 1231km supply & 1187 km of erection of OPGW [& 60km ADSS(supply +erection) for 33kV Rupai Namsai] as per actual requirement. The revised names of links considered under MW vacation are attached as ***Annexure-D.20 (This Annexure can be downloaded separately from the website of NERPC)***

b) Further, regarding asset segregation, terminal equipment will be the asset of that sector who owns the connected link of OPGW for which equipment has been installed.

Deliberation in the meeting

GM, NERTS informed that most of the links mentioned above has already been completed by them.

SE(O) informed that apart from above links, Manipur has intimated that additional links in Manipur is needed to be linked through OPGW and requested POWERGRID to look into the matter. He requested other constituents also if they have any proposal they can send an agenda item so that the matter can be taken up in the next TCC/RPC meeting.

GM, NERTS informed that no new addition is possible to be included at present, but in the new OPGW expansion, they will look into the matter.

The Sub-committee noted as above.

Action: NERTS

D.21 Replacement of SDH nodes of ULDC Scheme:

NERTS informed that as decided in the 21st UCC meeting, replacement of SDH equipment of all nodes of ULDC scheme were taken up. To keep uniformity of equipment & common spare generation, the same has been procured under the same LOA as awarded under MW vacation project. Cost Implication-Rs. 2.30 crores (approx). Forum may agree in principle & booking of the cost in to MW vacation project.

Deliberation in the meeting

All constituents agreed to the above proposal and requested NERTS/NERPC to put up the proposal in the next TCC/RPC meeting for endorsement.

Action: NERPC/NERTS

D.22 NER expansion project-Revision of Links:

It is proposed that following links may be deleted/revised from the list considered under NER Expansion project:

S.N.	Names of Links	Link length	Proposed Action	Reason for deletion/Revision	Remarks
1	132kV Silchar P.K.Bari	130km	Deletion	**Insurmountable ROW issue** due to which construction of Sil-PKB T/L is yet not completed.	Forum may suggest alternate route, if at all required, keeping in view integrity of expansion network.
2	Bong-SKT	1km	Revision	Bong-NTPC-AEGCL already considered in MW vacation. And Bong-Skt-PG connected over ICT link under HVDC & NKN.	Forum may consider alternate route by connecting Bong-220kV to Salakati-BTPS (AEGCL)-3.5km link(owner-CS) may be considered

Deliberation in the meeting

All constituents agreed to the above proposal and requested NERTS/NERPC to put up the proposal in the next TCC/RPC meeting for endorsement.

Action: NERPC/NERTS

D.23 Replacement of PDH Multiplexer nodes of ULDC Scheme & Terminal equipment (PDH+SDH) for all new SLDC ends & important nodes for SLDC connectivity:

NERTS informed that the issue was discussed in the 20th & 21st UCC meeting, further recommended and emphasized by UCC Forum, it is proposed for replacement of PDH Multiplexers (FOX515-ABB) equipment for all nodes considered under ULDC scheme. This will also include terminal equipment as mandatorily required for new SLDCs being established in NER.

Deliberation in the meeting

All constituents agreed to the above proposal and requested NERTS/NERPC to put up the proposal in the next TCC/RPC meeting for endorsement.

Action: NERPC/NERTS

ADDITIONAL AGENDA:

A. Comprehensive Award Scheme for Power Sector for the year 2014-2015:

SE(O) informed that Govt. of India has instituted an Annual Comprehensive Award Scheme for Power Sector. One of the Awards is for "Best Power Transmission System Availability". Copy of the scheme is at **Annexure – A.** The process has been initiated for the said awards for the year 2014-2015, for which nominations from all Central, State and eligible Private/JV sector transmission licensees are invited. Nomination from each licensee for a category of awards (220kv & above, or 132kV & above) will be considered taking into account all the areas/administrative regions/circles of that category of that category under the respective licensee in the country as a whole. He requested all the transmission licensees to forward their data as per enclosed scheme for 2014-15 to NERPC latest by **14th August, 2015** with due certification by concerned SLDC where applicable.

Deliberation in the meeting

The Sub-committee requested all the constituents of NER to take necessary action in this regard and submit their scheme if any, before above date.

B. Tapping in form of TEE – Connection at Bairabi Sub-station on the 132 KV Badarpur – Kolasib S/C transmission line.

SE(O) intimated that Govt. of Mizoram had requested Ministry of Power, Govt. of India to allow tapping of 132kV Badarpur – Kolasib line at Bairabi to feed power to Bairabi and adjoining villages. He stated that the issue was discussed with Ministry of Power and they have suggested that the issue may be discussed in the Sub-committee of NERPC and seek the views from the constituents for allowing temporary arrangement. He highlighted the urgency to restore power to Bairabi and adjoining areas which were affected since 02.04.2015 and requested the forum to give their opinions on the matter.

Deliberation in the meeting

After detailed deliberation, the Sub-committee meetings of NERPC unanimously agreed to allow temporary connection of above line by Dept. of Power, Govt. of

Mizoram to restore power supply to Bairabi and adjoining areas which was disrupted since April, 2015 along with the rider as below:

1. Dept. of Power, Mizoram should try to restore the T-connection to normal connection within three (3) months.
2. Bairabi will be radially fed from Badarpur by disconnecting Kolasib – Aizawl line.
3. Protection system should be in place.
4. Transmission Loss has to be borne by Dept. of Power, Mizoram.
5. Dept. of Power, Mizoram should intimate NERPC the monthly progress report of restoration of removing T-connection.

In view of above, Dept. of Power, Mizoram is requested to carry out the work immediately to restore power supply to Bairabi and adjoining areas as approved by the Sub-committee.

The Sub-committee noted as above.

Action: NERTS

C. Non–reporting of RTUs of Constituents

a) AEGCL:

Only 14-18 RTUs out of 50 are reporting partially with 10 to 20 % data. It is very difficult to run the GRID without proper real-time data. So AEGCL may confirm the realistic time by which all 50 RTUs is expected to be restored and real-time data can be provided for Grid Management.

The following Generating Stations and Sub-stations need utmost attention.

Generating Stations: NTPS, LTPS, Karbi Langpi

Sub-stations: Sarusajai, Samaguri, Mariani, BTPS, Dhaligaon, Rangia (Bhutan line data not available), Badarpur, Pailapool, Haflong, Dullavchera, Bokajan.

b) Me.ECL:

Generating Stations: Umiam-II (18 MW), Umiam, Leshka (84 MW) , Umtru

Sub-stations: 132 kV Khliehriat, Byrnihat S/S.

c) <u>TSECL</u>:

Generating Stations: 1. Gumti (since January, 2011), 2. Baramura (partial, U-5 data NA, CB status N/S) and 3. Rokhia (U-3 N/A, all CB status suspect)

Substations: Dharmanagar, Badharghat, Kamalpur, Jirinia, Budhjungnagar, Ambasa, Udaipur (Palatana line not connected) 7-8 RTUs are reporting against 15 RTUs.

d) Manipur: 4 RTUs

e) Nagaland: 3 RTUs

f) Mizoram: 1 RTU

g) MARIA_PG unstable.

h) Kopili and Doyang RTU not reporting.

i) Kathalguri and RC Nagar *50 pc data available*.

<u>Deliberation in the meeting</u>

GM, NERTS, POWERGRID informed that old RTUs are to be replaced immediately. Services required for these RTUs cannot be supported by the suppliers. All the constituents of NER are requested to replace their old RTUs at the earliest.

The Sub-committee requested all constituents of NER to procure new RTUs and replaced the old RTUs at the earliest so that real time data can be monitored for the benefit of the grid.

<u>Date & Venue of next OCC meeting</u>

It is proposed to hold the 112nd OCC meeting of NERPC on first week of August, 2015. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

****

Annexure-I

List of Participants in the 111st OCC Meetings held on 15/07/2015

SN	Name & Designation	Organization	Contact No.
1.	Sh. Nangkong Perme, EE, SLDC	Ar. Pradesh	09436288643
2.	Sh. M.K. Bordoloi, CGM, SLDC	Assam	09435203996
3.	Sh. M.K. Adhikary, GM (TRC)	Assam	
4.	Sh. A.K. Saikia, DGM,LDC, AEGCL	Assam	09401026118
5.	Sh. A.K. Das, AGM,AEGCL H/Q	Assam	09435045804
6.	Sh. P. Borah, AGM, Com Div (JHT)	Assam	09864064679
7.	Sh. H. Kakoti, AGM (Comn. Div)	Assam	09864110407
8.	Sh. A.N. Choudhury, AGM (Com)	Assam	09854120791
9.	Sh. J.K. Baishya, AGM	Assam	09435041494
10.	Sh. Karuna Sarma, AGM, AEGCL	Assam	09435013532
11.	Sh. K.M. Singh, Manager	Manipur	09436022380
12.	Sh. P. Yaiphaba, Manager	Manipur	08774088766
13.	Sh. Javed. M. Warjri, AEE ,SLDC	Meghalaya	09856012700
14.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
15.	Sh. Thanglawra, EE (MRT)	Mizoram	09862537214
16.	Sh. Lalduhawma, EE (SLDC)	Mizoram	09436144113
17.	Sh. A. Jakhalu, E.E (Trans)	Nagaland	09436002696
18.	Sh. D. Pal, Sr. Manager	Tripura	09436500244
19.	Sh. A. Mallick, DGM (SO-II)	NERLDC	09436302720
20.	Sh. B. Medhi, Manager	NERLDC	09436335376
21.	Sh. Ankit Jain, Engineer	NERLDC	09436335381
22.	Sh. A. Patir, GM (AM)	PGCIL	09436302529
23.	Sh. P. Kanungo, DGM (AM)	PGCIL	09436302823
24.	Sh. Joypal Roy, Sr. Manager (E/M)	NEEPCO	09435577726
25.	Sh. Ekonthung Ngullie, DGM (O&M)	NTPC	09435139531
26.	Sh. S. Medhi, Dy. Manager (AM)	NHPC	09435534564
27.	Sh. Thakor Prasad Pandey, DGM (O&M)	OTPC	08794718423
28.	Sh. P.K. Mishra, MS	NERPC	09968380242
29.	Sh. B.Lyngkhoi, Director/S.E (O)	NERPC	09436163419
30.	Sh. S.M. Jha, E.E	NERPC	08731845175
31.	Sh. S. Mukherjee, AEE	NERPC	08794277306
32.	Sh. Shaishav Ranjan, A.E	NERPC	08794276168

ANNEXURE-C.2

Maximum Conductor Temp. 85 °C

ACSR MOOSE (597 sqmm)

where V=400KV

Amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	798	552.85
43	813.96	563.91
41	845.88	586.03
40	874	605.51
38	891.48	617.62
36	908.96	629.73
34	926.44	641.84
32	943.92	653.95
30	961.40	666.06
28	978.88	678.17
26	996.36	690.28
24	1013.84	702.39
22	1031.32	714.50
20	1048.80	726.61

Maximum Condutor Temp. 75 °C

ACSR MOOSE (597 sqmm)

where V=400KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	631	437.16
43	643.62	445.90
41	668.86	463.39
40	728	504.36
38	742.56	514.45
36	757.12	524.53
34	771.68	534.62
32	786.24	544.71
30	800.80	554.79
28	815.36	564.88
26	829.92	574.97
24	844.48	585.06
22	859.04	595.14
20	873.60	605.23

Maximum Condutor Temp. 85 °C

ACSR Bersimis(724.69 sqmm)

where V=400KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	933	646.38
43	951.66	659.31
41	988.98	685.17
40	1024	709.43
38	1044.48	723.62
36	1064.96	737.80
34	1085.44	751.99
32	1105.92	766.18
30	1126.40	780.37
28	1146.88	794.56
26	1167.36	808.75
24	1187.84	822.94
22	1208.32	837.12
20	1228.80	851.31

Maximum Condutor Temp. 75 °C

ACSR Bersimis(724.69 sqmm)

where V=400KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	732	507.13
43	746.64	517.27
41	775.92	537.56
40	848	587.49
38	864.96	599.24
36	881.92	610.99
34	898.88	622.74
32	915.84	634.49
30	932.80	646.24
28	949.76	657.99
26	966.72	669.74
24	983.68	681.49
22	1000.64	693.24
20	1017.60	704.99

Maximum Condutor Temp. 85 °C

Zebra (484 sqmm)

where V=400KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	703	487.04
43	717.06	496.78
41	745.18	516.26
40	769	532.76
38	784.38	543.42
36	799.76	554.07
34	815.14	564.73
32	830.52	575.38
30	845.90	586.04
28	861.28	596.69
26	876.66	607.35
24	892.04	618.01
22	907.42	628.66
20	922.80	639.32

Maximum Condutor Temp. 75 °C

Zebra (484 sqmm)

where V=400KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	560	
43	571.2	
41	593.6	
40	643	445.47
38	655.86	454.38
36	668.72	463.29
34	681.58	472.20
32	694.44	481.11
30	707.30	490.02
28	720.16	498.93
26	733.02	507.84
24	745.88	516.75
22	758.74	525.66
20	771.60	534.56

Maximum Condutor Temp. 85 °C

ACSR MOOSE (597 sqmm) **Quad Conductor**

where V=765 KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	798	4229.34
43	813.96	4313.92
41	845.88	4483.10
40	874	4632.13
38	891.48	4724.77
36	908.96	4817.42
34	926.44	4910.06
32	943.92	5002.70
30	961.40	5095.34
28	978.88	5187.99
26	996.36	5280.63
24	1013.84	5373.27
22	1031.32	5465.91
20	1048.80	5558.56

Maximum Condutor Temp. 75 °C

ACSR MOOSE (597 sqmm) **Quad Conductor**

where V=765 KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	631	3344.25
43	643.62	3411.13
41	668.86	3544.90
40	728	3858.34
38	742.56	3935.51
36	757.12	4012.68
34	771.68	4089.84
32	786.24	4167.01
30	800.80	4244.18
28	815.36	4321.34
26	829.92	4398.51
24	844.48	4475.68
22	859.04	4552.84
20	873.60	4630.01

Maximum Condutor Temp. 85 °C

ACSR Bersimis(724.69 sqmm) **Quad Conductor**

where V=765 KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	933	
43	951.66	
41	988.98	
40	1024	5427.12
38	1044.48	5535.66
36	1064.96	5644.20
34	1085.44	5752.75
32	1105.92	5861.29
30	1126.40	5969.83
28	1146.88	6078.37
26	1167.36	6186.91
24	1187.84	6295.46
22	1208.32	6404.00
20	1228.80	6512.54

Maximum Condutor Temp. 75 °C

ACSR Bersimis(724.69 sqmm) **Quad Conductor**

where V=765 KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	732	3879.54
43	746.64	3957.13
41	775.92	4112.31
40	848	4494.33
38	864.96	4584.22
36	881.92	4674.11
34	898.88	4763.99
32	915.84	4853.88
30	932.80	4943.77
28	949.76	5033.65
26	966.72	5123.54
24	983.68	5213.43
22	1000.64	5303.31
20	1017.60	5393.20

Maximum Condutor Temp. 75 °C

ACSR Panther(210 sqmm)

where V=132 KV

amb. Temp. °C	current in amp.	root 3 X1 (MW)
45	366	83.68
43	373.32	85.35
41	387.96	88.70
40	413	94.42
38	421.26	96.31
36	429.52	98.20
34	437.78	100.09
32	446.04	101.98
30	454.30	103.86
28	462.56	105.75
26	470.82	107.64
24	479.08	109.53
22	487.34	111.42
20	495.60	113.31

Maximum Condutor Temp. 65 °C

ACSR Panther(210 sqmm)

where V=132 KV

amb. Temp. °C	current in amp.	root 3 X1 (MW)
45	244	55.78
43	248.88	56.90
41	258.64	59.13
40	312	71.33
38	318.24	72.76
36	324.48	74.18
34	330.72	75.61
32	336.96	77.04
30	343.20	78.46
28	349.44	79.89
26	355.68	81.32
24	361.92	82.74
22	368.16	84.17
20	374.40	85.60

Maximum Condutor Temp. 85 °C

Zebra (484 sqmm)

Hexa **where V=765KV**

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	703	5588.77
43	717.06	5700.54
41	745.18	5924.09
40	769	6113.46
38	769.00	6113.46
36	769.00	6113.46
34	769.00	6113.46
32	769.00	6113.46
30	769.00	6113.46
28	769.00	6113.46
26	769.00	6113.46
24	769.00	6113.46
22	769.00	6113.46
20	769.00	6113.46

Maximum Condutor Temp. 75 °C

Zebra (484 sqmm)

where V=765KV

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	560	4451.93
43	571.2	4540.97
41	593.6	4719.05
40	643	5111.77
38	655.86	5214.01
36	668.72	5316.24
34	681.58	5418.48
32	694.44	5520.71
30	707.30	5622.95
28	720.16	5725.19
26	733.02	5827.42
24	745.88	5929.66
22	758.74	6031.89
20	771.60	6134.13

Maximum Conductor Temp. 85 °C

ACSR MOOSE (597 sqmm)

Twin **where V=400KV**

Amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	798	1105.71
43	813.96	1127.82
41	845.88	1172.05
40	874	1211.01
38	891.48	1235.23
36	908.96	1259.45
34	926.44	1283.68
32	943.92	1307.90
30	961.40	1332.12
28	978.88	1356.34
26	996.36	1380.56
24	1013.84	1404.78
22	1031.32	1429.00
20	1048.80	1453.22

Maximum Condutor Temp. 75 °C

ACSR MOOSE (597 sqmm)

Twin **where V=400KV**

amb. Temp. °C	current in amp.	root 3 X VI (MW)
45	631	874.31
43	643.62	891.80
41	668.86	926.77
40	728	1008.72
38	742.56	1028.89
36	757.12	1049.07
34	771.68	1069.24
32	786.24	1089.41
30	800.80	1109.59
28	815.36	1129.76
26	829.92	1149.94
24	844.48	1170.11
22	859.04	1190.29
20	873.60	1210.46

ANNEXURE-C.2 (II)

Loadability of Lines of NER Grid (Inter-State Transmission Lines and Important lines of Intra-State level as per Adopted CT Ratios, CEA Manual on Transmission Planning Criteria and NRCE Guidelines

																As per CEA Transmission Planning Criteria Jan-2013							As per NRCE Guidelines			
S.No.	Name of the Line	Design Voltage in kV	Charged Voltage in kV	Length in ckt km	Type of conductor	Conductor Configuration	Conductor Size in sqr mm	CT Ratio at End-1	Adopted CT ratio at End-1	CT Ratio at End-2	Adopted CT ratio at End-2	Ampacity at End 1	Ampacity at End 2	Loading Limit (MVA) as per minimum CT ratio at End 1	Loading Limit (MVA) as per minimum CT ratio at End 2	Conductor Temperature (°C)	Ambient Teperature (°C)	Thermal Ampacity in A	Thermal Capacity in MVA	Emergency Loading Capacity in MVA (110% of Nominal)	Whether adopted CT ratio is sufficient at End 1	Whether adopted CT ratio is sufficient at End 2	Ampacity at 75° C Conductor Temp and 45° C Ambient Temp	MW Capacity at 75° C Conductor Temp and 45° C Ambient Temp	Ampacity at 75° C Conductor Temp and 20° C Ambient Temp	MW Capacity at 75° C Conductor Temp and 20° C Ambient Temp
As per Information furnished by NERTS, POWERGRID and NEEPCO and NETC																										
1	AGTPP - Agartala-I	132	132	8	ACSR Panther	Single	210	600/1	300/1	400/1	400/1	300	400	69	91	75	45	366	84	92	N	Y	366	84	496	113
2	AGTPP - Agartala-II	132	132	8	ACSR Panther	Single	210	600/1	300/1	400/1	400/1	300	400	69	91	75	45	366	84	92	N	Y	366	84	496	113
3	**Kolasib - Badarpur**	**132**	**132**	**107**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
4	**Aizwal - Kolasib**	**132**	**132**	**66**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
5	Aizwal - Kumarghat	132	132	133	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
6	Aizwal - Zemabawk	132	132	7	ACSR Panther	Single	210	300/1	300/1	600/1	600/1	300	600	69	137	75	45	366	84	92	N	Y	366	84	496	113
7	**Badarpur - Badarpur**	**132**	**132**	**1**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
8	**Badarpur - Jiribam**	**132**	**132**	**67**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
9	**Badarpur - Khliehriat**	**132**	**132**	**77**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
10	**Badarpur - Kumarghat**	**132**	**132**	**119**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**400/1**	**400/1**	**400**	**400**	**91**	**91**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
11	Dimapur - Imphal	132	132	169	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
12	Doyang - Dimapur-I	132	132	93	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
13	Doyang - Dimapur-II	132	132	93	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
14	Gohpur - Nirjuli (Itanagar)	132	132	43	ACSR Panther	Single	210	600/1	300/1	600/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
15	Imphal - Imphal	132	132	2	ACSR Panther	Single	210	600/1	400/1	600/1	400/1	600	400	137	91	75	45	366	84	92	Y	Y	366	84	496	113
16	Jiribam - Aizwal	132	132	172	ACSR Panther	Single	210	400/1	400/1	400/1	400/1	400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	113
17	Jiribam - Haflong	132	132	101	ACSR Panther	Single	210	400/1	400/1	400/1	400/1	400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	113
18	Jiribam - Loktak-II	132	132	82	ACSR Panther	Single	210	300/1	300/1	400/1	400/1	300	400	69	91	75	45	366	84	92	N	Y	366	84	496	113
19	Khandong - Umrangshoo	132	132		ACSR Panther	Single	210	300/1	300/1			300		69	0	75	45	366	84	92	N	N	366	84	496	113
20	Umrangshoo - Haflong	132	132		ACSR Panther	Single	210			400/1	400/1		400	0	91	75	45	366	84	92	N	Y	366	84	496	113
21	Khandong - Khliehriat-I	132	132	42	ACSR Panther	Single	210	300/1	300/1	600/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
22	**Khandong - Khliehriat-II**	**132**	**132**	**41**	**AAAC Panther**	**Single**		**600/1**	**600/1**	**600/1**	**600/1**	**600**	**600**	**137**	**137**	**75**	**45**	**366**	84	92	Y	Y	**366**	**84**	**496**	**113**
23	Khandong - Kopili I	132	132	11	ACSR Panther	Single	210	600/1	600/1	300/1	300/1	600	300	137	69	75	45	366	84	92	Y	N	366	84	496	113
24	***Khandong - Kopili II***	***132***	***132***	***12***	***ACSR Zebra***	***Single***		***600/1***	***600/1***	***600/1***	***600/1***	***600***	***600***	***137***	***137***	***75***	***45***	***366***	84	92	Y	Y	***366***	***84***	***496***	***113***
25	**Khliehriat - Khliehriat - I**	**132**	**132**	**8**	**AAAC Panther**	**Single**		**300/1**	**600/1**	**300/1**	**300/1**	**300**	**300**	**69**	**69**	**75**	**45**	**366**	84	92	N	N	**366**	**84**	**496**	**113**
26	Kumarghat - R.C.Nagar (Agartala)	132	132	104	ACSR Panther	Single	210	600/1	600/1	600/1	600/1	600	600	137	137	75	45	366	84	92	Y	Y	366	84	496	113
27	Loktak - Imphal-II	132	132	35	ACSR Panther	Single	210	400/1	400/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
28	Nirjuli -Ranganadi1-1	132	132	22	ACSR Panther	Single	210	600/1	600/1	500/1	500/1	500	500	114	114	75	45	366	84	92	Y	Y	366	84	496	113
29	Ranganadi - Ziro	132	132	45	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
30	Kohima-Dimapur1(PG)-1	132	132	58	ACSR Panther	Single	210	300/1	300/1	300/1	300/1	300	300	69	69	75	45	366	84	92	N	N	366	84	496	113
31	Silchar - Srikona I	132	132	1	ACSR Panther	Single	210	600/1	600/1	600/1	600/1	600	600	137	137	75	45	366	84	92	Y	Y	366	84	496	113
32	Silchar - Srikona II	132	132	1	ACSR Panther	Single	210	600/1	600/1	600/1	600/1	600	600	137	137	75	45	366	84	92	Y	Y	366	84	496	113
33	Silchar - Badarpur I	132	132	19	ACSR Panther	Single	210	600/1	600/1	600/1	600/1	600	600	137	137	75	45	366	84	92	Y	Y	366	84	496	113
34	Silchar - Badarpur II	132	132	19	ACSR Panther	Single	210	600/1	600/1	600/1	600/1	600	600	137	137	75	45	366	84	92	Y	Y	366	84	496	113
35	***Tezpur(Depota)-Balipara-1***	***132***	***132***	***28***	***ACSR Zebra***	***Single***	***484***	***800/1***	***800/1***	***800/1***	***800/1***	***800***	***800***	***183***	***183***	***75***	***45***	***560***	128	141	Y	Y	***560***	***128***	***772***	***176***
36	***Misa - Dimapur-I***	***220***	***220***	***124***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
37	***Misa - Dimapur-II***	***220***	***220***	***124***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
38	***Misa - Kopili-I***	***220***	***220***	***73***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
39	***Misa - Kopili-II***	***220***	***220***	***73***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
40	***Misa - Kopili-III***	***220***	***220***	***76***	***AAAC Zebra***	***Single***	***479***	***800/1***	***800/1***	***500/1***	***500/1***	***800***	***500***	***305***	***191***	***75***	***45***	***560***	213	235	Y	N	***560***	***213***	***772***	***294***
41	***Misa - Samaguri-I***	***220***	***220***	***34***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
42	***Misa - Samaguri-II***	***220***	***220***	***34***	***ACSR Zebra***	***Single***	***484***	***500/1***	***500/1***	***500/1***	***500/1***	***500***	***500***	***191***	***191***	***75***	***45***	***560***	213	235	N	N	***560***	***213***	***772***	***294***
43	AGBPP - Mariani (Charge at 220 kV)	400	220	163	ACSR Moose	Twin	597	800/1	800/1	800/1	800/1	800	800	305	305	75	45	1262	481	529	N	N	1262	481	1747	666
44	AGBPP - Misa (Charge at 220 kV)	400	220	383	ACSR Moose	Twin	597	800/1	800/1	800/1	800/1	800	800	305	305	75	45	1262	481	529	N	N	1262	481	1747	666
45	Misa - Mariani (Charge at 220 kV)	400	220	220	ACSR Moose	Twin	597	800/1	800/1	800/1	800/1	800	800	305	305	75	45	1262	481	529	N	N	1262	481	1747	666
46	Balipara - Bongaigaon I	400	400	290	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
47	Balipara - Bongaigaon I	400	400	290	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
48	Misa - Balipara I	400	400	95	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
49	Misa - Balipara II	400	400	95	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
50	Balipara - Ranganadi I	400	400	166	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
51	Balipara - Ranganadi II	400	400	166	ACSR Moose	Twin	597	1000/1	1000/1	1000/1	1000/1	1000	1000	693	693	75	45	1262	874	962	N	N	1262	874	1747	1210
52	Silchar - Azara	400	400	265	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
53	Azara - Bongaigaon	400	400	118	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
54	Silchar - Byrnihat	400	400	217	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
55	Byrnihat - Bongaigaon	400	400	167	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
56	Bongaigaon - Balipara III	400	400	304	ACSR Moose	Quad	597									75	45	2524	1749	1924	N	N	2524	1749	3494	2421
57	Bongaigaon - Balipara IV	400	400	304	ACSR Moose	Quad	597									75	45	2524	1749	1924	N	N	2524	1749	3494	2421
58	Balipara - BiswanathChariali I	400	400	65	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
59	Balipara - BiswanathChariali II	400	400	65	ACSR Moose	Twin	597									75	45	1262	874	962	N	N	1262	874	1747	1210
60	Silchar - Imphal I	400	132	140	ACSR Moose	Twin	597									75	45	1262	289	317	N	N	1262	289	1747	399
61	Silchar - Imphal II	400	132	140	ACSR Moose	Twin	597									75	45	1262	289	317	N	N	1262	289	1747	399
62	Silchar - PKBari I	400	132	127	ACSR Moose	Twin	597			600/1	600/1		600			75	45	1262	289	317	N	N	1262	289	1747	399
63	Silchar - PKBari II	400	132	127	ACSR Moose	Twin	597			600/1	600/1		600			75	45	1262	289	317	N	N	1262	289	1747	399
64	Mariani - Mokokchung I	220	220		ACSR Zebra	Single	484									75	45	560	213	235	N	N	560	213	772	294
65	Mariani - Mokokchung II	220	220		ACSR Zebra	Single	484									75	45	560	213	235	N	N	560	213	772	294
As per Information furnished by State Utilities of NER																										

Column-B: CEA TPC:CEA Transmission Planning Criteria; Column-C: Stability Limit = V1*V2*sin(δ)/X, considering V1=V2=1 PU, δ=30;

																As per CEA Transmission Planning Criteria Jan-2013								As per NRCE Guidelines			
S.No.	Name of the Line	Design Voltage in kV	Charged Voltage in kV	Length in ckt km	Type of conductor	Conductor Configuration	Conductor Size in sqr mm	CT Ratio at End-1	Adopted CT ratio at End-1	CT Ratio at End-2	Adopted CT ratio at End-2	Ampacity at End 1	Ampacity at End 2	Loading Limit (MVA) as per minimum CT ratio at End 1	Loading Limit (MVA) as per minimum CT ratio at End 2	Conductor Temperature ($^{\circ}$C)	Ambient Teperature ($^{\circ}$C)	Thermal Ampacity in A	Thermal Capacity in MVA	Emergency Loading Capacity in MVA (110% of Nominal)	Whether adopted CT ratio is sufficient at End 1	Whether adopted CT ratio is sufficient at End 2	Ampacity at 75°C Conductor Temp and 45°C Ambient Temp	MW Capacity at 75°C Conductor Temp and 45°C Ambient Temp	Ampacity at 75°C Conductor Temp and 20°C Ambient Temp	MW Capacity at 75°C Conductor Temp and 20°C Ambient Temp
1	**AGBPP- Deomali**	**220**	**220**		**ACSR Zebra**	**Single**	**484**	**800-400/1**						0	0	**75**	**45**	**560**	**213**	235	**N**	**N**	**560**	213	***772***	***294***
2	BTPS- Salakati I	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
3	BTPS -Salakati II	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
4	Agia-Sarusajai	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
5	Boko-Agia	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
6	Boko-Sarusajai	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
7	Mariani(AS)-AGBPP	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
8	Mariani(PG)-Misa	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
9	Mariani-Samaguri I	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
10	Samaguri-Balipara	220	220		ACSR Zebra	Single	484	400/1				400		152	0	75	45	560	213	235	N	N	560	213	***772***	***294***
11	Samaguri-Sarusajai I	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
12	Samaguri-Sarusajai II	220	220		ACSR Zebra	Single	484	800/1		800/1		800	800	305	305	75	45	560	213	235	Y	Y	560	213	***772***	***294***
13	AGBPP- Tinsukia I	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
14	AGBPP- Tinsukia II	220	220		ACSR Zebra	Single	484	800/1				800		305	0	75	45	560	213	235	Y	N	560	213	***772***	***294***
15	Dimapur-Dimapur (PG) I	132	132	1	ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
16	Dimapur-Dimapur (PG) II	132	132	1	ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
17	Kohima-Dimapur (PG)	132	132	58	ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
18	Bokajan-Dimapur	132	132		ACSR Panther	Single	210	100/1				100		23	0	75	45	366	84	92	N	N	366	84	496	***113***
19	Kohima- Karong	132	132		ACSR Panther	Single	210	250/1				250		57	0	75	45	366	84	92	N	N	366	84	496	***113***
20	Baljpara-Depota	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
21	Gohpur-Nirjuli	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
22	Kahilipara-Umtru I	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
23	Kahilipara-Umtru II	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
24	Pailapool-Jiribam(PG)	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
25	Pailapool-Srikona	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
26	Panchgram- Badarpur(PG)	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
27	Panchgram-Khlehriat	132	132		ACSR Panther	Single	210	400/1				400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
28	Panchgram-Srikona	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
29	Panchgram-Lumshnong	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
30	P K Bari - Kumarghat	132	132	1	ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
31	Agartala - Dhalabil	132	132	45	AAAC	Single		400/1		400/5		400	80	91	18	75	45	366	84	92	Y	N	366	84	496	***113***
32	Baramura - Teliamura(Gamaitila)	132	132	14	ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
33	P K Bari - Dharmanagar	132	132	35	AAAC	Single		400/1		400/5		400	80	91	18	75	45	366	84	92	Y	N	366	84	496	***113***
34	Udaipur - Palatana	132	132	12	ACSR Panther	Single	210	400/1		n/a		400		91	0	75	45	366	84	92	Y	N	366	84	496	***113***
35	**Surajmani Nagar - Palatana**	**132**	**132**	**35**	ACSR Panther	Single	210	**600-400/1**		**600-400/1**				**0**	**0**	**75**	**45**	**366**	84	92	N	N	**366**	84	496	***113***
36	**Surajmani Nagar - Palatana**	**132**	**132**	**35**	ACSR Panther	Single	210	**600-400/1**		**600-400/1**				**0**	**0**	**75**	**45**	**366**	84	92	N	N	**366**	84	496	***113***
37	Mawlai- Stage-I	132	132		ACSR Panther	Single	210			400/1			400	0	91	75	45	366	84	92	N	Y	366	84	496	***113***
38	EPIP II -Killing I	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***
39	EPIP II - Killing II	132	132		ACSR Panther	Single	210	400/1		400/1		400	400	91	91	75	45	366	84	92	Y	Y	366	84	496	***113***

Note :

1) At present for purpose of TTC calculations, line loadings are considered as per Normal Loading limit (Thermal Limit) as specified in CEA's Manual on Transmmission Planning Criteria or in NRCE Guidelines

2) The line loadings considered for study purpose are at 75 degree C conductor temperature and 45 degree C ambient temperature.

3) The line loadings will go up as there is a reduction in Ambient temperture from 45 degree Celcius

4) Further, as per NRCE Guidelines, all lines should be capable of carrying power as per specified in the Guidelines.

5) As per Opertional Guidelines issued by NRCE, in case relay settings restrict the transfer of power, it would be checked by the owner of the terminal equipment if they are in line with the guidelines given by the Task Force onPower System Analysis under contingencies. If they are not in line with the same, the relaysettings would have to be aligned with the same

6) As per CEA's Manual on Transmission Planning Criteria, all lines should be able to carry Emergency Loading in cases of contingencies for a duration of 1 to 2 hours

Column-B: CEA TPC:CEA Transmission Planning Criteria; Column-C: Stability Limit = V1*V2*sin(δ)/X, considering V1=V2=1 PU, δ=30;

Power Cuts/Load shedding : Region

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
MAX MW																															
MIN MW																															

Power Cuts/Load shedding : State1

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
MAX MW																															
MIN MW																															

Power Cuts/Load shedding : State2

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
MAX MW																															
MIN MW																															

Power Cuts/Load shedding : State3

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
MAX MW																															
MIN MW																															

Power Cuts/Load shedding : State4

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
MAX MW																															
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Power Cuts/Load shedding : State5

Date / Hour	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th	20th	21st	22nd	23rd	24th	25th	26th	27th	28th	29th	30th	31st
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AVE MW																															
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Scheme Code: Tr-1

Annexure-II

1. (a). Name of the Transmission Licensee in English:

   (b). Name of the Transmission Licensee in Hindi:

2. Address for correspondence:

3. Name & Contact details of Nodal officer in the organization:

4. Brief details about Transmission Licensee:

5. Brief details of calculation as per enclosed scheme at Appendix-III, IV and V of **Annexure-I**:

Scheme Code: Tr-1

Annexure-III

Transmission Element Data as on 31/03/2015

Details of Transmission Lines:

S.No.	Name of the Transmission Line	Voltage Level (kV)	S/C or D/C or S/C on D/C Tower Line	Line Length (Ckt. Km.)	Conductor type and characteristics	Surge Impedence Loading (SIL)	Date of commissioning	Date of Comml Operation
1								
2								
3								
4								
5								

Details of Substations:

S.No.	Name of the Sub-Station	Voltage Level (kV)	No. of ICTs / Switched Bus Reactors / SVCs	MVA Capacity of ICTs / MVAR of Switched Bus Reactors / SVCs	Date of commissioning	Date of Comml. Operation
1						
2						
3						
4						
5						

Transmission System Outage Data

Name of the Transmission Licensee:
Period: 2014-15

Annexure-IV

(Elementwise chronological listing)

S. No.	Name of the Transmission Element	Outage		Restoration		Duration of Outage attributable to						Deemed Availability	Reason of outage	Weightage factor of the transmission element (Wi)	Ckm $	Time considered for availability (Ti)	Time considered for Non-availability (TNAI)	Wi (Ti-TNAI)/Ti	Element wise availability
						Entity itself		Others		System #									
		Date	Time	Date	Time	Hrs	Min	Hrs	(Hrs)	Hrs	Min	(%)				(Hrs)	(Hrs)		(%)
	Transmission Lines																		
AC Lines																			
1																			
2																			
Element wise Sub-Total																			
HVDC																			
1																			
2																			
Inter-connecting Transformers (ICT) (Location & MVA Capacity)																			
1																			
2																			
Element wise Sub-Total																			
SVCs (Location & MVAR Capacity)																			
1																			
2																			
Element wise Sub-Total																			
Bus Reactors (Location & MVAR Capacity)																			
1																			
2																			
Element wise Sub Total																			

* MVA capacity for ICTs / MVAR for bus reactors and SVCs / rated capacity of HVDC syatem in MW

\# System constraints/ Natural calamity/ Militancy etc

$ Ckm and number of Sub-Conductor for lines and number for ICT/bus reactor / SVC