



भारत सरकार Government of India

विद्युत मंत्रालय Ministry of Power

उत्तर पूर्वी क्षेत्रीय विद्युत समिति

**North Eastern Regional Power Committee**

एन ई आर पी सी कॉम्प्लेक्स, डोंग पारमाओ, लापालाङ, शिल्लोंग-७९३००६, मेघालय  
NERPC Complex, Dong Parmaw, Lapalang, Shillong - 793006, Meghalaya

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No. NERPC/SE (O)/OCC/2019/ **1692-1729**

Dated: November 11, 2019

To,

1. Managing Director, AEGCL, Bijuli Bhawan, Guwahati – 781 001
2. Managing Director, APDCL, Bijuli Bhawan, Guwahati – 781 001
3. Managing Director, APGCL, Bijuli Bhawan, Guwahati – 781 001
4. Director (Generation), Me. PGCL, Lumjingshai, Short Round Road, Shillong – 793 001
5. Director (Distribution), Me. ECL, Lumjingshai, Short Round Road, Shillong – 793 001
6. Director(Transmission), Me. PTCL, Lumjingshai, Short Round Road, Shillong – 793 001
7. Managing Director, MSPDCL, Secure Office Bldg. Complex, South Block, Imphal – 795 001
8. Managing Director, MSPCL, Electricity Complex, Keishampat, Imphal – 795 001
9. Director (Tech.), TSECL, Banamalipur, Agartala -799 001.
10. Director (Generation), TPGCL, Banamalipur, Agartala -799 001.
11. Chief Engineer (WE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
12. Chief Engineer (EE Zone), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
13. Chief Engineer (TP&MZ), Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791111
14. Engineer-in-Chief (P&E), Department of Power, Govt. of Mizoram, Aizawl – 796 001
15. Chief Engineer (P), Department of Power, Govt. of Nagaland, Kohima – 797 001
16. CGM, (LDC), SLDC Complex, AEGCL, Kahilipara, Guwahati-781 019
17. Group General Manager, NTPC, Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
18. ED, NERTS, PGCIL, Dongtiah-Lower Nongrah, Lapalang, Shillong -793 006
19. ED (O&M), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
20. ED (Commercial), NEEPCO Ltd., Brookland Compound, Lower New Colony, Shillong-793003
21. ED (O&M), NHPC, NHPC Office Complex, Sector-33, Faridabad, Haryana-121003
22. Vice President (Plant), OTPC, Badarghat Complex, Agartala, Tripura - 799014
23. GM, NERLDC, Dongtiah, Lower Nongrah, Lapalang, Shillong -793 006
24. Member Secretary, ERPC, 14 Golf Club Road, Tollygunge, Kolkata-700033
25. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
26. Chief Engineer (NPC), NRPC Complex, Katwaria Sarai, SJSS Marg., New Delhi - 110016

**Sub: Minutes of 161<sup>st</sup> OCC Meeting.**

Sir/Madam,

Please find enclosed herewith the minutes of 161<sup>st</sup> OCC Meeting held at Guwahati on the **22<sup>nd</sup> October, 2019** for your kind information and necessary action. The minute is also available on the website of NERPC, [www.nerpc.nic.in](http://www.nerpc.nic.in).

Any comments/observations may kindly be communicated to NERPC Secretariat at the earliest.

**Encl: As above**

भवदीय / Yours faithfully,

B. Lyngkhoi  
Director/ SE

Copy to:

1. CGM, AEGCL, Bijuli Bhavan, Guwahati - 781001
2. CGM, APGCL, Bijuli Bhavan, Guwahati - 781001
3. CGM, DISCOM, Bijuli Bhavan, Guwahati - 781001
4. Head of SLDC, Me.ECL, Lumjingshai, Short Round Road, Umjarain, Shillong – 793 022
5. Head of SLDC, Department of Power, Govt. of Arunachal Pradesh, Itanagar- 791 111
6. Head of SLDC, Department of Power, Dimapur, Nagaland
7. Head of SLDC, Electricity Department, Govt. of Manipur, Keishampat, Imphal – 795 001
8. Head of SLDC, Department of Power, Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799 001
10. Chief Engineer(Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
11. Addl. GM (EED), NTPC Ltd., Bongaigoan Thermal Power Project, P.O. Salakati, Kokrajhar- 783369
12. DGM (C&M), OTPC, 6th Floor, A-Wing, IFCI Tower -61, Nehru Place, New Delhi – 110019.



**Director/ SE**

North Eastern Regional Power Committee

**MINUTES OF THE 161<sup>st</sup> OPERATION COORDINATION**

**SUB-COMMITTEE MEETING OF NERPC**

**Date** : 22/10/2019 (Tuesday)  
**Time** : 10:00 hrs  
**Venue** : "Hotel Nandan", Guwahati.

The List of Participants in the 161<sup>st</sup> OCC Meeting is attached at **Annexure – I**

Member Secretary, NERPC welcomed all the participants to the 161<sup>st</sup> OCC meeting. At the very outset, he informed the forum of the incident at Kopili HEP. He stated that the loss of lives and loss of generation from the plant is very unfortunate. Further, he informed that NERPC officers have visited the site and saw that almost 15 feet silt, rock and boulder has filled up the plant. He mentioned that, as a forum will always stand united with NEEPCO during the time of crisis. Regarding PSDF, he requested all the utilities especially Arunachal Pradesh to avail funds from PSDF at the earliest, otherwise the same may get lapsed.

The forum observed a one-minute silence in respect of the lost lives at Kopili Power Station.

Thereafter, Member Secretary requested Director, NERPC to take up the agenda for discussion.

**A. CONFIRMATION OF MINUTES**

**CONFIRMATION OF MINUTES OF 160<sup>th</sup> MEETING OF OPERATION SUB-COMMITTEE OF NERPC.**

*The Sub-committee confirmed the minutes of 160<sup>th</sup> OCCM of NERPC as no comments/ observations received from the constituents.*

**ITEMS FOR DISCUSSION**

**B.1. ACTION TAKEN:**

**1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:**

The status as informed in 161<sup>st</sup> OCC:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST **	Line Differential Protection
Ar. Pradesh	Package-I NOA issued Finance dept concurrence not given. P-II tender to be opened on 22.10.19. Thereafter P-III tender will be done. Station-wise status to be updated *	Contract agreement signed. TPA-pending approval of the Finance Department, Govt of Ar. Pradesh	-	To reply to TESG queries.	-
Nagaland	All completed except for PLCC. Status submitted as per format, to be checked.	TPA completed, A/c opening by Oct'19	-	To reply to TESG queries.	Lines identified. Under DPR preparation stage.
Mizoram	Will be submitted by Oct'19.	Permission received from govt for opening of account. TPA under consideration of govt.	To reply to TESG queries.	To reply to TESG queries.	Lines identified for installation of DPR viz. 132kV Aizawl - Luangmual and 132kV Kawmzawl - Khawiva.
Manipur	Oct'19 Status report to be submitted	Contract agreement signed. TPA signed. A/C opening pending.	To reply to TESG queries.	To reply to TESG queries.	Lines identified. LDP for 132kV Imphal-Imphal and 132kV Jiribm-Jiribam proposed. Under DPR preparation stage.
Tripura	Station-wise status to be updated *	Contract agreement signed. Draft TPA with Govt of Tripura. TPA & A/C opening by Nov'19	Study to be carried out in consultation with NERLDC.	To reply to TESG queries.	Lines not yet identified. To be taken up in Sub-group.

Assam	Station wise not submitted. NERPC to write to MD, AEGCL	TPA, Contract agreement & A/C opening Nov', 19. Draft TPA under consideration of Govt.	-	Appraisal Committee approved.	Lines identified. Under DPR preparation stage.
Meghalaya	MePTCL Station-wise status updated MePGCL - Station-wise status to be updated.	Contract agreement signed, TPA completed and A/C opened. Requisition for first tranche given to PSDF.	-	Appraisal Committee approved.	Tendering in progress

***Deliberation of the sub-Committee:***

Director, NERPC informed that in the 20th TCC/NERPC meeting it was unanimously agreed to request MoP/CEA for grant of PSDF funding for SAMAST for 5 remaining States of NER. In this regard he requested the NER States (except Assam, Meghalaya) to submit the reply to queries ASAP.

It was intimated that a meeting would be convened at CEA New Delhi involving all NER States except Assam and Meghalaya where decision regarding PSDF grant in respect of the States would be taken. NERPC would coordinate with CEA and fix date of the meeting. All States advised to be ready with data sought by CEA.

***The Sub-Committee noted as above.***

***Action: All state utilities/NERPC.***

**2. Long Outage of Important Grid Elements:**

Name of the Element	Name of Utility	Status as informed in 160 <sup>th</sup> OCC	Status as informed in 161 <sup>st</sup> OCC
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	DPR submitted to NLDC/NPC.	Agreed by NLDC/NPC
132kV Dimapur - Imphal (out since 25.07.18)	NERTS	Referred to TCC/RPC	NERTS updated the following Status: Foundation: 23/28 Erection: 17/28 Stringing: Yet to start 7 spans RoW Sufficient funds not released by NHIDCL. In addition, landslide is very frequent. DoP, Nagaland – In

			case required the tower may be diverted to two more locations. Erection, stringing simultaneously. DoP, Nagaland willing to assist in RoW. Forum decided that a Special Meeting be convened in presence of NHIDCL.
220kV Sonabil-Samaguri-I	AEGCL	NIT by Sep'19	NIT not completed, insulators TS under re-consideration.
132kV Panchgram(out since 14.01.2019) Srikona-	AEGCL	To be updated	Survey yet to be completed. Soil testing by Nov'19
63MVAR L/R for 400kV Palatana-Silchar Ckt-I (out since Apr'19)	OTPC	By Oct'19	Waiting for material, expected by Dec'19

**The Sub-Committee noted as above.**

**Action: MePTCL, NERTS, AEGCL, OTPC.**

**3. Follow up of recommendations of PCC/Sub-group:**

SN	Name of element	Actions to be taken	Concerned Utilities	Status as informed in the 160 <sup>th</sup> OCC Meeting	Latest status
1	132 kV AGTCCPP - Agartala D/C	Installation of Line Differential in 132 kV AGTCCPP - 79 Tilla D/C & Review of impedance setting of both ends as a temporary measure.	NERTS/ NEEPCO	<u>LDR procurement</u> : Bids opened and is under evaluation <u>Impedance measurement</u> := Test kit is in use at Misa S/S and shall be spared after 10.09.19	<u>LDR</u> : Bids are under technical evaluation. Award by Nov'19 <u>Impedance Measurement</u> : To be completed by 30.11.19
2	132kV AGTCCPP-Kumarghat	GPS to be procured and time synchronization of relay to be done	NEEPCO	Dec'19	Dec'19
3	132kV PK Bari-Kumarghat	Installation of Line differential relay	NERTS	LDR procurement Bids opened and is under evaluation	<u>LDR</u> : Bids are under technical evaluation. Award by Nov'19

**The Sub-Committee noted as above.**

**Action: NEEPCO, NERTS.**

**4. Furnishing of various data for reliable operation of grid:**

Sl.No.	Data reg.	Target deadline	Latest status
1	Furnishing Technical and Commercial data for computation of PoC Charges and Losses for January to March'20 (Q4 of 2019-20)	15.10.2019	Manipur, Assam, Meghalaya, Nagaland submitted. Rest 3 states to submit. Tripura by 23.10.2019, Ar.Pradesh- by Oct'19 end, Mizoram already sent NHPC , NEEPCO to submit
2	Furnishing details regarding GT Tap Positions of ISGS and other generators. Required for studies related to reactive power capability testing	15.10.2019	Kopili HEP, BgTPP, Palatana GBPP submitted. AGBPP, Khandong & DHEP submitted. RHEP & Pare not submitted. Data from State Generators also required.
3	Furnishing Nodewise half hourly data monthly Required for studies pertaining to Real Time Market	By 10 <sup>th</sup> of the month	Received from Arunachal, Manipur and Mizoram. TSECL will submit by Oct'19. Assam, Meghalaya and Nagaland to submit

*The Sub-Committee noted as above.*

*Action: All utilities as above.*

**B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING SEPTEMBER, 2019**

As per the data made available by NERLDC, the grid performance parameters for September, 2019 are given below:

**NER PERFORMANCE DURING SEPTEMBER, 2019**

States	Energy Met (MU)		w.r.t. Aug,19 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Aug,19 % inc (+) /dec (-)	% surplus (+) /shortfall (-) of energy in Sep,19
	Sep-19	Aug-19		Sep-19	Aug-19		
Ar. Pradesh	57.65	67.2	-14.21	57.96	67.63	-14.30	-0.53
Assam	956.16	1070.59	-10.69	1050.84	1118.49	-6.05	-9.01
Manipur	72.92	74.6	-2.25	73.33	75.06	-2.30	-0.56
Meghalaya	164.64	166.61	-1.18	164.64	166.61	-1.18	0.00
Mizoram	67.38	64.75	4.06	67.74	65.21	3.88	-0.53
Nagaland	66.29	72.86	-9.02	66.64	73.55	-9.39	-0.53
Tripura	141.11	153.79	-8.25	141.94	160.21	-11.40	-0.58
<b>Region</b>	<b>1526.15</b>	<b>1670.4</b>	<b>-8.64</b>	<b>1623.09</b>	<b>1726.76</b>	<b>-6.00</b>	<b>-5.97</b>

	Demand Met (MW)	w.r.t. Aug,19	Demand in (MW)	w.r.t. Aug,19	% surplus (+) /shortfall (-)

States	Sep-19	Aug-19	% inc (+) /dec (-)	Sep-19	Aug-19	% inc (+) /dec (-)	of demand in Sep,19
Ar. Pradesh	152	152	0.00	152	155	-1.94	0.00
Assam	1900	1956	-2.86	1980	2051	-3.46	-4.04
Manipur	182	184	-1.09	190	207	-8.21	-4.21
Meghalaya	336	333	0.90	336	333	0.90	0.00
Mizoram	91	91	0.00	91	91	0.00	0.00
Nagaland	156	169	-7.69	176	192	-8.33	-11.36
Tripura	298	300	-0.67	303	300	1.00	-1.65
<b>Region</b>	<b>3070</b>	<b>3023</b>	<b>1.55</b>	<b>3183</b>	<b>3095</b>	<b>2.84</b>	<b>-3.55</b>

**REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU**

**AVERAGE FREQUENCY (Hz)**

Month---->	Sep-19	Aug-19
Total Generation in NER (Gross)	1651.289	1744.980
Total Central Sector Generation (Gross)	1233.651	1388.350
Total State Sector Generation (Gross)	417.638	356.630
<b>Inter-Regional Energy Exchange</b>		
(a) NER-ER	19.39	14.09
(b) ER-NER	<b>429.01</b>	<b>528.17</b>
(c)NER-NR	<b>412.35</b>	<b>467.61</b>
(d)NR-NER	<b>0.00</b>	<b>0.00</b>
© Net Import	-2.73	46.47

Month---->	Sep-19	Aug-19
	% of Time	% of Time
Below 49.9 Hz	4.57	7.28
Between 49.9 to 50.05 Hz	75.25	72.67
Above 50.05 Hz	20.18	20.05
Average	50.01	50.00
Maximum	50.27	50.32
Minimum	49.85	49.5

***Deliberation of the sub-Committee:***

NERLDC gave a presentation on the grid performance for the month of September'19. NERLDC highlighted the Demand Met and Energy Met of September, 2019. Frequency and Voltage pattern for September, 2019 were highlighted along with MVAR Vs Voltage graph for Palatana, BgTPP & AGTCCPP.

NERLDC expressed concern over high number of GDs in the Region (31 nos. of GDs in September'19) and large numbers of line trippings in the region. NERLDC informed that most of these GDs have taken place due to Blackout of Kolasib S/S and this was caused due to tripping of 132 kv Kolasib – Aizawl and 132 kV Kolasib – Badarpur, 14 and 13 no. of times, respectively.

Regarding frequent disturbance in Kolasib area of Mizoram, it was decided that a team comprising of NERTS, NERLDC & NERPC would visit Kolasib in last week of October, 2019 for fact finding and remedial actions, if any. P&ED Mizoram agreed to extend all possible assistance.

***The Sub-Committee noted as above.***

<b>C. ITEMS- STATUS REVIEW</b>
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**1. Status of Generating Units, Transmission Lines in NER:**

During 161<sup>st</sup> OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 160 <sup>th</sup> OCC Meeting		Status as given in 161 <sup>st</sup> OCC Meeting	
		Timeline for completion	Furnishing of detail parameters	Timeline for completion	Furnishing of detail parameters
<b>a. New elements</b>					
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	By 15.09.19	Already submitted	2 months time to reclaim the oil values. By 30.12.2019	Already submitted
2	Kameng HEP of NEEPCO two units (2 x 150 MW)  Next two units (2x150 MW)	Nov'19 or Dec'19	CEA clearance available	Nov'19 or Dec'19	CEA clearance available
3	132kV Monarchak – Surjamani nagar D/C of TSECL	By Dec'19, tower erected 128/145 foundation completed 145/152. stringing 15.5 km completed.	To be submitted to NERLDC.	By Dec'19, tower erected 128/152. 145/152 foundation completed 145/152. stringing 15.5 km completed.	To be submitted to NERLDC.
4	220/132 kV, 160MVA ICT-II at Balipara	30.09.19	To be submitted to NERLDC.	Accessories and Oil arrived at site. Main unit reached Kisangunj. By Nov'19	To be submitted to NERLDC.
5	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	Idle charging of ICT by 15.09.19  Power Flow by 30.09.19	To be submitted to NERLDC.	Test charging shall be delayed due to damage to the Power House and Switchyard after failure of Penstock at Kopili.	To be submitted to NERLDC.
6	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	A date will be fixed NERPC, MeECL and NERTS will visit	Not applicable.	A date will be fixed by NERPC in consultation with MeECL	Not applicable.

				and NERTS in next OCC	
7	Replacement of 315 MVA ICT-II with 500 MVA ICT at Misa (PG)	400/220 kV 500 MVA ICT-III put into service on 27.08.19	To be submitted to NERLDC.	put into service on 27.08.19. To be dropped.	Submitted to NERLDC
8	220kV Balipara-Sonabil-2	Estimate under process	To be submitted to NERLDC.	AEGCL- Non availability of terminal equipments at Balipara.	To be submitted to NERLDC.
9	Bay at Agia S/S for 132kV Agia-Nangalbibra Ckt#II by AEGCL	LOA issued on 27.06.19. By Sep'19	To be submitted to NERLDC.	LOA issued on 27.06.19. Panel not reached site.	To be submitted to NERLDC.
10	80MVAR B/R at RHEP by NEEPCO	NEEPCO requested for revision of 1st NERSCT MoM. FE 40Cr approx.	-	To be taken up in the next SCM.	-
<b>b. Elements under breakdown/upgradation</b>					
11	Up-gradation of 132 kV Lumshnong-Panchgram line	TESG queries submitted	Not applicable.	TESG queries submitted	Not applicable.
12	PLCC Panels at Loktak end of Loktak - Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Aug'19.	Not applicable.	Nov'19. NERPC to write to MD, MSPCL for expediency.	Not applicable.
13	Upgradation of 132 kV Bus Bar at Umiam Stg- III to ACSR Zebra	DPR submitted. Other upgradation works to be included in DPR	Not applicable	DPR submitted. Other upgradation works to be included in DPR	Not applicable
14	220/132 kV 30 MVA ICT at Mokokchung	March' 2021	To be submitted to NERLDC	Drawings are under approval. March' 2021	To be submitted to NERLDC
15	Upgradation of 132kV Yurembam-Karong by MSPCL	WIP. By Aug'19	-	Completed. <b>(To be dropped)</b>	-

16	Upgradation of 132kV Lekhi-Chimpu and Lekhi bus by DoP Ar. Pradesh	Mar'2020	-	Mar'2020	-
17	Upgradation of CT at Lekhi for 132kV Lekhi-Chimpu by DoP Ar. Pradesh	Mar'2020	-	Mar'2020	-
18	Installation of LDP for 132 kV AGTCCPP- Agartala D/C & 132kV PK Bari- Kumarghat by NERTS	LDR procurement Bids opened and is under evaluation	-	Bids are under technical evaluation. By Nov., 19.	
19	Procurement of GPS at AGTCCPP & time synchronization for 132kV AGTCCPP- Kumarghat by NEEPCO	Dec'19	-	Dec'19	-
20	Diversion of 132kV Bawktlang-Sihhmui	Status: OBD on 18.09.19 By Nov'19	-	Bids are under technical evaluation. LOA by Nov'19	-

**The Sub-Committee noted as above.**

**Action: All utilities as above.**

**C.1. Update on Real Time Energy Assessment for Effective Grid Management:**

Data availability as updated in the 161st OCCM is given below:

Name of the state /utility	Data Availability (in%)	Issues	Status as updated in the 161st OCCM
DoP Ar. Pradesh	Not updated	-	Same problems persisting. CDAC to visit critical locations immediately.
Assam	62%	-	
Manipur	80%	(i)Frequent hang of TARA device, resumes reporting upon reboot. (ii) Yurembam end of 132kv of Imphal(PG)-2 fdr, corresponding to SEM NP-8374-A not reporting. (iii) Jiribam 132/133kv ICT(Manipur consumption), corresponding to SEM NP-8501-A not reporting	

Meghalaya	0% detailed report to be submitted	After TARA devices connected to SEMs, they hang.
Mizoram	50%	Luangmual end of 132kV Aizawl(PG) not reporting; Kolasib end of 132kV Badarpur(PG) not reporting
Nagaland	37.5%	Non-reporting: (i)Kohima end of 132kV Dimapur(PG)-2 (ii)Sanis end of 132kV DHEP (iii)Mokokchung end of Mokokchung(PG)-1 (iv) Mokokchung end of Mokokchung(PG)-2 (v) Mokokchung end of DHEP FDR
Tripura	12.5%. Network available 24x7. Device fault suspected.	-

**The Sub-Committee noted as above.**

**Action: CDAC/AII SLDCs/NERPC**

**C.2. Ensuring proper functioning of Under Frequency Relays(UFR) & df/dt Relays:**

In 7<sup>th</sup> NPC meeting held on 08.09.17 it was agreed that mock test is good enough to test the healthiness of the UFR & df/dt relays. The frequency of site inspection was proposed to be upto six months. RPC may carry out periodic inspection, in line with provisions of IEGC and furnish inspection reports to NPC.

Deliberations in the previous meetings:-

- Inspection for Mawphlang completed.
- Inspection for Sankardevnagar, Rangia and Rowta under Assam was completed in April'2019.
- UFR Inspection and Testing for TSECL Stations as well as UFRs under Islanding Scheme No.2 carried out in June'19.

In 160<sup>th</sup> OCCM, DGM, SLDC, TSECL informed the following status:

<b>UFR details</b>	<b>Status as informed in the 160<sup>th</sup> OCCM.</b>
For all existing UFR except SMNagar	By Oct'19
UFR at SMNagar	By Sep'19
<i>Additional UFR under Islanding Scheme-II</i>	<i>Status to be updated</i>

- In 160th OCCM it was decided that UFR Inspection for Nagaland would be completed by Sep'19.

**Deliberation of the sub-Committee:**

Director, NERPC informed that UFR Inspection for Dimapur, Nagaland was completed in the third week of September, 2019. Further, he informed that DoP Nagaland has been requested to shift UFR installed for 132kV Wokha-Kohima feeder at Kohima to radial 66/33kV loads. The forum requested NERPC to plan for UFR Inspection in Manipur in Nov'19.

***The Sub-Committee noted as above.***

***Action: DoP Nagaland, TSECL, NERPC.***

**C.4. Extended C Band VSAT for power system communications in NER:**

In 156<sup>th</sup> OCCM CGM, NERLDC informed that KPTCL has committed to go ahead with the Pilot Project. The readiness for immediate execution of the same will be communicated.

MePTCL raised apprehensions regarding the possibility of Cyber Security breach at Killing as fallout of this pilot. NERLDC informed that the same has already been taken care of, which will be addressed by GM(SL), NERLDC. In 157<sup>th</sup> OCCM, CGM, NERLDC informed that the queries already addressed by NERLDC. He also informed that Cyber Security aspects are taken care by the firewall. MePTCL requested that the same may be intimated to EE, Killing.

In 158th OCC Meeting it was informed that EE, Killing, MePTCL would resolve the issues with ABB at the earliest.

The 159th OCC forum approved implementation of the pilot project upon resolution of the security concerns.

In 160th OCCM Director, NERPC once again requested NERLDC to obtain the approximate cost of the project so that the same may be approved by TCC/RPC.

**Deliberation of the sub-Committee:**

NERLDC informed that quotation requested from the concerned agency and the cost would be informed in the next OCCM.

***The Sub-Committee noted as above.***

***Action: NERLDC.***

**C.5. DIMAPUR\_PG telemetry out since Feb'18.**

In 159<sup>th</sup> OCCM NERTS informed that LOA placed on 06.05.2019. The target for completion is Nov'19.

**Deliberation of the sub-Committee:**

NERTS informed that the work is in progress. Data already started reporting. Joint validation to be done by 15.11.19.

***The Sub-Committee noted as above.***

***Action: NERTS***

**C.6 Update on PDMS:**

As per deliberation in the previous meeting(s) the following status/decisions:-

- SAT for Assam system completed. Data collection for Meghalaya, Tripura & Mizoram completed.
- Network to be finalised based on the feedback of Operational load flow given by NERLDC
- Data collection to be completed for Arunachal Pradesh and Nagaland.
- Prospective Go Live by Nov'19.

**Deliberation of the sub-Committee:**

Director, NERPC informed that PDMS project is in the final stages of completion and multiple training programs would be conducted prior to Go Live. He requested all the utilities to participate for hands-on learning.

***The Sub-Committee noted as above.***

***Action: PRDC/All utilities.***

**C.7 Non-availability/ Non-functioning of synchronization facility at numerous stations**

As per deliberations in the previous meetings the following is the status for synchronization facility at stations of different utilities:

- AEGCL – AEGCL informed that as per report from MRT division CR panels has check-sync facility available and no separate procurement of synchroscope is necessary.
- DoP Ar. Pradesh –Lekhi S/S no Sync check relay is available while for Chimpu relay is available. The procurement for trolley/synchroscope is being initiated and exact date for implementation would be intimated later on. But, they will have Synchronization facility latest by Oct 2019.

- In 159<sup>th</sup> OCCM it was decided that Synchronising trolley (one no. for each station) is to be procured for strategically located substations. Further, it was decided that wiring is to be completed for important feeders for the critical stations.
- In 160<sup>th</sup> OCCM, it was decided that a meeting would be convened amongst NERTS, AEGCL, NERLDC and NERPC in Sep'19 for detailed discussion on the necessity of the trolleys.

**Deliberation of the sub-Committee:**

AEGCL informed that synchro-check facility is available in all BCUs and as such there is no requirement of Synchrosopes.

Sr.DGM NERTS opined that only in some pockets the synchroscope is required so that manually synchronization may be done with the main grid. Within 35degree, the phasors have to be separated. This intelligence is not given to BCU, so it is required for synchronization in case of post blackout situation. The forum requested AEGCL to proceed for Procurement of Synchrosopes for 13 Stations as per list.

AEGCL agreed to procure Synchronization trolley for 13 locations in Assam, which were discussed in 159<sup>th</sup> OCCM.

***The Sub-Committee noted as above.***

***Action: AEGCL, DoP Ar. Pradesh, NERPC.***

**C.8 Phase shift errors in PMU:**

In 155<sup>th</sup> OCCM Director, NERPC informed that in the Sub-group meeting held on 05.04.19, it was agreed that the matrix of phase comparison for each of the stations vs Bongaigaon will be prepared by NERLDC. NERLDC informed that work is underway and would be completed by April'19.

In 156<sup>th</sup> OCCM, NERLDC informed that the matrix has been prepared, with deviations being categorized in three groups: (i) +120 deviation,(ii)-120 deviation, (iii) matching w.r.t Bongaigaon.

Sr.GM(AM), NERTS informed that for some ASEB stations 90 deg deviation is present which has to be checked

Within one week the data w.r.t. connection changes will be collected by NERTS in conjunction with AEGCL and rectification would be completed by May'19 for substations with +/- 120 degree and planning of activities to correct the phase shift of - 90 or +150 degree group shall be made by May 2019.

In 157<sup>th</sup> OCCM Sr. GM(AM), NERTS assured that the complete schedule of works would be prepared by 14<sup>th</sup> June,2019. The forum requested AEGCL to do likewise.

In 158<sup>th</sup> OCCM NERTS informed that schedule of works has been prepared and the works would be completed by Aug'19. AEGCL was requested to prepare the schedule of works in consultation with NERTS.

In 159<sup>th</sup> OCCM Sr.DGM, NERTS informed that action plan shall be submitted within 31.08.19. AGM, SLDC, AEGCL informed that after commissioning of SAS there is no spare panel, TB. So the CT, CVT terminals have to be brought from Kiosk to CR. After detailed deliberation, it was decided that NERTS would visit and analyze for Samaguri the pre-requisites for changing the connections.

The following status was updated by NERTS/AEGCL in the 160<sup>th</sup> OCCM:

- Bongaigaon - Completed except for New Siliguri-2 feeder.
- Misa - 220 kV Side Completed.
- Dimapur, Mariani, Silchar, Salakati - yet to be started, possible completion by 30.09.19.
- Samaguri sub-station under upgradation under PSDF. Re-connection to the PMU will be done after completion of upgradation work.

**Deliberation of the sub-Committee:**

The following status was updated by NERTS/AEGCL:

- Bongaigaon - Completed except for New Siliguri-2 feeder.
- Misa - 220 kV Side Completed.
- Dimapur, Mariani, Silchar, Salakati - yet to be started, possible completion by 31.10.19.
- Samaguri sub-station under upgradation under PSDF. Re-connection to the PMU will be done after completion of upgradation work.

***The Sub-Committee noted as above.***

***Action: AEGCL/NERTS***

**C. 9 Tentative schedule for Black Start & Restoration Procedure Mock exercise in NER during the year 2019**

In 160<sup>th</sup> OCCM the mock black start schedule status was as below:

DHEP - Black start successful, but synchronization failed. The entire procedure would be repeated in the next mock exercise.

AGBPP - Emergency service board 6.6kV has UPS, STG connection. With STG in service, STG auxiliaries being fed from the emergency board.

When STG not in service black start can be done. Segregation of aux supply from emergency board would be taken up internally by NEEPCO.

NERLDC mentioned that the mock black start exercises are very important for ensuring preparedness during restoration after grid disturbances and it is mandated as per regulations. With the present configuration, mock exercise at AGBPP shall be carried out when STGs are not in service. NEEPCO assured that all efforts would be made to segregate the aux supply of the STGs from the emergency service board and provisions would be made for black start exercise at AGBPP.

**Deliberation of the sub-Committee:**

The following status was given:

- LOKTAK - shutdown requested on 24<sup>th</sup> & 25<sup>th</sup> October, 2019 for commissioning of Bus-A and subsequently Mock Black Start may be done.
- AGBPP - Work regarding Segregation of STG auxiliaries has already started. Mock black start schedule shall be given in the next OCCM.

***The Sub-Committee noted as above.***

***Action: NEEPCO, NHPC, NERLDC***

**C. 11 DVAR and PSS at AGTCCPP:**

In 156<sup>th</sup> OCCM Sr. Manager, NEEPCO informed that installation and commissioning would be complete by July'19.

In 158<sup>th</sup> OCCM Sr. Manager, NEEPCO informed that the work would start from July'19, during s/d of Unit 4. Since Unit #4 is having Coupling problem the DVAR & PSS installation is expected to be complete for Unit #4 by Oct'19. For other units the installation would be done subsequently.

In 159<sup>th</sup> OCCM DGM, NEEPCO informed that OEM Engineering would visit AGTCCPP shortly. It was requested to intimate NERLDC/NERPC during OEM presence to enable visit by a team.

In 160<sup>th</sup> OCCM DGM, NEEPCO informed that the GTG-IV is still under S/D due to load coupler problem. M/s ABB visited Plant and did some partial work of DVAR of the Unit. They will again visit in the month of Sept'19 and accordingly NERLDC/NERPC will be informed. NERLDC requested NEEPCO to intimate the action plan for installation of DAVR/PSS in the other units at AGTCCPP.

**Deliberation of the sub-Committee:**

AGTCCPP has been requesting the vendor i.e. M/s ABB to install DVR & PSS in GTGs one by one, and tentative visit is in Nov'2019.

***The Sub-Committee noted as above.***

***Action: NEEPCO.***

**C. 11 Bus Configuration issues for various sub-stations:**

Status as on 160th OCC Meeting:

- 132kV Transfer Bus at Loktak HEP - CEA clearance obtained. Manpower engaged in Unit-III restoration. To be completed by Oct'19
- 400kV Bus A at RHEP - (i)NEEPCO to procure new 400kV CB for Bus Coupler Bay including mandatory spares.  
(ii) NEEPCO to check /ensure the healthiness of all the elements required to take Bus-A into service. Followings bay equipments to be checked:
  - Two sets of Center Break Isolator(Bus Coupler)
  - Four sets of Pantograph isolators
  - One Set CT(Bus Coupler)
  - One set CVT(Bus-A)

Shutdown was requested by NEEPCO. OCCM gave in-principle of the shutdown on 22.09.19 & 23.09.19 tentatively. However, exact date would be based on in-flow conditions and consent of DoP Ar. Pradesh in real time.

- 132kV Bus Coupler at Pavoi Bus coupler is in operation. The protection system is yet to be confirmed by Assam

**Deliberation of the sub-Committee:**

- 132kV Transfer Bus at Loktak HEP - CEA clearance obtained. Shutdown requested on 24.10.2019 & 25.10.2019.
- 400kV Bus A at RHEP - NEEPCO again requested for shutdown of 400KV Bus Shutdown during the month of Nov'19. If agreed the equipment will be tested for their healthiness.
- 132kV Bus Coupler at Pavoi - Bus coupler is in operation. The protection system is yet to be confirmed by Assam.

***The Sub-Committee noted as above.***

***Action: NEEPCO/NHPC/AEGCL.***

**C.12 Distance Relay Settings Revision at Deothang in Bhutan:**

In 158<sup>th</sup> OCCM Member Secretary(I/C), NERPC informed that settings at Deothang (presently reach settings set at zero) would be revised ASAP as has been communicated by Bhutan.

In 159<sup>th</sup> OCCM Sr.DGM, NERTS informed that engineer would visit Deothang on 09.08.19 for SEM issues. Further, he informed that SOTF at Rangia would be disabled until visit of OEM. Regarding relay reach settings at Deothang, Director NERPC intimated that the same has been taken up with BPC and is expected to be corrected by 15.08.19.

In 160<sup>th</sup> OCCM Sr.DGM(AM), NERTS informed that Engineer from NERTS visited Rangia and Deothang on 09.08.19, however BPC Bhutan did not allow correction of SEM connection on load. The work would be done on next opportunity. He further informed that at Rangia, the SOTF feature of 132 kV Motonga (now Deothang) feeder has been disabled on 09th August, 2019.

Director, NERPC informed that even after repeated emails there has been no confirmation from BPC Bhutan regarding the rectification of the relay reach settings at Deothang. He assured that the matter would be taken up again.

**Deliberation of the sub-Committee:**

NERTS informed the following status:

- Final reading at Deothang and Initial Reading at Motonga : Sent to NERLDC
- FR/IR at Rangia - Sent to NERLDC
- Proper relay settings at Motonga and Deothang : Belongs to Bhutan
- The revision of the reach settings at Rangia : Done

The forum requested NERLDC to take up the matter regarding revision of relay settings at Motonga and Deothang with Bhutan in the next Operational Coordination Committee meeting with Bhutan. It was decided to drop the agenda item in the meantime.

***The Sub-Committee noted as above.***

***Action: NERLDC.***

**C. 13 Status of recommendations reg GD-Vs on 03<sup>rd</sup> & 20<sup>th</sup> April,2019:**

Recommendations	Status as informed in the 160 <sup>th</sup> OCCM	Status as informed in the 161 <sup>st</sup> OCCM
Identification of weak joints for 400kV Palatana-Silchar D/C ( Scope NERTS)	Sample of failed conductor already sent to NTH.	Report submitted to NERPC.
Study for reactive compensation in Tripura System(scope of TSECL)	NERPC to write to CMD, TSECL for forthwith submission of data.	NERPC vide letter dated 11.10.2019 has written to CMD, TSECL for forthwith submission of data.

Identification of feeders for additional UFR based load shedding under Islanding Scheme-II( Scope of TSECL)	Status of procurement, installation to be submitted.	NERPC vide letter dated 11.10.2019 has written to CMD, TSECL for procurement & installation of UFRs.
Standalone EL for integration of relay at AGTCPP by Oct'19(Scope of NEEPCO)	Under Process. Delayed tender at least 1+6 months. From date of LOA to be monitored	By Mar'2020
All stations to confirm DR downloading facility and it's healthiness at respective stations. A consolidated undertaking by the respective utility in this regard is to be submitted prior to each OCCM.	<b>NEEPCO</b> except Doyang HEP all other Stations have the DR downloading facility. In case of DHEP, order placed to M/s ABB, for all the machines, lines, bus etc. Retrofitting shall be done from Dec'19 to April'20. After completion of the same regular uploading of DR/EL in the tripping portal shall be done.  Khandong- Kop-II bay of NERTS, DR downloading not explained to NEEPCO. Kopili end under renovation Khandong end - DR downloading to be explained in sub-group	<b>NEEPCO</b> Relays already receipt at site. Physical verification of the same yet to be done in presence of ABB personnel. Both Generator & line & bus bar protection will be made functional with DR & EL within April'20.  <b>NERTS</b> The REL-670 relay at Khandong for Kopili - II feeder is planned to be upgraded by Dec'19.
NHPC to procure standalone EL for Loktak HEP	Under process exact date of LOA to be confirmed	Under process exact date of LOA to be confirmed
Revised SPS-3 scheme offer sought from GE by NERTS	GE intimated approximate cost to be about Rs 1 Crore. Detailed break up is yet to be submitted. Generation reduction would be decided with OTPC	GE to submit detailed break up by 31.10.19.
Line defects in 400kV Silchar - Azara & 400kV Silchar-Byrnihat T/L to be attended(Scope of NETC)	Defects attended by availing the shut down as proposed. AR successfully operated on 02.09.19** 400kV TLA to be installed	Defects attended by availing the shut down as proposed. AR successfully operated on 02.09.19** 400kV TLA under discussion stage. To be dropped.
Impedance measurement for 400kV Paltana-Silchar D/C, 400kV Silchar-Azara,	The Impedance Measuring Kit is on use at Misa S/S now. Shall be diverted to	Impedance measurement shall be completed by

400kV Silchar – Byrnihat	Agartala by 10.09.19	30.11.19.
Line parameters to be matched at Silchar, Azara and Byrnihat.	To be done on or after 10.09.19	Line parameters matched and reviewed. The reviewed parameters shall be given to Azara by 30.11.19 for implementation.
NERTS and AEGCL to jointly visit Azara and check exact cause for delay in appearance of voltage input to relay when charged via Tie Breaker	Joint visit done. But the problem of delayed appearance of voltage while charging through Tie CB could not be identified.  However, the problem of non operation of Auto Reclosure has been attended.	Auto-reclosure operation erratic. Joint visit of NERTS/AEGCL to Azara by Oct'19.

**The Sub-Committee noted as above.**

**Action: NERTS, AEGCL, TSECL, MePTCL, NEEPCO, NETC.**

**C.14 Tripping of all units of BgTPP:**

On 23/05/2019 Units I, II, III of BgTPP tripped at 03:06 hrs, 03:37 hrs, 03:56 hrs respectively. In 158th OCCM NTPC gave a detailed presentation on tripping of the three units on 23.05.2019. The suggested recommendations by NTPC are as follows:

Sl. No.	Recommendation	Status as informed in the 160th OCCM	Status as informed in the 161st OCCM
1	Unit -1 unit bus incomer breaker to restored at the earliest	By Sep'19	Completed
2	Providing alternate cooling water source to compressors	Unit-1 overhead tank connection made, when unit-2 will go under s/d then connection would be completed. S/D planned Apr'2020	Unit-1 overhead tank connection made, when unit-2 will go under s/d then connection would be completed. S/D planned Apr'2020

**The Sub-Committee noted as above.**

**Action: NTPC.**

**C.15 Transformer Tap Optimization Study:**

NERLDC has conducted Transformer Tap Optimization studies considering High Hydro Scenario in North Eastern Region. Suggested taps position of important transformers in

NER for maintaining bus voltages within permissible limit as well as to minimize system losses was circulated in the 158<sup>th</sup> OCCM.

In 159<sup>th</sup> OCCM NERLDC informed that comments have been received from OTPC and SLDC Meghalaya. AGM, SLDC, AEGCL informed that comments of SLDC Assam would be sent shortly. Meghalaya presented the study done by them on Tap Optimization Study to NERPC and NERLDC. Their effort of study was appreciated by the forum. Members requested NERLDC to send reminder mail.

In 160<sup>th</sup> OCCM AEGCL informed that the comments would be sent by 06.09.2019.

**Deliberation of the sub-Committee:**

AGM, SLDC, AEGCL informed that the comments have been sent to NERLDC. Comments from constituents except OTPC and Meghalaya is yet to be received.

***The Sub-Committee noted as above.***

**C.16 Better weather forecasting for power sector by IMD:**

Decisions/deliberations in the previous meetings:

- IMD to conduct survey for each of the individual utilities.
- Nodal officers for all the utilities nominated in the 159<sup>th</sup> OCCM.
- Utilities (except NERTS) to furnish the list of substations where AWS can be installed.

**Deliberation of the sub-Committee:**

NERLDC informed that all utilities except AEGCL, TSECL, NTPC, Ar. Pradesh, MePTCL, BgTPP, MSPCL have agreed to allow IMD for installation of AWR in their stations. OTPC, NHPC and NEEPCO informed that they agree for all of their generating stations and the same may be considered. The forum requested all utilities to submit the station list by November 2019.

***The Sub-Committee noted as above.***

***Action: All utilities as above.***

**C.17 Erroneous SCADA data i.r.o. AEGCL**

In 160<sup>th</sup> OCCM AEGCL informed that administrative approval has been received. ECI would be given LOA by this week. At least 3 months would be required for supply and installation. NERLDC requested SLDC Assam to submit the hourly voltage data block-wise for calculation of VDI for the period w.e.f. Apr'19 to Jul'19 for onward transmission to CERC.

**Deliberation of the sub-Committee:**

The forum noted that the matter has been discussed in the 15th NETeST meeting of NERPC and decided to drop the agenda item.

***The Sub-Committee noted as above.***

**C.18 Requirement of model data for simulation of power system stability and dynamics**

NLDC vide letter dated 27th Aug 2019 to NPC and RPCs highlighted the requirement of inclusion of new formats in addition to the existing formats by CTU and STU/SLDCs for collection of data pertaining to dynamic parameters of new generators and other equipment. In case of already connected plants, SLDC/STU may issue the necessary instruction to the concerned generator with modified template and request them to furnish the information latest by Dec 2019.

In 160<sup>th</sup> OCCM, CGM, NERLDC stated for new elements being commissioned the data may be submitted to NERLDC and for old generators the available data is also to be submitted

**Deliberation of the sub-Committee:**

The forum requested all the CSGS and State generating utilities to submit the available data. NERPC will write a letter to the constituents for sensitizing the issue.

***The Sub-Committee noted as above.***

***Action: NEEPCO, NHPC, NTPC, OTPC, all state generating utilities.***

**C.19 3-phase Auto-reclosure for 400kV Silchar-Azara & 400kV Silchar - Byrnihat:**

In 160<sup>th</sup> OCC Meeting NERPC informed that in view of repeated 2-ph/3-ph tripping of 400kV Silchar-Azara & 400kV Silchar-Byrnihat due to back flashover, the 3-ph AR is imperative to be implemented. Sr.GM(SO-II), NERLDC opined that in case of simultaneous tripping of both of these lines, chances of successful 3-ph AR would be remote due to islanding of the Southern grid from NER grid(different frequency). After detailed deliberation it was decided that in order to increase the reliability of the system, 1-ph & 3-ph AR would be implemented for both the 400kV Silchar-Azara and 400kV Silchar-Byrnihat. Forum requested NERLDC to give suggestion regarding which end check sync and dead sync to be implemented. NERPC informed that this would be further referred to CTU & CEA for concurrence.

**Deliberation of the sub-Committee:**

NERLDC opined that in view of separation of grid(s), the 3 phase AR may not be implemented. Sr.DGM, NERTS stated that 3-ph AR for the 2 lines may be implemented

with dead sync at Azara and Byrnihat and check sync at Silchar. This would address the concern of NERLDC. Further SOTF will act for 3-ph through fault at Azara and Byrnihat.

Director, NERPC informed that the proposal was mooted in view of frequent faults due to back flashover affecting more than 2 phases. The forum requested NERPC to take views of CEA in the matter and referred the item to next OCCM for further discussion.

***The Sub-Committee noted as above.***

***Action: NERPC.***

### **C.20 Special Protection Scheme at RHEP**

Discussion in the subgroup meeting of NERPC held on 07.08.19 as follows:

NERPC informed that as per decision in the 158th OCCM a team visited RHEP on 05.08.19 and suggested the following SPS:

(i)With tripping of one ICT, one unit of RHEP is to be tripped.

(ii)SPS to be taken into service when all 3 units of RHEP are generating.

NEEPCO requested that tripping of one unit of Pare HEP to be included in the SPS when both units at Pare are generating.

The matter was referred to OCC for approval.

The 160<sup>th</sup> OCC forum agreed in principle and requested NEEPCO to implement the SPS.

### **Deliberation of the sub-Committee:**

NEEPCO informed that the scheme is under implementation stage and DPR/TS is being prepared.

***The Sub-Committee noted as above.***

***Action: NEEPCO.***

### **C.21 Frequent trippings in Arunachal Pradesh system:**

In 159th OCCM Sr.GM(SO-I), NERLDC informed that in the months of June-July'19 frequent trippings were observed in the 132kV RHEP-Ziro-Daporizo-....corridor and lines connected to Lekhi. He requested the intervention of the forum for proper analysis of the same. Director, NERPC stated that participation of DoP Ar. Pradesh in the Sub-group meeting on Protection and PCC is extremely lacklustre. He requested DoP Ar. Pradesh to ensure adequate participation from concerned transmission division in all the meetings.

SE(SO&PSC), DoP Ar. Pradesh stated that there is no cohesiveness in data collection since engineers are scattered and onsite training is required. It was decided that after 15th August, 2019 scheduling of training is to be done, then DoP Ar. Pradesh to send personnel to Nirjuli(PowerGRID) for practical hands-on training. The following officers were nominated for the training:

- >Moli Kamki, AE, DoP Ar.Pradesh
- >Hibu Bama, EE, DoP Ar.Pradesh
- >Duyo Richo, AE, DoP Ar.Pradesh

**Deliberation of the sub-Committee:**

EE, SLDC, DoP Ar.Pradesh informed that official order has been issued to the aforesaid officers to attend the training at Nirjuli Station. Sr.GM(AM), NERTS informed that no executives have attended the training at Nirjuli Station. The forum viewed the matter very seriously and requested NERPC to take up the matter with CE, DoP Ar.Pradesh.

***The Sub-Committee noted as above.***

***Action: DoP Ar. Pradesh/NERPC.***

**C.22 Status of CT upgradation:**

The status of CT upgradation as per the mentioned table as per 161<sup>st</sup> OCC Meeting is to be reviewed.

Name of the line	CT Ratio at either end (current)		CT Ratio at either end (required)		No. of CTs required		Present Status
	Stn A	Stn B	Stn A	Stn B	Stn A	Stn B	
132 kV Jiribam-Aizwal	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	CTs to arrive at site by 30.11.19
132 kV Jiribam-Haflong	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	CTs to arrive at site by 30.11.19
132 kV Khandong-Umrangso-Haflong	300/1	400/1	600/1	600/1	3 at Khandong by NEEPC O, 3 at Umrangso by AEGCL	3 at Umrangso by AEGCL, 3 at Haflong by PGCIL	AEGCL-Arranged from other station not procured To be updated CGM to take up
132 kV D/C Doyang - Dimapur	300/1	600/1	600/1	600/1	3 by PGCIL &	6 by	PGCIL-CTs to arrive at site by 30.11.19

					NEEPC O		NEEPCO By Dec'20
132 kV Khandong - Khliehriat- I	300/1	300/1	600/ 1	600/1	3 by NEEPC O	3 by PGCIL	PGCIL done NEEPCO Done
132 kV Khandong - Kopili I & II	300/1	300/1	600/ 1	600/1			PGCIL done NEEPCO Done
132 kV Dimapur- Dimapur	600/1	1200/ 1	600/ 1	600/1		3 by DoP Nagaland	PGCIL- completed, DoP Nagaland- Dec'19

**The Sub-Committee noted as above.**

**Action: DoP Nagaland, AEGCL, NEEPCO.**

**C. 23 Metering Status Review:**

Agenda Description	Status as per 160 <sup>th</sup> OCCM	Status as per 161 <sup>st</sup> OCCM
Distribution of 70 Laptops	In 160th OCC Meeting, Assam informed that 3 laptops for Srikona, Dullavchera and Hailakandi will be received from Badarpur(PG) after rectification of software issues. Also Meghalaya requested NERTS to despatch the laptop from Misa to Shillong so that Meghalaya can take from NERTS,Shillong.  Software for self installation will be mailed by NERTS to all the concerned within few days as informed by NERTS	Two Nos Laptops for MeECL handed over to NERLDC.  Link for Vinplus software for LNT make SEMs emailed on 21.10.19.
Correction of Meter error: <i>(i) Erratic reading:</i> Ningthoukhong end, Kohima end , Panchgram end <i>(ii) Sign Change:</i> Dimapur I & II state end, Deothang end, Silicon Factory end,	Not yet corrected.	NERTS informed that meters have been found ok. Checking of input (CT/PT) has to be done by respective s/s. Respective Representatives of constituent will co-ordinate with the s/s. Nagaland has given a list to rectify high time drift SEMs & NERTS agreed to replace 3 SEMS with time drift more than 15 min.

Agenda Description	Status as per 160 <sup>th</sup> OCCM	Status as per 161 <sup>st</sup> OCCM
Mokokchung end, Kopili end (check meter).		
SEMs to be Procured	In 160th OCC Meeting, NERTS informed that the procurement will be completed by Oct'19	Procurement is in process. Tendering Expected by 01.11.19.

*The Sub-Committee noted as above.*

**Action: NERTS.**

**D. ITEMS FOR DISCUSSION**

**D.1 Generation Planning (ongoing and planned outages)**

- a. Present per day MU and projected number of days of operation.

Plants	Reservoirs level in meter	MU content	Present DC (in MU)	No of days as per current generation
Khandong + Kopili stg II	723.1	35.24	0	Will be "0" until further intimation.
Kopili	-	-	0	Will be "0" until further intimation.
Doyang	323.3	24.3	0.31275	78
Loktak	767.86	91	0.5	182

The outage of other generating stations may be approved considering the present water levels in reservoirs.

NERLDC highlighted that due to unavailability of Kopili HEP and Khandong HEP, constituents should plan for procurement of power for proper portfolio management.

*The Sub-Committee discussed and approved the proposed shutdown by Generating Stations as given in Annexure - D.2 which is available in NERPC website.*

## **D.2 Outage Planning Transmission elements**

It was agreed in the 99<sup>th</sup> 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:**

In 160<sup>th</sup> OCCM NERLDC presented a report on the shutdown approval timeline(s) followed in OCC of other regions. It was observed that M+2 month's shutdown was approved in M<sup>th</sup> month. For eg. shutdowns from 01.11.2019 to 30.11.2019 is approved in the OCC of September, for which requisition has to be submitted by 5<sup>th</sup> of September, 2019 i.e. 5<sup>th</sup> day of the M<sup>th</sup> Month, M being the month in which OCC Meeting is held. By following this practice there will be no overlapping of shutdown dates as happening at present. Members unanimously agreed to the practice in other RPCs. Since in the 160<sup>th</sup> OCC shutdown is approved upto 31.10.2019, it was decided that in order to regularize and follow the new procedure; shutdown from 01.11.2019 to 31.12.2019 would be taken up for consideration in the next OCCM. The forum requested all the utilities to submit the shutdown requisition for the period (01.11.2019 to 31.12.2019) by 05<sup>th</sup> October, 2019 positively.

### **Deliberation of the sub-Committee:**

***The sub-Committee discussed and approved the transmission line outages proposed by Constituents for November, 2019 which is available in the website of NERPC.***

***The Sub-Committee noted as above.***

***Action: All utilities.***

## **D.3 Estimated Transmission Availability Certificate (TAC) for the month of August, 2019-September, 2019:**

NETC and POWERGRID have submitted the outage data for the month of July, 2019 - August, 2019. So that the attributability of outage of the said elements may please be finalized.

***The Sub-Committee noted as above.***

**Action: NERTS/NETC.**

**D.4 Assessment of TTC, TRM & ATC by SLDC on respective Inter-State Transmission Corridor**

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid. The study results will be presented during the meeting. SLDCs are requested to check and validate the TTC of their control areas as computed by NERLDC.

**Deliberation of the sub-Committee:**

NERLDC informed that if, any issue or clarification required by the states, they can contact NERLDC.

***The Sub-Committee noted as above.***

**Action: All state utilities.**

**D.5 RGMO performance analysis of events**

Decisions in the previous meetings:

- NERLDC to scan PMU records for any event prior to 11:55hrs on 05.02.2019 resulting in droop of frequency by more than 0.03 Hz.
- BgTPP Unit #II mechanical problem in Turbine to be rectified.
- BgTPP DAS data to be submitted for event dated 05.06.19.
- For event dated 21.08.2019 DAS data to be submitted by Kopili HEP, Khandong HEP and Palatana GBPP.
- Reasons for non-sustenance of positive generation of Unit –II & III at BgTPP to be furnished.

**Deliberation of the sub-Committee:**

NERLDC informed that no new event triggering FGMO/RGMO in the month of September 2019.

***The Sub-Committee noted as above.***

**D. 6 Reactive power capability/injection of generating stations:**

In 158<sup>th</sup> OCCM, it was decided that by Aug 1<sup>st</sup> week reactive capability testing would be done for Palatana and subsequently schedule for testing for other ISGS will be prepared.

In 159<sup>th</sup> OCCM, NERLDC informed that Palatana is absorbing and generating MVAR as per grid requirement. The testing would be done on 14<sup>th</sup> August, 2019. NERLDC requested NTPC to give a schedule of reactive testing for BgTPP.

In 160<sup>th</sup> OCCM, NERLDC informed that the reactive capability testing for Palatana was successfully completed on 14.08.19. All the recommendations and decisions during the testing and recorded in MoM are to be implemented by OTPC at the earliest. It was decided that testing for BgTPP would be done in the 3<sup>rd</sup> week of Sep'19. NEEPCO and OTPC in unison informed the members that AGTCCPP is generating continuous MVAR in limit of their capability. This is highly undesired as it is causing undue stress on the machine as well as excitation system. Member Secretary, NERPC informed that the matter would be taken up by the Committee and measures would be suggested by the same.

**Deliberation of the sub-Committee:**

- Palatana GBPP - OTPC requested for a joint meeting w.r.t. implementation of tap changing suggestion as per the reactive capability testing results.
- BgTPP - Testing completed on 30<sup>th</sup> of Sept. Load angle limiter setting to be increased. NTPC is in the process of consultation with OEM.
- AGTCCPP was requested to suggest a date for the testing at their plant.

***The Sub-Committee noted as above.***

***Action: NTPC, OTPC, NERLDC.***

**D.7 Accurate Load forecasting by SLDCs as per IEGC c1.5.3 for better system operation**

RMSE for load forecast of actual data in comparison to that forecasted by the states for the month of July'19 is as follows:

<b>% Error with Actual Data (Forecasted by States)</b>							
<b>Day</b>	<b>Ar. Pradesh</b>	<b>Assam</b>	<b>Manipur</b>	<b>Meghalaya</b>	<b>Mizoram</b>	<b>Nagaland</b>	<b>Tripura</b>
<b>Median</b>	23	15	9	11	34	11	15

Forum decided that load forecast error will be monitored in OCC Meeting till the RMSE comes below 5%

In 160<sup>th</sup> OCCM CGM, NERLDC informed that POSOCO in association with IIT, Guwahati is developing methodology to forecast at the regional level. He requested all SLDCs to be proactive for the same.

***The Sub-Committee noted as above.***

***Action: all SLDCs.***

**D.8 Continuous shutdown of 220 kV Bus Coupler & 4 x 33 MVA 220/132kV ICT-1 along with associated bays w.e.f 06/09/2019 and shifting of 01 set of 220 kV Bus PT at Dimapur w.e.f 02/09/2019.**

Under the NERSS VIII, SS01 package , the 220/132 kV Dimapur substation is being upgraded from AIS to GIS including replacement of existing 4x33.33 MVA, 220/132 kV single phase unit transformer by 1 x 160 MVA, 220/132 kV 3-phase unit and addition of 1 No 1x160 MVA, 220/132 kV 3-phase transformer.

The existing 220/132 kV Dimapur substation is a conventional AIS substation having 220 kV bays with double main cum transfer scheme and 132 kV bays with single main and transfer bus schemes. Under the NERSS VIII project, all the existing 220 kV and 132 kV AIS bays shall be changed to GIS bays (Double main bus scheme) in the same existing switchyard by creating space for 220 kV GIS building , 132 kV GIS building and outer Gas Insulated Bushings after dismantling the existing tower/ beams/ equipment's along with structures. During this upgradation period, both the 220 kV & 132 kV bays shall be operated on single bus system and only 220 / 132kV 100 MVA ICT 2 shall remain in service. "

As per the proposed up-gradation and dismantling, only 220 KV Bus-A (towards the Transmission line side) will be in service. For construction of 200kV GIS Building and 132kV GIS building following assets at Dimapur substations shall be required to be dismantled.

- (1) 220/132 kV 4 X 33MVA ICT-1
- (2) 220kV ICT – 1 BAY
- (3) 132kV ICT – 1 BAY
- (4) 220kV BUS B
- (5) 220kV BUS COUPLER BAY

The substation layout diagram is attached for further reference.

The existing 220 kV PTs of Bus 1 & 2 are installed where the 220 kV GIS building is proposed to be constructed. As such 1 set of the bus PT is to be shifted to a convenient location towards ICT-2 area.

After shifting of the PT to the new location, dismantling works of the bus coupler bay and ICT-1 bays including the 4x33.33 MVA 1-Phase transformer will commence.

Once the above shutdown is approved, the shutdown shall continue till erection, testing and commissioning of the new GIS system which is February 2021 as per the approved L2 schedule.

Considering the above, It is proposed for Shutdown below mentioned assets under new construction activity related outage:

- a. Continuous Shutdown of BUS A w.e.f 01.11.2019 to 05.11.2019 for shifting of 1 set of 220 kV Bus PT as above.

- b. Continuous Shutdown of the 220kV/132kV 4x 33 MVA ICT – 1, 220 kV Bus -B and ICT-1 bays (Bay No.203 & 204)w.e.f 06/11/19 till erection, testing and commissioning of the new GIS system.

In 160th OCCM, NERLDC informed that during the period of shutdown, power restriction in Nagaland might be required in peak hours and hence concurrence of Nagaland will be necessary to approve the shutdown.

Further, NERLDC informed that as per system studies there will be severe low voltage problem in case of outage of other ICT in service at Dimapur. NERLDC opined that this shutdown would be allowed after restoration of the 132 kV Dimapur – Imphal line. NERTS requested NERLDC to check whether the low voltage issue could be avoided by changing the tap position of the ICTs in Nagaland Power System.

Director, NERPC requested NERLDC to conduct a detailed study so that the matter may be discussed in detail in the next OCCM in presence of officers from DoP Nagaland.

**Deliberation of the sub-Committee:**

NERLDC briefly stated the study results: Outage of ICT (N-1) 114kV at Dimapur with DHEP generation, 108kV at Dimapur without DHEP generation

In view of the low voltage at Dimapur node NERLDC suggested for reduction of load or MW constrained SPS at Nagaland. Further it was informed that the study was not done considering availability of 132kV Imphal-Kohima, 132kV Dimapur-Kohima and 132kV Karong-Kohima

EE, SLDC, DoP Nagaland informed that any spare or backup is not there for Nagaland. First shifting of towers from Kohima to Dimapur is required so that 132kV Dimapur-Kohima line is in service and Dimapur may draw from Kohima (2 towers displaced by landslide).

Further Nagaland may be allowed to draw via Imphal-Kohima( by using the erstwhile D-I line) at Dimapur. This is only in case of exigency.

Also Karong-Kohima shutdown may be deferred because Nagaland draws from Manipur in case of exigency.

The forum decided that no SPS is required and the shutdowns may be granted subject to restoration of 132kV Dimapur-Kohima line and return of shutdown after upgradation of 132kV Karong-Kohima (HTLS).

***The Sub-Committee noted as above.***

***Action: NERLDC, MSPCL, NERTS.***

**D.9 Outage of lines and ICT at RHEP for replacement of breakers:**

Director, NERPC informed the forum that during the Committee visit to RHEP on 05<sup>th</sup> August, 2019 it was brought to notice that all hydraulic CBs at RHEP are to be replaced due to non-availability of spares. Considering the urgency of the work, NEEPCO has already given the order and materials are deemed to be delivered shortly. He requested for the views of the forum keeping in view the power supply condition to Arunachal Pradesh. SE(SO&PSC), DoP Ar. Pradesh stated that 132kV RHEP-Ziro line is the life line for the state and it is not possible to grant shutdown of the line. After detailed deliberation it was decided that NEEPCO would be requested to explore the option of keeping at least one 400/132kV ICT in service and 132kV RHEP-Ziro in service (by means of Transfer Bus and Bus Coupler) at all times.

**Deliberation of the sub-Committee:**

In view of delayed delivery of equipment, the forum deferred the item for discussion in the next OCCM.

***The Sub-Committee noted as above.***

**D.10 Monitoring of Critical Elements affecting the reliability and security of the Grid**

Critical Elements which affect NER/ER TTC/ATC Values and Cause major Grid Disturbance		
SI No	Name of Element	No of Tripping during Sep'19
1	400 kV Bongaigaon - Byrnihat S/C	NIL
2	400 kV Bongaigaon - Azara S/C	NIL
3	400 kV Silchar - Azara S/C	3 times
4	400 kV Silchar - Byrnihat S/C	1 time
5	400 kV Palatana - Silchar D/C	NIL
6	400/132 kV, 125 MVA ICT I and II at Palatana	NIL
7	132 kV Palatana - Surajmaninagar S/C	1 time
8	400 kV Balipara - Misa D/C	NIL
9	400/220 kV 1x315 MVA and 1 x 500 MVA ICTs at Misa	NIL
10	132 kV Imphal - Dimapur S/C	NIL
11	132 Khandong - Kopili D/C	NIL

**Deliberation of the sub-Committee:**

NERLDC presented the count of trippings and requested concerned utilities to ensure availability of the 400kV corridor in NER.

***The Sub-Committee noted as above.***

**D.11 Intra State Lines being kept open**

Important intrastate lines are being kept open, compromising the reliability of the NER grid. Some of the lines kept open are as follows:

- a. 132kV Rangia- Rowta
- b. 132kV Rangia-Siphajhar
- c. 132kV Sarusajai-Umtru 1, 2
- d. 132kV Kahilipara-Umtru 1, 2

Action plan to mitigate the issues leading to opening the above mentioned lines is to be discussed so that these lines may be kept in service round the clock.

In 160<sup>th</sup> OCCM SLDC, AEGCL informed that the 132kV Rangia - Rowta and 132kV Rangia-Sipajhar is being kept open due to system constraints. NERPC informed that for items c & d above issue will be resolved after LILO at Killing. NERLDC requested for joint study along with Assam for a & b above.

**Deliberation of the sub-Committee:**

AGM, SLDC, AEGCL informed that the 220kV BTPS-Rangia line is not stable, i.e. why the lines kept open so that Bhutan line does not trip.

After detailed deliberation, it was decided that joint Study of Assam and NERLDC would be carried out on 29.10.2019.

***The Sub-Committee noted as above.***

***Action: NERLDC, AEGCL***

**D.12 Bay for 2<sup>nd</sup> circuit of 220kV Sonabil- Balipara line at Balipara**

Proposal of Bay for 2<sup>nd</sup> circuit of 220kV Sonabil- Balipara line at Balipara that needs to be constructed at the earliest to enhance the stability and security of North Bank of Brahmaputra. AEGCL desires to take up the work on installation of the missing elements for the same at Balipara GSS.

**Deliberation of the sub-Committee:**

AEGCL request permission from PGCIL to erect bay terminal equipment at Balipara. NERTS acquiesced.

***The Sub-Committee noted as above.***

***Action: NERTS, AEGCL***

#### **D.13 Reactivation of SPS -1**

The SPS-1 associated with tripping of generation of both Modules of Palatana CCGT (2 x 363.3 MW) is deactivated at present. The same needs to be activated to Avoid Violation of ATC of NER-ER Corridor. Details of the SPS are attached as **Annexure D.13** for reference.

#### **Deliberation of the sub-Committee:**

After detailed deliberation, it was decided that SPS-1 is to be reviewed at Palatana & Silchar for actual status and then turned on. The forum agreed to take up the matter for implementation in the next OCCM.

***The Sub-Committee noted as above.***

***Action: NERTS, OTPC***

#### **D.14 Implementation of revised SPS-3 scheme**

As per the Minutes of 20th TCC & 20th NER Power Committee Meetings held at Guwahati on 12th Sept., 2019 (Agenda No. D 20), the said SPS is to be discussed again in OCC and it is to be put up in the 21st TCC/RPC Meeting.

#### **Deliberation of the sub-Committee:**

The forum agreed to take up the matter for implementation in the next OCCM.

***The Sub-Committee noted as above.***

***Action: NERPC***

#### **D.15 Submission of Disturbance recorder (DR) data:**

As per the Minutes of 20th TCC & 20th NER Power Committee Meetings held at Guwahati on 12th Sept., 2019, the states of Arunachal Pradesh, Nagaland and Mizoram, who have not started giving the DR data till date, shall start sending DR data since September, 2019. However, no DR data has been received from these states in September, 2019.

#### **Deliberation of the sub-Committee:**

The forum referred the matter to the next Sub-group for discussion.

***The Sub-Committee noted as above.***

***Action: NERPC***

**D.16 Delay in availing of shutdown:**

The approved shutdown is being availed after much delay from the approved shutdown time. This mostly leads to delay in restoration of shutdown and leads to grid security and reliability issues. The shutdown will not be allowed to be availed beyond delay of a certain time. This delay time may be discussed by the forum.

**Deliberation of the sub-Committee:**

NERTS informed that the matter has been taken seriously and timely return of shutdown would be included in station benchmark. The forum requested other utilities to adopt similar measures for timely return of shutdown.

***The Sub-Committee noted as above.***

***Action: All transmission utilities.***

**D.18 Automatic Generation Control(AGC) in Indian Grid:**

Hon'ble Central Electricity Regulatory Commission (CERC) has stipulated the implementation of AGC in Indian Grid. CERC order and AGC requirements are attached as **Annexure D.18**.

**Deliberation of the sub-Committee:**

NERLDC informed that the following stations need to have AGC as per the Country wide plan:

BgTPP, AGBPP, Kopili, Loktak, Doyang, Khandong.

Director, NERPC stated that the pilot for BgTPP is in advance stage and only the Communication items are to be installed at plant level. Further, he stated that the matter has been discussed in detail in the 15th NETeST meeting.

***The Sub-Committee noted as above.***

**D.19 Frequent high loading of 220 kV BTPS-Salakati line:**

It has been observed several times that the loading of each 220 kV BTPS- Salakati line had gone beyond thermal limit of 203 MW. In order to reduce the loading of this D/C and for better reliability of the grid, it is requested to re-conduct 220 kV BTPS-Salakati line with HTLS and commissioning of 400/220 kV, 315 MVA ICT-1 at BgTPP at the earliest. In the 160th OCC meeting, the target date for commissioning of ICT-1 at BgTPP was given as 15th Sep'2019.

**Deliberation of the sub-Committee:**

The forum unanimously agreed that the HTLS re-conductoring of 220kV BTPS-Salakati is required and referred the matter to the 2nd NERSCT for approval.

BgTPP mentioned that IFT test of Transformer oil of ICT I has failed and the revised target date for commissioning of ICT-1 is December 2019.

***The Sub-Committee noted as above.***

***Action: NERPC***

**D.20 Installation of FACTS devices at Biswanath-Chariali:**

After commissioning of +/- 800 kV HVDC Biswanath Chariali – Agra Pole-1 in December 2015 and Pole 2 in September 2016, the duration of high voltage at 400 kV Bongaigaon, 400 kV Balipara, 400 kV Biswanath Chariali, 400 kV Ranganadi and 400 kV Misa nodes have increased. The low fault level at these 400 kV Buses of NER also result in voltage spikes with each switching of filter banks at 400 kV Biswanath Chariali (PG) substation.

High voltage observed in 400 kV nodes of NER grid (Balipara, Biswanath Chariali & Ranganadi) for 18 minutes w.e.f 23:55 Hrs on 22.02.19 while increasing power order of HVDC Biswanath Chariali – Agra from 500 MW to 700 MW after de-blocking of Pole-1. Unwanted switching of filter bank at Biswanath Chariali before the desired power flow in HVDC poles was the reason of sudden rise in voltage.

High voltage was also observed in major 400 kV nodes (phase voltage of 295 kV at Balipara, 303 kV at Biswanath Chariali & 299 kV at Ranganadi) while tripping of HVDC Biswanath Chariali –Alipurduar - Agra Pole-1 on 29th Aug'18 which resulted in Grid Disturbance in Arunachal Pradesh Power System and Ranganadi and Pare Power Stations.

The matter needs resolution, as this poses a threat to security of NER power system as also may force operation of HVDC Biswanath Chariali - Agra link at much lower capacity than rated. There have also been instances of tripping of 400 kV lines on overvoltage, which have resulted in near-miss incidents in NER power system.

It was observed from system studies that the planned reactive compensation till now may not be sufficient to keep all 400 kV lines in NER Grid in service during off-peak hours. Hence installation of FACTS devices like STATCOM/SVC at Biswanath Chariali is necessary to resolve the issue.

**Deliberation of the sub-Committee:**

The forum unanimously agreed and referred the matter to the 2nd NERSCT for approval.

*The Sub-Committee noted as above.*

**Action: NERPC**

**D.21 Non-Reporting of PMU data under URTDSM Project:**

PMUs at Agia (AS), Samaguri (AS), Tinsukia (As), Salakati (AS), Kopili (NO), Dimapur (PG) and Misa (PG) are not reporting/reporting partially. The concerned utilities are requested to take appropriate actions.

**Deliberation of the sub-Committee:**

Pls refer to discussion of the 15th NETeST.

*The Sub-Committee noted as above.*

**Metering Agenda**

**D.22 High SEM Time Drift:**

Time drift in SEMs may result in computational errors in Regional energy accounts & Weekly Loss. All constituents in whose premises the meters are installed are required to take corrective action for time correction whenever meter time drift > 1minute and submit weekly compliance report of the same to NERLDC.

The compliance report of many locations as detailed in **Annexure D.22.a**, are not received by NERLDC and **Annexure D.22.b** provides location details of Drift correction action not being done / weekly SEM data not sent.

**Deliberation of the sub-Committee:**

EE, SLDC, DoP Nagaland informed that at Dimapur(PG) time drift is 40min and for 132kV Karong-Kohima the Kohima end is giving less reading.

*The Sub-Committee noted as above.*

**Action: NERTS.**

**ADDITIONAL AGENDA ITEMS FROM NERPC**

**D.23 Outage of Kopili HEP, Power Re-allocation from BgTPP:**

The NER States were advised to chalk out action plan for arranging alternate Power post outage of Kopili HEP wef 07.10.2019. It was anticipated that Kopili would not be

available for a long period of not less than one year and it would be required for the States to decide course of action.

The forum noted that as per MoP allocation Assam has share 148MW and Meghalaya share 46.6 MW from Unit#III BgTPP. EE, SLDC, Meghalaya stated that Meghalaya has no requirement of the specified share and the same may be de-allocated.

The forum decided that the share of Meghalaya may be re-allocated to Assam and requested NERPC to approach MoP for speedy implementation of the same. Also, other States may also consult their Managements the requirements of additional power and intimate NERPC for further action with CEA/MoP.

***The Sub-Committee noted as above.***

***Action: NERPC.***

#### **ADDITIONAL AGENDA ITEMS FROM NERLDC**

##### **D.24 Restoration of Assets damaged at Kopili HEP due to failure of Penstock:**

220kV Misa-Kopili ckt I, II, III and 132kV Kopili-Khandong D/C are under outage since 07.10.2019. This is considerably reducing reliability of NER grid.

To finalise action plan for early restoration of the said connectivity, it is proposed to form a senior level task force consisting of members from NERPC, NERLDC & NERTS and convene a meeting of the task force at the earliest.

##### **Deliberation of the sub-Committee:**

It was decided that Member Secretary, NERPC would constitute a Committee of NERLDC, NERTS, NEEPCO and NERPC so that a concise approach may be devised for quick restoration of the links.

***The Sub-Committee noted as above.***

***Action: NERPC.***

##### **D.25 Vulnerability of NER grid due to forced outage of 220kV Kopili Substation:**

In view of forced outage of 220kV Kopili Substation (NEEPCO), the following precautions need to be adopted for secure Grid operation aftermath of SPS-3 operation (i.e. tripping of both 400kV Silchar- Killing & 400kV Silchar-Azara lines)

1. To export the power from 132kV Khleihriat (Me) SS to northern part of NER Grid, two vital links of Meghalaya ,i.e. (i)132 kV KhIrt-NEHU-Umiam I-Umiam III-Umtru-EPIP-Killing ; (ii)132 kV KhIrt-NEHU-Mawlai-Mawngap-Nongstoin-Nangalbibra-Mendipathar-Agia should remain in service with full strength. Effort

should be there to keep all the lines in these two links available all the time.

2. As experienced in past GDs in southern pocket, 132kV Badarpur (PG) SS provides a suitable option to synchronize AGTCCPP Island, Loktak Island and Grid power. So, in the event of GD in southern pocket, attempt should be made to extend Grid power to 132kV Badarpur SS (PG) at the earliest. Depending on the extent of GD, the 132kV Meghalaya links, mentioned above, may require to extend Grid power to 132kV Badarpur SS (PG). Prompt action to extend Grid power will help in reducing outage hour of GD.

**Deliberation of the sub-Committee:**

NERLDC thanked Meghalaya for their support in keeping internal links viz. 132kV Khliehriat-NEHU-Umiam I-Umiam III-Umtru-EPIP-Killing and 132 kV Khliehriat-NEHU-Mawlai-Mawngap-Nongstoin- Nangalbibra-Mendipathar-Agia closed at all times. Also, it was decided that 132kV DHEP-Sanis is to be kept closed.

***The Sub-Committee noted as above.***

***Action: MePTCL/DoP Nagaland.***

**D.26 Declaration of High Demand Season and Low Demand Season**

NERLDC informed that as per latest tariff order High demand season and Low Demand Season is to be determined on a regional basis. Discriminatory Tariff would accordingly be applied from Mar'20. High Demand 3 months, Low Demand 9 months. Off-peak 20hrs and Peak 4hrs. The forum decided to take up the matter for discussion in the next OCCM.

***The Sub-Committee noted as above.***

***Action: NERPC.***

**D.27 SCED Refund**

NERLDC informed that as per CERC order 08/SM/2019 dated 28.09.2019; 400Cr is to be distributed on Pan-India basis. The Account details of all the state utilities/Power Departments was requested for smooth transfer of money.

***The Sub-Committee noted as above.***

***Action: All DISCOMS/DoP Ar.Pradesh/DoP Nagaland/P&ED Mizoram.***

**D.28 Running of RHEP Unit in Night time:**

NERLDC suggested that one unit of RHEP may be run during the night time subject

to availability of water. This will avoid opening of 400kV RHEP-BNC line one circuit. It was noted that Technical minimum of RHEP unit is 110 MW. NEEPCO agreed to confirm whether units can be run at a lower load.

***The Sub-Committee noted as above.***

***Action: NEEPCO.***

**ADDITIONAL AGENDA FROM NEEPCO:**

**D.29 Request for allowing NEEPCO to charge Khandong —Kopili 132KV Circuit - 2 at 33 KV**

In view of the flooding of kopili power station our power supply system from switch yard has totally collapsed. The rescue operation is carried out by using DG set.

We require stable power supply at kopili power station area for proper illumination for safety of the equipment and for subsequent restoration of the power station with switchyard etc.

We have arranged one 1 MVA 33/0.4 KV transformer which will meet the power requirement. The location has been identified in the switch yard area near the 132 KV Khandong Kopili circuit -2 line.

We propose to charge the line at 33 KV from Khandong end from 33Kv bus of Khandong switch yard using spare 33 KV bay. The feasibility was checked by our engineers and it was observed that the line can be charged at 33 KV.

In view of the facts stated above and in this hour of crisis, we would request you kindly to allow NEEPCO to charge 132 KV Khandong Kopili circuit -2 at 33 KV.

**Deliberation of the sub-Committee:**

The forum approved the charging of 132kV Khandong-Kopili-II at 33kV level as a temporary measure and granted shutdown for the same.

***The Sub-Committee noted as above.***

***Action: NERTS/NEEPCO.***

**Date & Venue of next OCC meeting**

It is proposed to hold the 162<sup>nd</sup> OCC meeting of NERPC on third week of November 2019. However, the exact date and venue will be intimated in due course.

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**Annexure-I****List of Participants in the 161<sup>st</sup> OCC Meeting held on 22<sup>nd</sup> October, 2019**

SN	Name & Designation	Organization	Contact No.
1.	Sh. Sange Phuntso, EE (E)	Ar. Pradesh	09436041217
2.	Sh. T.K. Mahanta, CGM, SLDC	Assam	-
3.	Sh. H.S. Mohan, DGM, SLDC	Assam	09435336124
4.	Sh.B.C.Borah, AGM, SLDC	Assam	-
5.	Sh.M.Bhuyan, AGM	Assam	-
6.	Sh. Rupjyoti Das, AM, SLDC	Assam	09101302916
7.	Sh. Nashanta Barmah, AM, MRT	Assam	-
8.	Sh. Angarparna Saikia, AM, MRT	Assam	-
9.	Sh. H.Deveshwar Singh, Manager	Manipur	09436201742
10.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
11.	Sh. R. Khongmalai, AE (MRT)	Meghalaya	08014137268
12.	Sh. A.Ryntathiang, JE (System Protection)	Meghalaya	-
13.	Sh. F.Lalrinpuia, SE	Mizoram	09436143080
14.	Sh. Benjamin L.Tlumtea, Sr.EE, SLDC	Mizoram	-
15.	Sh. Jawb Lalrinfela, AE	Mizoram	-
16.	Sh. Nitovi Wotsa, EE (Trans)	Nagaland	09436004928
17.	Sh. Anil Debbarma, DGM, SLDC	Tripura	09612589250
18.	Sh. Diganta Goswami, DGM (E/M), O&M	NEEPCO	09435577655
19.	Sh. Manash P. Nath, Chief Managher	NERLDC	09436335374
20.	Sh.R.Sutradhar, Sr.GM	NERLDC	-
21.	Sh. Kaushik Sharma, GM	NERLDC	-
22.	Sh. Palash Jyoti Borah, Dy. Manager	NERLDC	08761093397
23.	Sh. Keshab Borah, Engineer	NERLDC	07002323608
24.	Sh. Sourav Mandal, Dy. Mgr.	NERLDC	0960212353
25.	Sh. Pranjal Borkataki, Manager	NERLDC	-
26.	Sh. U. Kataki, Sr. GM (I/c-AM)	PGCIL	09435505418
27.	Sh. H. Talukdar, Sr. DGM	PGCIL	09436335237
28.	Sh. Deepak Sanaygadh, Sr.Mgr (E)	NHPC	09932029462
29.	Sh. Narendra Kumar Gupta, Sr. Mgr. (O)	OTPC	09774233426

30.	Sh. S.K.Mishra, DGM (OS), ER-II	NTPC	09438233207
31.	Sh. S.Das, AGM (O), BgTPP	NTPC	07637032174
32.	Sh. Sajeev Mohandas, DGM (EEMG), BgTPP	NTPC	09496006403
33.	Sh. Anil R.Sah, DGM	NETC	09999055047
34.	Sh. Ratan Singh Basnet, Dy. Mgr.	NETC	08811072489
35.	Sh. A.K. Thakur, Member secretary	NERPC	09810271963
36.	Sh. B. Lyngkhoi, Director (O&P)	NERPC	09436163419
37.	Sh. S. Mukherjee, AD	NERPC	08794277306

## ***SPS Schemes of NER***

*Table -1: System Protection Scheme (SPS) No. 1 Information Sheet*

### SPS No.1 in NER

Item	Information Explanation
Reporting Party	POWERGRID, OTPC, AEGCL, MePTCL and TSECL
Scheme's Name	SPS associated with tripping of generation of both Modules of Palatana CCGT (2 x 363.3 MW)
Classification	SPS related to Minimization of ATC Violation of NER-ER Corridor
Reference No.	<b>SPS/NER/ATC/01</b>
Operating Procedure	<b>Refer to Chapter 12, Point No 12.1 of Operating Procedure of NER</b>
Design Objectives	To Avoid Violation of ATC of NER-ER Corridor
Operation	Load Disconnection
Modelling	<p><b><u>Pre-condition:</u></b>  <b>Following lines should be kept in open conditions</b></p> <ul style="list-style-type: none"> <li>➤ 132 kV Khliehriat – Lumshnong S/C</li> <li>➤ 132 kV Pailapool – Jiribam line at Jiribam end</li> <li>➤ 132 kV P K Bari – Dharmangar S/C will be kept open</li> </ul> <p><b><u>Scheme</u></b></p> <ol style="list-style-type: none"> <li>i. When both Modules of Palatana CCGT trips, a signal (SPS-I) will be generated from trip relay of the Modules and will be sent to Silchar.</li> <li>ii. After receiving SPS signal from Palatana at Silchar, a signal should trip the Circuit Breakers of 132 kV Silchar – Srikona D/C and Circuit Breakers of 132 kV Silchar – Hailakadi D/C. Also, a signal from Silchar should be sent to Badarpur.</li> <li>iii. After receiving signal from Silchar at Badarpur End, the signal should trip the Circuit Breakers of 132 kV Badarpur – Panchgram line at Badarpur.</li> <li>iv. Then manual demand management / disconnection should be imposed, if necessary.</li> </ol>
Original In-Service Year	<b>14.09.2013</b>
Recent Assessment Group	OTPC, NERPC Secretariat, NERLDC & NERTS
Recent Assessment Date	<b>10.05.2018</b>



नई दिल्ली  
NEW DELHI

याचिका संख्या. /Petition No.: 319/RC/2018

कोरम/Coram:

श्री पी. के. पुजारी, अध्यक्ष/Shri P. K. Pujari, Chairperson  
डॉ. एम. के. अय्यर, सदस्य/ Dr. M.K. Iyer, Member  
श्री आई. एस. झा, सदस्य/ Sh. I.S. Jha, Member

आदेश दिनांक /Date of Order: 28<sup>th</sup> of August, 2019

**IN THE MATTER OF**

Automatic Generation Control (AGC) implementation in India

**AND**

**IN THE MATTER OF**

National Load Despatch Centre  
Power System Operation Corporation Ltd.  
(A Government of India Enterprise) B-9,  
Qutab Institutional Area, Katwaria Sarai  
New Delhi-110016

...Petitioner

**VERSUS**

1. NTPC Limited,  
Plot No A-8A,  
Sector-24, Noida,  
Uttar Pradesh, India- 201301
2. NHPC Limited,  
N.H.P.C Office Complex,  
Sector-33, Faridabad – 121003, Haryana

3. Central Transmission Utility,  
Saudamini, Plot No. 2,  
Sector-29, Gurgaon-122 001 (Haryana)
4. SJVN, Shakti Sadan,  
SJVN Corporate Office Complex, Shanan-171006
5. THDC INDIA LIMITED, Corporate Office,  
Rishikesh, Pragatipuram, By Pass Road,  
Rishikesh – 249201, Uttrakhand
6. Aravali Power Company Private Ltd.,  
Indira Gandhi Super Thermal Power Station (IGSTPS),  
Jharli, District Jhajjar, Haryana-124141
7. N T E C L Vallur Thermal Power Project,  
P.O.: Vellivoyal Chavadi,  
Ponneri Taluk, Tiruvallur Dist, Chennai- 600 103
8. NLC India Limited,  
Block - 1, Neyveli - 607 801,  
Cuddalore District, Tamilnadu
9. NTPC-SAIL Power Company Limited –  
Corporate Centre, 4th Floor, Nbcc Tower,  
15 Bhikaiji Cama Place, New Delhi, Delhi – 110066
10. Coastal Gujarat Power Ltd,  
Tata Power Co. Ltd., Backbay Rec Station,  
148, Lt. Gen. J.Bhonsle Marg,  
Nariman Point, Mumbai 400 021
11. Sasan Power Limited,  
Reliance Centre, Near Prabhat Colony,  
Off Western Express Highway,  
Santacruz East, Mumbai – 400055, Mumbai
12. Ratnagiri Gas and Power Pvt. Ltd.,  
Registered Office, NTPC Bhawan,  
Core-7, SCOPE Complex,  
7, Institutional Area, Lodi Road,  
New Delhi-110003, India
13. North Eastern Electric Power Corporation Ltd,  
Brookland Compound, Lower New Colony,  
Shillong-793003, Meghalaya, India.

14. ONGC Tripura Power Company Ltd.  
6th Floor, A Wing, IFCI Towers, 61,  
Nehru Place, New Delhi – 110019

15. Bharatiya Rail Bijlee Company Ltd.  
Nabinagar, Khera Police Station  
Dist.-Aurangabad, Bihar-824303

**Northern Region**

16. Delhi Transco Limited,  
33kV, Sub Station Building,  
Minto Road, New Delhi -110002.

17. Haryana Vidyut Prasaran Nigam Limited,  
XEN/LD & PC, SLDC Complex,  
Sewah Panipat -132103.

18. Himachal Pradesh State Electricity Board,  
HP Load Despatch Society,  
SLDC complex, Totu,  
Shimla -171011.

19. Jammu & Kashmir Power Development Department,  
SLDC Building,  
220 kV Grid Station Narwal,  
Jammu -180007.

20. Punjab State Transmission Corporation Limited,  
Ablowal, Patiala, SLDC Building,  
Near 220KV Grid Substation,  
PSTCL, Ablowal,  
Patiala -147001

21. Rajasthan Rajya Vidyut Prasaran Nigam Limited,  
State Load Despatch Centre,  
Rajasthan Rajya Vidyut Prasaran Nigam Limited,  
Ajmer Road, Heerapura,  
Jaipur -302024

22. Uttar Pradesh Power Transmission Corporation Limited,  
Power System, 5th Floor,  
Shakti Bhawan, 14 Ashok Marg,  
Lucknow -226001

23. Power Transmission Corporation of Uttarakhand Limited,  
400 KV Substation,  
Veerbhadra, Rishikesh -249202

24. General Manager,  
Singrauli Super Thermal Power Station,  
Shakti Nagar, UP-231222
25. General Manager,  
Singrauli Solar PV Power Project,  
Shakti Nagar, UP-231222
26. General Manager,  
Singrauli Small Hydro Power Project,  
Shakti Nagar, UP-231222
27. General Manager,  
Rihand Super Thermal Power Station-I,  
Rihand Nagar, UP-231223
28. General Manager,  
Rihand Super Thermal Power Station-II,  
Rihand Nagar, UP-231223
29. General Manager,  
Rihand Super Thermal Power Station-III,  
NTPC Rihand, Dist-Sonbhadra,  
UP - 231223
30. General Manager,  
Dadri, National Capital Power Project,  
Dadri Dhaulana Road,  
Distt. Gautam Buddh Nagar,  
UP-201008
31. General Manager,  
Dadri – Stage - II,  
National Capital Power Project,  
Dadri Dhaulana Road,  
Distt. Gautam Buddh Nagar,  
UP-201008
32. General Manager,  
Firoz Gandhi Unchahar Thermal Power Project-I,  
Unchahar, Distt. Rai bareilly,  
UP
33. General Manager,  
Firoz Gandhi Unchahar Thermal Power Project-II,  
Unchahar, Distt. Raibareilly,  
UP

34. General Manager,  
Firoz Gandhi Unchahar Thermal Power Project-III,  
Unchahar, Distt. Raibareilly,  
UP
35. General Manager,  
Firoz Gandhi Unchahar Thermal Power Project-IV,  
P.O. Unchahar, Dist. : Raibareilly (U.P.) Pin-229406
36. General Manager,  
Firoz Gandhi Unchahar Solar PV Power Project,  
Unchahar, Distt. Raibareilly, UP
37. General Manager,  
Dadri Gas Power Project,  
Dhaulana Road, Distt.  
Gautam Buddh Nagar,  
UP-201008
38. General Manager,  
Dadri Solar PV Power Project,  
Dhaulana Road, Distt.  
Gautam Buddh Nagar,  
UP-201008
39. General Manager,  
Auraiya Gas Power Project( Gas Fired, RLNG Fired, Liquid Fired),  
Dibiyapur, Distt Etawah,  
UP-206244
40. General Manager,  
Anta Gas Power Project (Gas Fired, RLNG Fired, Liquid Fired),  
Distt. Baran,  
Rajasthan-325209
41. General Manager, Koldam HPP, NTPC,  
Post- Barman, Dist- Bilaspur,  
Himachal Pradesh 174013
42. Station Director,  
Narora Atomic Power Station,  
Narora, Distt. Bulandshahar,  
UP-202389
43. Station Director,  
Rajasthan Atomic Power Station-B,  
Anu Shakti Vihar, Kota,  
Rajasthan-323303

44. Station Director,  
Rajasthan Atomic Power Station-C, (RAPS-5&6)  
PO-Anushakti, Kota,  
Rajasthan-323304
45. General Manager,  
Bairasiul Hydro Electric Project,  
NHPC Ltd., Surangini,  
Distt. Chamba, HP-176317
46. General Manager,  
Salal Hydro Electric Project,  
NHPC Ltd,  
Jyotipuram, Distt. Udhampur,  
J&K-182312
47. General Manager,  
Tanakpur Hydro Electric Project,  
NHPC Ltd.,  
Banbassa, Distt. Champawa,  
Uttarakhand-262310
48. General Manager,  
Chamera-I Hydro Electric Project,  
NHPC Ltd.,  
Khairi, Distt.  
Chamba, HP-176310
49. General Manager,  
Uri Hydro Electric Project,  
NHPC Ltd.,  
Mohra, Distt. Baramulla,  
J&K-193122
50. General Manager,  
Chamera-II Hydro Electric Project,  
NHPC Ltd.,  
Karian, Distt. Chamba,  
HP-176310
51. General Manager,  
Chamera-III Hydro Electric Project,  
NHPC Ltd., Dharwala, Distt.- Chamba,  
HP-176311
52. General Manager,  
Dhauliganga Hydro Electric Project,  
NHPC Ltd., Tapovan, Dharchula, Pithoragarh,  
Uttarakhand-262545

53. General Manager,  
Dulhasti Hydro Electric Project,  
NHPC Ltd.,  
Chenab Nagar, Distt. Kishtwar,  
J&K-182206
54. General Manager,  
Uri 2 Hydro Electric Project, NHPC Ltd.,  
Nowpora, Distt. Baramulla, J&K-193123
55. General Manager,  
Parbati HE Project Stage-III Behali,  
P.O- Larji Kullu 175122 Himachal Pradesh
56. Chief Engineer,  
Sewa-II Power Station,  
NHPC Ltd. Mashke, post Bag no-2,  
P.O-Khari, Dist: Kathua, Jammu and Kashmir -176325
57. The Chief Engineer (Electrical),  
Kishanganga HEP,  
Office cum Residential colony, Kralpora,  
Distt: Bandipora, Jammu and Kashmir-193502
58. Chief Engineer (Elect.),  
Parbati-II HEP, Electrical & Mechanical complex,  
Sainj, Distt. Kullu, Himachal Pradesh -175134
59. General Manager,  
Napha Jhakhri HEP,  
Satluj Jal Vidyut Nigam Ltd. Power Project,  
Jhakri, Rampur, Distt. Shimla, HP-172201
60. General Manager,  
Rampur HEP,  
Satluj Jal Vidyut Nigam Ltd. Power Project,  
Jhakri, Rampur, Distt. Shimla, HP-172201
61. General Manager,  
Tehri Hydro Development Corporation Ltd.,  
Pragatipuram, Rishikesh,  
Uttarakhand-249201
62. General Manager,  
Koteshwar HEP, THDCIL, Koteshwerpuram,  
Post Office- Pokhari Tehri Garwal, Uttarakhand - 249146

63. Director (Power Regulation),  
Bhakra Power House, SLDC Complex,  
66 KV Substation, Industrial Area Phase-I,  
Madhya Marg, BBMB Chandigarh
64. General Manager, ADHPL,  
Village- Prini, PO -Jagat Sukh,  
Tehsil - Manali, Distt- Kullu (H.P) India.
65. General Manager,  
Indra Gandhi Super Thermal Power Project,  
PO -Jharli, Tahsil Matanhail, Dist – Jhajjar, (Haryana)-124125
66. General Manager,  
Karcham Wangtoo HEP,  
Himachal Baspa Power Company Limited,  
Sholtu Colony, PO- Tapti, Dist-Kinnaur, -172104 (HP)
67. Director,  
Malana - II Everest Power Pvt. Ltd,  
Hall-A/ First Floor Plot No-143-144,  
Udyog Vihar, Phase -4, Gurgaon, Haryana 122015
68. Company Secretary,  
Shree Cement Thermal Power Project Bangurnagar,  
Beawar , Dist Ajmer, Rajasthan -305901
69. Company Secretary,  
Greenco Budhil HPS Ltd,  
Plot No. 1367 Road No- 45,  
Jubilee Hills, Hyderabad- 500033
70. Project General Manager,  
Himachal Sorang Power Limited, D-7,  
Lane-I, Sector-I, New Shimla, Shimla, H.P.-171009.
71. General Manager,  
Sainj HEP, HPPCL, Larji,  
Distric - Kullu, Himachal Pradesh, 175122

### **Western Region**

72. MSLDC,  
Airoli, Navi Mumbai, Airoli,  
Thane - Belapur Road, Navi Mumbai-400708.
73. State Load Despatch Centre,  
MPPTCL, Jabalpur,  
O/o Chief Engineer (SLDC), MPPTCL, Nayagaon, Jabalpur

74. SLDC Gotri Vadodara,  
Gujarat, 132kV Gotri s/s compound,  
Opposite Kalpvruv Complex,  
Gotri Road,  
Vadodara
75. Chhattisgarh State Load Despatch Centre,  
C.E(LD), State Load Despatch Centre,  
CSPTCL, Daganiya-HQ,  
Raipur, Chhattisgarh
76. General Manager, Korba STPS STG (I& II),  
National Thermal Power Corporation,  
P.O. Vikas Bhavan, Jamnipali,  
Korba(Distt.),  
Chhattisgarh- 495 450.
77. General Manager,  
Korba STPS STG (III),  
National Thermal Power Corporation,  
P.O. Vikas Bhavan, Jamnipali,  
Korba(Dist),  
Chhattisgarh- 495 450.
78. General Manager,  
STAGE-I, Vindhyachal STPS,  
National Thermal Power Corporation of India Ltd,  
P.O Vindhyanagar, Sidhi(Dist),  
Madhya Pradesh – 486 885
79. General Manager,  
STAGE-II, Vindhyachal STPS,  
National Thermal Power Corporation of India Ltd,  
P.O Vindhyanagar, Sidhi(Dist),  
Madhya Pradesh – 486 885
80. General Manager,  
STAGE-III, Vindhyachal STPS,  
National Thermal Power Corporation of India Ltd,  
P.O Vindhyanagar, Sidhi(Dist),  
Madhya Pradesh – 486 885
81. General Manager,  
STAGE-IV, Vindhyachal STPS,  
National Thermal Power Corporation of India Ltd,  
P.O Vindhyanagar, Sidhi(Distt.),  
Madhya Pradesh – 486 885

82. General Manager,  
Kawas Gas Power Project,  
National Thermal Power Corporation of India Ltd,  
P.O. Aditya Nagar,  
Surat- 394 516
83. General Manager,  
Gandhar Gas Power Project,  
National Thermal Power Corporation of India Ltd,  
P.O. NTPC Township, Bharuch(Distt.),  
Gujarat- 392 215
84. General Manager,  
SIPAT TPS Stg-I,  
National Thermal Power Corporation of India Ltd,  
SIPAT, Chhattisgarh.
85. General Manager,  
SIPAT TPS Stg-II,  
National Thermal Power Corporation of India Ltd,  
SIPAT, Chhattisgarh.
86. General Manager,  
Mouda STPP,  
NTPC Ltd,  
Mouda Ramtek Road,  
P.O.Mouda, Nagpur (Dist),  
Maharashtra
87. General Manager ,  
2 X 135 MW Kasaipali Thermal Power Project,  
ACB (India) Ltd.  
District - Korba  
Chhattisgarh Chakabura 495445
88. General Manager,  
Bharat Aluminium Co. Ltd,  
Captive Power plant-II,  
BALCO Nagar Chhattisgarh, Korba 495 684
89. Executive Director,  
Costal Gujarat Power Ltd,  
Tunda Vandh Road, Tunda Village, Mundra,  
Gujarat Kutch 370435
90. Executive Director,  
DB Power,  
Village - Baradarha, Post - Kanwali,  
Dist - Janjgir, Champa, Chhattisgarh Baradarha 495695

91. Executive Director,  
Jindal Power Ltd. Stg-I,  
OP Jindal STPP, PO-Tamnar,  
Gjarghoda Tehsil,  
Chhattisgarh District - Raigarh, 496107
92. Executive Director,  
Jindal Power Ltd. Stg-II,  
OP Jindal STPP,  
PO-Tamnar,  
Gjarghoda Tehsil,  
Chhattisgarh District - Raigarh, 496107
93. Executive Director,  
Plot No Z-9,  
Dahej SEZ Area (Eastern side),  
Dahej, Taluka-Vagra, Gujarat Dist-Bharuch, 392130
94. Executive Director,  
EMCO Power Ltd,  
Plot No B-1, Mohabala MIDC Growth Center  
Post Tehsil - Warora, Dist Chandrapur-Maharashtra 442907
95. Executive Director,  
ESSAR POWER MP LTD.  
Village Bandhora,  
Post Karsualal, Tehsil Mada,  
Distt. Singrauli, Madhya Pradesh-486886
96. General Manager,  
GMR CHHATTISGARH ENERGY LTD  
Skip House, 25/1, Museum Road  
Karnataka Bangalore 560025
97. Managing Director,  
Jaypee Nigri Super Thermal Power Project,  
Nigri District, Madhya Pradesh  
Singrauli 486668
98. Executive Director,  
DCPP, OP Jindal STPP,  
PO-Tamnar, Gjarghoda Tehsil,  
Chhattisgarh District - Raigarh, 496107
99. Station Director,  
Nuclear Power Corporation of India ltd,  
Kakrapara Atomic Power Station,  
PO - via Vyara, Gujarat Dist - Surat 395651

100. Station Director,  
Tarapur Atomic Power Station 1&2,  
Nuclear Power Corporation of India Ltd,  
P.O. TAPP, Thane(Dist),  
Maharashtra- 401 504
101. Station Director,  
Tarapur Atomic Power Station 3&4,  
Nuclear Power Corporation of India Ltd,  
P.O. TAPP, Thane (Distt.),  
Maharashtra- 401 504
102. Managing Director,  
Korba West Power Co. Ltd.,  
Village – Chhote Bhandar,  
P.O. - Bade Bhnadar,  
Tehsil - Pussore,  
District - Raigarh,  
Chhattisgarh Raigarh 496100
103. Managing Director,  
KSK Mahanadhi,  
8-2-293/82/A/431/A, Road No 22 Jubilee Hills  
Andhra Pradesh Hyderabad 500033
104. General Manager,  
LANCO Power Ltd,  
Plot No - 397, Phase -III, Udyog Vihar, Haryana  
Gurgaon 122016
105. General Manager,  
NTPC-SAIL Power Company Private Ltd,  
Puranena Village, Chhattisgarh Dist - Durg,  
Bhilai 490021
106. General Manager,  
Ratnagiri Gas & Power Pvt Ltd,  
2nd Floor, Block-2, IGL Complex,  
Sector-126, Expressway, Uttar Pradesh  
Noida 201304
107. Managing Director,  
Sasan Power Ltd,  
DAKC, I Block, 2nd Floor, North Wing,  
Thane Belapur Road, Koparkhairana Maharashtra  
New Mumbai 400710

108. Managing Director,  
Vandana Vidyut Bhavan,  
M. G. Road  
Chhattisgarh Raipur 492001
109. Managing Director,  
RAPP Transmission Company Limited,  
Mira Corporate Suites,  
1&2 Ishwar Nagar,  
Okhla crossing,  
Mathura road,  
New Delhi, 110065
110. General Manager,  
LARA,  
National Thermal Power Corporation of India Ltd,  
Chappora, PO-Pussora,  
Raigarh, Chhattisgarh.
111. General Manager,  
Solapur,  
National Thermal Power Corporation of India Ltd,  
Western Region HQ,  
Samruddhi Venture Park,  
2<sup>nd</sup> Floor, MIDC Marol,  
Andheri East, Mumbai,  
Maharashtra.

**Eastern Region**

112. State Load Despatch Center,  
GRIDCO Colony  
PO-Mancheswar Railway Colony,  
BBSR Bhubaneswar -751070
113. State Load Despatch Center,  
Jharkhand State Electricity Board (JSEB)  
Kushai Colony, Doranda,  
Ranchi-834002
114. SLDC-BSEB,  
Patna, Bihar State Electricity Board,  
Vidyut Bhawan, Jawaharlal Nehru Marg,  
Patna-800021
115. SLDC-W.Bengal,  
P.O. Danesh Seikh Lane,  
Andul Road  
Howrah – 711109

116. Damodar Valley Corporation,  
DVC Tower,  
VIP Road, Kolkata,  
WB 700054
117. Energy and Power Deptt.,  
Govt. of Sikkim  
Kazi Road,  
Gangtok 737 201
118. General Manager,  
Farakka Super Thermal Power Plant-I&II,  
NTPC Ltd.,  
Farakka, WB 742236
119. General Manager,  
Farakka Super Thermal Power Plant-III,  
NTPC Ltd.,  
Farakka, WB 742236
120. General Manager,  
Kahalgaon Super Thermal Power Plant-I NTPC Ltd,  
Bhagalpur Bihar 813214
121. General Manager,  
Kahalgaon Super Thermal Power Plant-II NTPC Ltd,  
Bhagalpur Bihar 813214
122. Executive Director,  
Talcher Super Thermal Power Stn-I NTPC Ltd,  
Nayapalli, Odisha 751012
123. Addl. General Manager,  
National Thermal Power Corporation Limited,  
BARH Thermal Power Station, Patna, Bihar 803213
124. GM(O&M),  
Kanti Bijlee Utpadan Nigam Limited  
Muzaffarpur Thermal Power Station Bihar Muzaffarpur 843130.
125. The General Manager(O&M),  
Bharatiya Rail Bijlee Company Ltd.  
Nabinagar,Khera Police Station Dist.-Aurangabad, Bihar-824303
126. General Manager (O&M),  
Darlipali Super Thermal Power Project NTPC Ltd.  
Odisha Darlipali,Sundergarh 770072.(upcoming)

127. Chairman, Damodar Valley Corporation  
DVC Tower, VIP Road West Bengal Kolkata 700054  
(Not an ISGS but have many generating units)
128. Chief Engineer (Elect),  
Teesta V HEP,  
NHPC,  
Singtam, East Sikkim 737134
129. Chief Engineer,  
Rangit Hydro Electric Project NHPC,  
P.O. Rangit Nagar  
South Sikkim 737111
130. CEO,  
Maithon Power Limited  
MA-5 Gogna Colony,  
P.O: Maithon, Dhanbad,  
Jharkhand 828027
131. DGM (Electrical), Adhunik Power & Natural Resource Limited  
Village: Padampur, PS: Kandra Tata-Seraikela Road,  
Jharkhand 832105
132. GM (Power Sales & Regulatory),  
GMR Kamalanga Energy Ltd,  
Plot No.-29, Satyanagar,  
Bhubaneswar, Odissa-751007
133. Head Power & Sales,  
Jindal India Thermal Power Ltd.,  
Plot No.12,Local Shopping Complex,  
Sector-B1,Vasant Kunj, New Delhi- 110070
134. Advisor(Power),  
Ind-Barath Energy Utkal Ltd ,  
Sahajbahal, PO CgarpaliBarpali,  
Dist - Jharsuguda, Odisha , Pin – 768211
135. GM(C & RA),  
Odisha Power Generation Corporation Ltd.,  
Zone-A, 7th Floor, Fortuna Towers,  
Chandrashekharpur, Odisha Bhubaneswar 751023. (Upcoming)
136. Sr.Vice President(O&M),  
Teesta Urja Ltd.(Teesta -III HEP)  
Vijaya Building, 2nd Floor, 17 Barakhamba Road  
New Delhi New Delhi 110001

137. Asst. General Manager ,  
DANS ENERGY PVT. LTD.  
5th Floor, DLF Building No. 8,  
Tower C, DLF Cyber City, Phase – II,  
Gurgaon- 122002, Haryana
138. Chairman,  
GATI Infrastructure Ltd,  
268, UdyogVihar,  
Phase-IV, Gurgaon,  
Haryana 122001
139. President –Technical,  
Shiga Energy Private Ltd.  
5th Floor, DLF Building No.8,  
Tower C, Phase-II, Haryana Gurgaon 122002
140. VP (Commercial),  
Sneha Kinetic Power Project Private Ltd  
1366, Road no. 45, Jubilee Hills  
Telangana Hyderabad 500033

**Southern Region**

141. Andhra Pradesh State Load Dispatch Centre,  
Room No. 611, 6th Floor, A Block APTRANSCO,  
Vidyut Soudha, Khairatabad
142. State Load Despatch Centre,  
KPTCL, 28, Race course Cross Road,  
Bangalore -560009
143. State Load Despatch Centre, Kalamassery,  
Executive Engineer O/o Chief Engineer, (Transmission),  
System Operation, Kalamassery-683503
144. System Control Centre,  
Electricity Department, Puducherry,  
137, Nethaji Subhash Chandra Bose Salai,  
Electricity Department-605001
145. TANTRANSCO, SLDC, MLDC  
Block, 144 Anna Salai, Chennai-600002
146. Telangana SLDC, Chief Engineer,  
Room No 611 A Block,  
SLDC of the State of Telangana (TSSLDC),  
TSTRANSCO, Vidyut Soudha,  
Khairtabad, Hyderabad-500082

147. General Manager,  
National Thermal Power Corporation Ltd.,  
SR Headquarters II & V Floors,  
MCH Complex,  
R.P. Road, Secunderabad-500 003,
148. General Manager,  
National Thermal Power Corporation Ltd.,  
SR Headquarters II & V Floors,  
MCH Complex,  
R.P.Road, Secunderabad-500 003,
149. General Manager,  
Neyveli Lignite Corporation Ltd.,  
Corporate Office, Block-01,  
P.O. Neyveli, PIN: 607 801,  
Cuddalore Distt., Tamil Nadu State.
150. The Deputy General Manager,  
Neyveli Lignite Corporation Ltd.,  
Corporate Office, Block-01,  
P.O. Neyveli, PIN: 607 801,  
Cuddalore Dist., Tamil Nadu State.
151. The Deputy General Manager,  
Neyveli Lignite Corporation Ltd.,  
Corporate Office, Block-01,  
P.O.Neyveli, PIN: 607 801,  
Cuddalore Dist., Tamil Nadu State.
152. The Deputy General Manager,  
Neyveli Lignite Corporation Ltd.,  
Corporate Office, Block-01,  
P.O.Neyveli, PIN: 607 801,  
Cuddalore Dist., Tamil Nadu State.
153. The Station Director,  
Madras Atomic Power Station,  
Nuclear Power Corpn. Of India Ltd.,  
Kalpakkam – 603 102, Tamil Nadu State
154. The Deputy General Manager,  
Kaiga Generating Station,  
Nuclear Power Corpn. of India Ltd.,  
P.O.Kaiga, Via Karwar,  
Karnataka - 581400 , Karnataka State.

155. The Station Director,  
Kudankulam Nuclear Power Project, Unit -1  
Nuclear Power Corporation of India Ltd.,  
P.O. Kudankulam, Radhapuram Taluk Tirunelveli District,  
Tamil Nadu - 627 106
156. The Station Director,  
Kudankulam Nuclear Power Project, Unit -2  
Nuclear Power Corporation of India Ltd.,  
P.O. Kudankulam, Radhapuram Taluk Tirunelveli District,  
Tamil Nadu - 627 106
157. The Chief Operating Officer,  
LANCO- Kondapalli Power Ltd., Stage-II  
Plot No.4, Software Units Layout,  
Hitech City, Madhapur,  
Hyderabad-500 081. Andhra Pradesh State
158. The Chief Operating Officer,  
LANCO- Kondapalli Power Ltd., Stage-III  
Plot No.4, Software Units Layout,  
Hitech City, Madhapur,  
Hyderabad-500 081. Andhra Pradesh State
159. General Manager (O&M),  
NTPC Tamilnadu Energy Company Ltd.,  
Vallur Thermal Power Project,  
Vellivoyalchavadi P.O.,  
Ponneri Taluk, Tiruvallur Dist.,  
Chennai – 600103, Tamil Nadu State.
160. Sr. Vice President,  
Meenakshi Energy Pvt. Ltd.,  
Meenakshi, Plot No: 119,  
Road No: 10, Jubilee Hills,  
Hyderabad-500 033.
161. The Chief Executive Officer,  
NLC Tamil nadu Limited,  
2\*500, MW JV Thermal Power Project,  
Harbour Estate,  
Tuticorin, PIN: 628004, Tamil Nadu State.
162. Thermal Power Tech Corporation India Limited,  
SPSR Nellore, 6-3-1090,  
A-Block, 5<sup>th</sup> Floor, TSR Towers,  
Raj Bhavan Road, Somajiguda,  
Hyderabad, 5000082.

163. Sr. Vice President,  
Meenakshi Energy Pvt. Ltd.,  
Meenakshi, Plot No: 119,  
Road No: 10, Jubilee Hills,  
Hyderabad-500 033.
164. The General Manager (Projects),  
Simhapuri Energy Pvt. Ltd.,  
Madhucon Greenlands, 6-3-866/2,  
3rd Floor, Begumpet,  
Hyderabad-500016.
165. Managing Director,  
Coastal Energen Pvt. Ltd,  
7th Floor, Buhari Towers,  
4 ,Moores Road,  
Chennai, PIN: 600006, Tamil Nadu State
166. The Chief Commercial Officer (CCO)  
SEMBCORP Energy India Ltd.,  
6-3-1090, A-Block, 5th Floor,  
T.S.R Towers, Raj Bhavan Road,  
Somajiguda, Hyderabad 500082, Telangana
167. Senior General Manager,  
IL & FS Tamilnadu Power Company limited,  
C. Pudhupettai post,  
Parangipettai (via), Chidambaram(tk.),  
Cuddalore-608502, Tamil Nadu.
168. General Manager,  
Sembcorp Gayatri Power Ltd.,  
TP Gudur Mandal,  
Nellore-524344, Andhra Pradesh.

**North Eastern Region**

169. State Load Despatch Centre,  
Agartala, 79 Tilla, Kunjaban, Agartala,  
Tripura (West)
170. Department of Power,  
Government of Nagaland, SLDC Nagaland,  
Electricity Colony,  
Full Nagarjan Dimapur, Nagaland
171. Mizoram State Load Despatch Centre,  
Tuikhuahtlang, Aizawl -796001

172. State Load Despatch Centre,  
Assam, SLDC, AEGCL,  
Near 132kv Grid Sub Station,  
Kahilipara, Guwahati
173. General Manager,  
Doyang HEP, NEEPCO,  
Wokha, Nagaland
174. General Manager,  
Ranganadi HEP, NEEPCO,  
P.O. Ranganadi Proj. Dist. Subansiri,  
Ar. Pradesh-791121
175. General Manager,  
AGBPP, NEEPCO,  
Kathalguri, Tinsukia, Assam
176. General Manager,  
AGTPP, NEEPCO,  
Ramchandranagar, Agartala, Tripura
177. General Manager,  
KHANDONG HEP, NEEPCO,  
Umrangsoo, N.C.Hills, Assam
178. General Manager,  
KOPI LI HEP, NEEPCO,  
Umrangsoo, N.C.Hills, Assam
179. General Manager,  
KOPI LI-2 HEP, NEEPCO,  
Umrangsoo, N.C.Hills, Assam
180. Chief Engineer,  
NHPC  
Loktak HEP Leimatak-795124, Manipur
181. Ranganadi HEP (NEEPCO)  
Ranganadi HEP, NEEPCO Ltd.,  
Yazali, Dist. Lower Subansiri,  
Andhra Pradesh-791119
182. Managing Director,  
ONGC Tripura Power Company Ltd,  
6th Floor, A Wing, IFCI Tower-61,  
Nehru Place, New Delhi, 110019

183. General Manager,  
Bongaigaon TPP, NTPC Ltd.,  
P.O.-Salakati, Kokrajhar Dist.  
Assam-783369
184. Kameng HEP (NEEPCO),  
EMG, Kameng HEP, NEEPCO, Kimi,  
P.O.- Bhalukpong, Post Box-2, West Kameng  
Dist., Arunachal Pradesh, PIN – 790114
185. Pare HEP (NEEPCO),  
Pare HEP, NEEPCO Ltd, Sopo,  
P.O- Doimukh, Dist- Papumpare,  
Arunachal Pradesh, PIN – 791112
186. State Load Despatch Centre,  
Agartala, 79 tilla, Kunjaban,  
Agartala, Tripura (West)
187. Department of Power,  
Government of Nagalnd,  
SLDC Nagaland, Electricity Colony,  
Full Nagarjan Dimapur, Nagaland.
188. Mizoram State Load Despatch Centre,  
Tuikhuahtlang, Aizawl -796001
189. State Load Despatch Centre,  
Assam, SLDC, AEGCL,  
Near 132kv Grid Sub Station,  
Kahilipara, Guwahati

**...Respondents**

190. Member Secretary,  
Northern Regional Power Committee  
18-A, Shaheed Jeet Singh Sasanwal Marg,  
Katwaria Sarai,  
New Delhi-110 016
191. Member Secretary,  
Southern Regional Power Committee  
29, Race Course Cross Road,  
Bangalore-560 009.
192. Member Secretary,  
Eastern Regional Power Committee  
14, Golf Club Road,  
Kolkata-700 033

193. Member Secretary,  
Western Regional Power Committee  
F-3, MIDC Area,  
Andheri (East),  
Mumbai-400 093
194. Member Secretary,  
North Eastern Regional Power Committee  
NERPC Complex,  
Dong Parmaw,  
Lapalang,  
Shillong-6
195. Chief Engineer (Grid Management),  
Central Electricity Authority Sewa Bhawan,  
R.K.Puram,  
New Delhi-110 022.
196. Chief Engineer  
(National Power Committee),  
Central Electricity Authority,  
18-A, Shaheed Jeet Singh Sasanwal Marg,  
Katwaria Sarai, New Delhi-110 016

**...Proforma Respondents**

**Parties Present:** Shri S.R. Narasimhan, NLDC  
Shri N. Nallarasana, NLDC  
Shri Phanisankar Chilakuri, NLDC

### **ORDER**

The Petitioner, National Load Dispatch Centre (NLDC) is the system operator at the national level and has made the following prayers:

- a) Direct all ISGS stations whose tariff is regulated / determined by CERC to install equipment as per the requirement mentioned in the Petition at the unit control rooms for transferring the required data for AGC by 30th June 2019.*
- b) Direct all ISGS stations whose tariff is regulated / determined by CERC to ensure communication from nearest wide band node to the RTU in the unit control room by 30th June 2019.*
- c) Direct Central Transmission Utility (CTU) to ensure communication availability*

*from NLDC/RLDCs to nearest wide band node/switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication by 30th June 2019.*

- d) Decide the mark up price for secondary regulation service through AGC.*
- e) Allow NLDC/RLDCs to test, tune and operate the AGC system for providing the signals to the power plants as and when they comply with the directions above.*
- f) Allow any variation in the generation during testing phase to be settled under DSM.*
- g) Allow NLDC/RLDCs to put all the Phase-I plants under continuous operation on AGC before 31st December 2019.*
- h) Direct Phase-II plants in the detailed modus operandi to provide infrastructure at RTU/internal communication.*
- i) Road map for implementation of AGC at RLDCs in future may be accepted.*
- j) Pass any other orders as this Commission may deem fit and proper under the given facts and circumstances.*

## **SUBMISSIONS OF THE PETITIONER**

2. The Petitioner has submitted that vide Order dated 13.10.2015 in petition no 11/SM/2015, the Commission gave the roadmap for ‘Operationalization of Generation Reserves in the Country’. The Order mandated that each region should maintain primary, secondary and tertiary reserves. The objective of the Order was to introduce ‘Spinning Reserves’ in the country, which is one of the important components for ensuring grid security, quality and reliability by achieving adequacy of supply and maintaining load-generation balance. All generating stations that are regional entities were directed to ‘must plan’ operationalization of Automatic Generation Control (AGC) along with reliable telemetry and communication by 01.04.2017. The Commission noted that this would entail a one-time expense for the generators to install requisite software and firmware, which could be compensated for and that the communication infrastructure must be planned by the Central Transmission Utility (CTU) and developed in parallel, in a cost-effective manner.

3. The Commission directed the Petitioner to upload the detailed modus operandi on ‘Operationalization of Spinning Reserves’ on NLDC website and seek comments from the

stakeholders by 11.08.2017 and file the comments received from stakeholders within two weeks thereafter. Accordingly, the report was also uploaded on the NLDC website.

4. The Petitioner has submitted that the detailed implementation plan was also discussed in the National Power Committee (NPC) meeting held at Indore on 08.09.2017. An agenda on 'secondary frequency control' was sent to NPC for discussion in the respective Regional Power Committees (RPC). The Expert Group constituted (in May 2017) by the Commission to review and suggest measures for bringing power system operation closer to National Reference Frequency, recommended that the frequency control continuum as given in their report may be adopted and included as part of the Grid Code (hereinafter referred to as 'IEGC') through an amendment to Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010. Further, it was recommended that AGC must be implemented throughout the country at the earliest in line with the Commission's recommendation of treating a region as a balancing area and that the Performance Metrics for AGC payments may be introduced once sufficient experience is gained through the pilot project (carried out at Dadri generating station of NTPC). AGC at the intra-State level, particularly for large states, was to be implemented in line with directions by the Appropriate Commission(s).

5. The Petitioner has submitted that the Commission in its order dated 06.12.2017 in Petition No. 79/RC/2017 approved the Commissioning of the AGC Pilot Project between NLDC and NTPC Dadri Stage-II and various developments in the AGC Pilot were acknowledged by the Commission. Vide the above order, the Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Dadri Stage-II was successfully taken under remote as a part of AGC pilot project from NLDC from 1225 Hrs. of 04.01.2018 and is under continuous operation. Further, data is being submitted by NLDC to NRPC in the agreed format on a weekly basis.

6. The Petitioner has submitted that Karnataka Power Transmission Corporation Limited (KPTCL) together with (United States Agency for International Development (USAID) has proposed AGC pilot project on Varahi and Sharavathi Hydro Power Plants. On 10.02.2018, SRLDC, USAID and NLDC visited NP Kunta solar park in Andhra Pradesh for understanding the feasibility of AGC implementation. USAID agreed to take the AGC implementation at NP Kunta Solar power project under 'Greening the Grid' (GtG)-RISE

project. The matter was also discussed in the 33<sup>rd</sup> meeting of SRPC held on 17.02.2018 at Puducherry. A workshop was organised by USAID and NLDC on 15.05.2018 at Andhra Pradesh SLDC, Vijayawada to explain the basic architecture of the AGC project and the proposed project at NP Kunta to stakeholders.

7. On 18.05.2018, Letter of Award was issued by NTPC Simhadri to M/S Siemens for the supply, testing and commissioning of software and hardware and implementation of the AGC pilot project at NTPC-Simhadri. AGC on Barh (Eastern Region), Bongaigaon (North Eastern Region) and Mauda (Western Region) are power plants of NTPC under contracting phase of implementation.

8. The Petitioner has submitted that it has started up-gradation of SCADA from October 2017. AGC set up is envisaged to be capable of sending and receiving AGC signals to all Regional Entity generating stations to start with for the first time in India. The RLDCs' SCADA/EMS system was recently upgraded before AGC was notified through the Commission's Order. Hence, considering a region as a balancing area, AGC is being implemented through NLDC, which is a unique experiment as five (5) AGCs are being operated from a single control center at NLDC. Further, as a next step, discussion could start on the roadmap to progressively shift AGC control to RLDCs over the next 3-5 years. At the intra-regional level, discussion at RPC level is on for introducing AGC at least in the few intra-State generators in RE-rich States.

9. The Petitioner has submitted that the CERC (Communication System for inter-State transmission of electricity) Regulations, 2017 has provided detailed roles and responsibilities of various organizations with respect to communication. NLDC was given the responsibility for preparation and issuance of guidelines with the approval of the Commission on the interfacing requirements in respect of terminal equipment, RTUs, SCADA, PMUs, Automatic Generation Control (AGC), Automatic Meter Reading (AMR), Advanced Metering Infrastructure (AMI), etc. and for data communication to the respective control centres. The Generic Technical Specifications for AGC connecting equipment that has to be procured by the power plants were prepared by the Petitioner based on the experience of the AGC pilot project (at Dadri) for full scale implementation of AGC. Generating stations have to install AGC connecting equipment at the unit control rooms for transferring the required set of data for AGC.

10. The Petitioner has submitted that Regional Secondary Reserves quantum, mandated by the Commission are given as below:

Secondary Reserves quantum needed in MW (Region wise)	
NR	800
ER	660
WR	800
SR	1000
NER	363
Total	3623

11. The Petitioner has suggested that the detailed implementation plan pan-India for AGC implementation is proposed in the following manner:

Phase-I

(a) Inter-State Generating Stations (ISGS) generators, whose tariff is regulated/ adopted by the Commission, are proposed to be made capable of participating in 'Secondary Control' since the tariff for these generators is already available and there are fewer communication issues. This is also because in case of these generating stations, Ancillary Services/ AGC Pilot Project Framework is available for settlement (without the refund of fixed charges as mentioned in the Half Yearly Feedback on Ancillary Services and CERC Order on AGC Pilot Project) and, therefore, its implementation is expected to be dispute free. However, limiting AGC implementation to only these generating stations may not be sufficient to ensure availability of the full quantum of reserves as mandated by the Commission.

Phase-II

(b) All Regional Entity generating stations scheduled by RLDCs (over and above the Phase-I power stations mentioned above) can be made capable of participating in secondary control. However, Declared Capability (DC) at present is not taken from these generating stations by RLDCs. Some Independent Power Producers (IPP) have part Power Purchase Agreements with discoms/ traders while part capacity is untied, and power is sold under merchant contracts. Tariff for these generators has to be

decided and agreed upon *a priori* for secondary control participation of these generators. DC and Schedule have to be obtained from these generators similar to Central Sector generating stations for reserve estimation. Many of these regional entity generating stations operate in the day-ahead energy market and the day-ahead prices may have a significant role in respect of these generating stations as far as availability to the grid at any instant is concerned. Low prices in the Day-Ahead Market (DAM) on a sustained basis may lead to many of these units remaining off the grid. The following, inter-alia, may be the requirements for the Regional entity generating stations equipped under Secondary Control:

- The generating stations shall bear the cost of secondary control hardware at the generating station end including the cost of the fibre optic cable from the generating station control room to the nearest communication node.
- Share DC and Schedule like ISGS generators on day ahead basis and subsequent revisions with RLDCs.
- Payment for energy and incentive will be as decided by the Commission.
- The generating stations shall have working control systems for turbine, boiler and governor. Governor response plots/ graphs of past incidents have to be submitted to concerned RLDC.
- Existing wide band communication node to be established within a radius below 30-40 km from the plant to communicate with the nearest RLDC. Distance need not be a binding limitation and the connectivity of the generating station with the communication node can be seen on case to case basis based on merit.

12. The Petitioner has submitted that Primary, secondary and tertiary generation reserves are required for frequency control and ensuring reliable operation of the grid, particularly under high Renewable Energy (RE) penetration. Primary control provision has been existing in the IEGC but its enforcement has been an issue that has been highlighted before the Commission. Secondary control had been absent in the system so far while tertiary frequency control was introduced only in April 2016 through the Central Electricity Regulatory Commission (Reserves Regulation Ancillary Services) Regulations, 2016 (or for short, RRAS Regulations). Through Order dated 16<sup>th</sup> July 2018 in Petition No. 07/SM/2018, Fast Response Ancillary Services or FRAS was ordered by the Commission for central sector hydro stations and is under implementation phase.

13. The Petitioner has submitted that the following issues become important when one looks at the entire continuum of frequency control:

- i. Ensuring accurate load forecasting and Renewable Energy (RE) forecasting: This is the first step towards reliability as generating units need to get committed based on the forecasts. Starting from Discom level, the forecasts need to be aggregated for the State at SLDCs level, at RLDCs for the regional level and at NLDC for the All-India level.
- ii. Evaluating Area Control Error (ACE) of each control area: Bias may be taken as equal to Frequency Response Characteristics (FRC) of the State in past ten events. For ACE, high quality measurement of line flows and frequency at 10 seconds or better periodicity at LDCs is a must. Further, seamless transfer of schedule data from off-line systems to SCADA must be ensured. RLDCs are already bringing forth the non-availability of real time data in the RPC forums and this needs to be addressed promptly.
- iii. Primary Response: The SLDCs must also monitor the primary response from the generating units within the State and report to the respective SERCs as directed by CERC vide its order dated 31<sup>st</sup> July 2017 in Petition No. 84/MP/2015.
- iv. Measurements: For AGC, high quality measurements are needed for inter-regional tie lines and generating stations under AGC. As stated above, periodic monitoring of the data quality needs to be done at the RPC forums and chronic problems of non-availability of data are addressed promptly so that real time operation is smooth.
- v. Fiber Optic Communication: Fiber optic communication from Regional Entity generating station to nearest CTU node and from there on to RLDCs/ NLDC is a must and it could be closely monitored through the RPC forums. This is required irrespective of whether we have a regulated system of secondary reserves procurement or a market based one.
- vi. Participation: ACE is allocated to the generating stations under AGC based on the selected participation factor mode in the AGC software. The participation of each generating station will be calculated by the AGC software based on the weightage assigned to different attributes of the plant and the grid. Spinning reserve availability, ramp rate and variable cost of the generating station are the important attributes that are typically considered. In case of inter-/ intra-regional transmission constraints during

outages, certain plants may not be able to participate in AGC till normalization of transmission system.

14. The Petitioner has submitted that ‘Spinning Reserves’ viz. DC on bar minus schedules available in real time in ISGS is currently used for rescheduling/ tertiary reserves by States, tertiary frequency control through Reserves Regulation Ancillary Services and now being envisaged for secondary control through AGC. It is also available for primary control though the IEGC clearly specifies that the schedules should not exceed capacity on bar less Normative Auxiliary Consumption. This ensures that even if the power plant is fully scheduled, the overload capacity and margins in auxiliary consumption is able to provide primary response.

15. The Petitioner has submitted that after the forecast of load and RE generation, the scheduling of conventional generation resources by the States assumes importance. Here, apart from scheduling, the States also need to indicate the amount of hot spinning reserves it is holding. The reserves could be held either within the State or at the ISGS where the State has a share but it should be replenished whenever there is a contingency such as a generating unit tripping within the State. Unless such a mechanism is in place, the secondary control would not work as all the reserves would get depleted quickly. DC on bar less the schedules equals the hot spinning reserves. It was observed that hot spinning reserve gets depleted daily during the morning and evening peak hours when States requisition their full entitlement. Under this situation, the State utilities ought to have reserves elsewhere within the State.

16. The Petitioner has submitted that on 06.09.2018, the Commission has issued a discussion paper on ‘*Redesigning Ancillary Services Mechanism in India*’ and comments were invited from stakeholders. The Petitioner is of the view that the physical infrastructure in terms of communication and suitable hardware/ software at the power plants is sine qua non for secondary control through AGC irrespective of whether the same is regulated or market-based. The only variable is the quantum of secondary reserves required on day to day basis.

### **PROCEEDINGS DURING HEARING**

17. The Petition was admitted on 25.10.2018. During the hearing on 31.1.2019, the

Petitioner submitted that the present petition has been filed for implementation of AGC in India.

18. The Petitioner further submitted that the Commission in its Order dated 06.12.2017 in Petition No. 79/RC/2017 approved the commissioning of AGC pilot project between NLDC and NTPC Dadri Stage-II and the Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Accordingly, one plant in each region has been identified and AGC has also been commissioned in Simhadri and Mauda generating station.

19. The Petitioner requested the Commission to direct ISGS to install the equipment in power plants for accepting signals from NLDC. After hearing, the Commission directed the Petitioner to furnish the Minutes of Meeting held with RPCs wherein RPCs have given their consent to the AGC pilot project. The Commission further directed the Petitioner to submit the feedback report on the operation of AGC at NTPC Dadri Stage-II along with the summary of findings of this pilot project.

20. The Petitioner has complied with the directions and submitted the minutes of the special meetings on AGC pilot project which were held with all RPCs. The Petitioner has also submitted the feedback report before the Commission on 15<sup>th</sup> February 2019, highlighting the learning from the pilot project. Several learning including those on the implementation aspects, communication protocols, generator regulation and load following capabilities, metering, monitoring, visualisation, accounting etc. were gathered via pilot project and explained in the feedback report. The Pilot projects have also provided capacity building in the field of AGC which will be useful during implementation of secondary control on a large scale.

### **ANALYSIS & DECISION**

21. We have heard the Learned Counsels for the Petitioner and have carefully perused the records.

22. The Commission is of the view that the most important responsibility of the Power System operators is to maintain reliability of the Power System by maintenance of Load -

Generation balance. For a large complex grid such as the Indian grid, primary, secondary and tertiary frequency controls are must-have tools to ensure reliability. With the objective of ensuring grid security, quality and reliability, the Commission vide Order dated 13.10.2015 in Petition no 11/SM/2015 had laid down a roadmap for '*Operationalization of Generation Reserves in the Country*'. It was envisaged that apart from the primary reserve at the national level, secondary reserve should be maintained by each region and tertiary reserve by each State. All the generating stations that are regional entities were directed to plan to operationalize AGC along with reliable telemetry and communication by 01.04.2017. The NLDC was directed to submit a detailed procedure to operationalize reserves in the country vide Order dated 13.10.2015.

23. The Commission notes that an 'outline procedure' was submitted by NLDC vide letter dated 15.12.2015 in which it was proposed to take up a pilot project with one of the NTPC plants in a region based on which further activities could be taken up. On 05.02.2016, NLDC was advised to submit the draft detailed procedure and implementation plan for operationalization of Reserves within three months of implementation of Ancillary Services Regulations. After various brainstorming sessions and meetings, NLDC submitted the detailed procedure on Operationalization of Spinning Reserves on 14.07.2017 and recommended that secondary control should be added as an Ancillary Service.

24. The Commission observes that the 'National Electricity Policy' also mandates that adequate reserves may be maintained to ensure secure grid operation. The Commission is of the view that collective efforts of the stakeholders in implementation of the AGC are a step forward and will go a long way in development of the secondary reserves in the country leading to stable frequency operation and grid security and reliability.

25. The Commission observes that the feedback on implementation of AGC submitted by NLDC highlights the need for enhancing adequacy of reserves in the country. It has been stated that valuable experience has been gained in terms of implementation aspects, communication protocols, generator regulation and load following capabilities, cyber security etc. which is useful during implementation of secondary control on a large scale. The Petitioner has submitted that from the interactions with national and international experts on power systems and experience with Ancillary Services till date, the general understanding was that different solutions as a package like load and Renewable Energy (RE) generation

forecast, proper portfolio management by the States, primary response from the generators, secondary control in the form of AGC, Ancillary Service products in different timeframes etc. are needed for stable frequency operation of the power system. No unique solution existed. NLDC report emphasised that a bad or no forecast of load/ RE generation and poor portfolio management by the State utilities would lead to heavy deviations from schedule and grid indiscipline exhausting all reserves in the system and making the system insecure. AGC effectiveness would have to be seen in this overall context. It was further highlighted in the feedback report that deployment of two-three plants under AGC with 200 MW-300 MW reserve might not be sufficient for a grid size like that of India. The Commission observes that the Expert Group on 'National Reference Frequency' in its report submitted to the Commission in November 2017 recommended that AGC must be implemented throughout the country at the earliest and Performance Metrics for such AGC payments may be introduced once sufficient experience is gained through the pilot project.

26. The Petitioner has suggested that implementation of AGC be undertaken in Phases. Under Phase-I, ISGS generators, whose tariff is regulated/ adopted by the Commission, are proposed to be made capable of participating in 'Secondary Control'. Dadri Stage-II NTPC in Northern Region was the first AGC pilot project of the country which was approved by the Commission vide Order in Petition No.79/RC/2017 on 06.12.2017 and is in continuous operation from 1225 Hrs. of 04.01.2018. The Commission also directed that similar pilot projects may be replicated by NLDC, in at least one other regional grid of the country. Accordingly, four more AGC pilot projects have been/are being implemented viz. Simhadri Stage-II in Southern Region, Mauda Stage-II in Western Region, Barh Stage-II in Eastern Region and Bongaigaon in North-Eastern Region.

27. The Commission observes that there is one-time expense involved for the generators to install requisite software and firmware. The Commission has been informed that the implementation cost i.e. placing of order for the equipment and integration cost of the four AGC pilot projects which have been commissioned viz. Dadri Stage-II NTPC in Northern Region Simhadri Stage-II in Southern Region, Mauda Stage-II in Western Region and Barh Stage-II in Eastern Region, is in the range of Rs. 30.00 lakhs to Rs. 50 lakhs per generating station. The Commission accepts the Petitioner's proposition that the cost of such equipment at generating stations for AGC implementation is not significant and ideally all ISGS stations should be AGC enabled. The Commission notes that majority of the thermal stations

regulated by the Commission have station capacity of 200 MW and above and the AGC support is mainly expected from these facilities apart from the hydro generating stations other than Run-of-River projects. It will therefore be prudent, also from the point of view of cost effectiveness to ensure that the thermal generating stations with installed capacity of 200 MW and above and all hydro stations with capacity exceeding 25 MW necessarily have the capability to provide AGC support. Further, the Commission is of the view that with due regard to the nature of the Run-of-River Hydro projects it may not be advisable to mandate such plants to provide AGC support, as this might lead to spillage/ under-utilization of water, which should be avoided. Accordingly, the Commission directs all thermal Inter State Generating Stations (ISGS) that are regional entities with installed capacity of 200 MW and above and all hydro stations with capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by the Commission, to install the required software and firmware for implementation of AGC at the unit control rooms for transferring the required set of data for AGC. These regional entity generators may approach the Commission under relevant regulations and provisions of PPA for compensation of this one-time cost. The Commission also directs the Central Transmission Utility and the NLDC to commission the required communication system in parallel.

28. Once the aforesaid generating stations are AGC enabled, NLDC/ RLDCs shall be allowed to test, tune and operate the AGC system for providing the signals to the power plants. With this decision to make the ISGS stations AGC compliant, the Commission is of the view that any other pilot beyond the five pilots already initiated by NLDC, may not be needed.

29. As regards compensation for AGC support and deviation charges, it is clarified that the framework in this regard as stipulated in the Commission's Order in Petition no. 79/RC/2017 dated 06.12.2017 shall apply to the five pilot projects as also to other ISGS as and when they are AGC enabled. This arrangement shall remain in place till further Orders or till relevant regulations inter-alia on compensation for AGC services are framed by the Commission.

30. The Commission has noted the suggestions of the Petitioner for covering under Phase-II, other regional entity generators (other than those whose tariff is determined or adopted by

the Commission). The Commission is of the view that decision on this issue cannot be taken in the present petition. It needs wider consideration.

31. The Commission observes that NLDC in its report on implementation of RRAS, has recommended moving towards market-based procurement of ancillary service for a more robust design. The relevant excerpt is reproduced below:

*“Once the scope of present implementation of ancillary services is enlarged from the regulated generation stations at inter-state level to include state-level generators also, a critical mass would be achieved. Moreover as more and more generators start participating in regulation services, closer monitoring of the performance of generating stations would also be needed. The implementation would also be more robust by design and subsequently, based on the experience gained, market based procurement of ancillary services could also be thought of.”*

32. The Commission is of the view that the experience gained under RRAS underlines the need for a calibrated approach to transform the extant administered Ancillary Services mechanism to a market-based mechanism with the objective of increasing the ambit of potential providers of such services at efficient costs and enhanced reliability of the grid. The Staff Paper on *‘Redesigning Ancillary Services Mechanism in India’* issued by staff of the Commission on 06.09.2018 has highlighted that the physical infrastructure in terms of communication and suitable hardware/ software at the power plants is sine qua non for secondary control through AGC irrespective of the fact whether the same is regulated or market-based. The only variable is the quantum of secondary reserves required on day to day basis.

33. The Commission observes that given the changes in technology, generation mix and increasing decentralized generation, and locational ancillary requirements, long term bilateral contracts for ancillary support should be avoided. Same resource can provide multiple flexibility services. For example, a generator that can provide fast tertiary response can also provide slow tertiary response. An arrangement which bundles multiple flexibility services has some advantages – by allowing such generators to utilize their capabilities to serve various system requirements thereby reducing the cost of providing individual services. Accordingly, the Commission directs the staff of the Commission to initiate a comprehensive review of Ancillary services framework based on these principles, and present to the Commission for suitable decision.

## **SUMMARY**

34. In the interest of reliable and safe grid operation, the Commission directs that all the ISGS stations whose tariff is determined or adopted by CERC shall be AGC-enabled and the ancillary services including secondary control through AGC be implemented as per the following direction:

- i. All thermal ISGS stations with installed capacity of 200 MW and above and all hydro stations having capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC are directed to install equipment at the unit control rooms for transferring the required data for AGC as per the requirement to be notified by NLDC. NLDC shall notify the said requirements within one month of this order.*
- ii. All such ISGS stations whose tariff is determined or adopted by CERC shall have communication from the nearest wide band node to the RTU in the unit control room.*
- iii. The Central Transmission Utility (CTU) is directed to have communication availability from NLDC/ RLDCs to the nearest wide band node/ switchyard for the generating stations in a redundant and alternate path ensuring route diversity and dual communication.*
- iv. The NLDC is also directed to commission the required communication infrastructure.*
- v. The expenditure as a result of compliance of the above directions may be claimed as per relevant regulations or provisions of the PPA.*
- vi. The NLDC is directed to monitor implementation of the above directions so that all the ISGS stations whose tariff is determined or adopted by CERC are AGC-enabled within six months of this order.*
- vii. The framework regarding compensation for AGC support and deviation charges as stipulated in the Commission's Order in Petition no. 79/RC/2017 dated 06.12.2017 shall apply to the five pilot projects as also to other ISGS as and when they are AGC enabled. This arrangement shall remain in place till the relevant regulations inter alia on compensation for AGC services are framed by the Commission.*
- viii. NLDC/RLDCs are allowed to operate the AGC system for enabling the signals to the power plants at the earliest.*

*ix. All new thermal ISGS stations with installed capacity of 200 MW and above and hydro stations having capacity exceeding 25 MW excluding the Run-of-River Hydro Projects irrespective of size of the generating station and whose tariff is determined or adopted by CERC shall mandatorily have the capability to provide AGC support.*

35. With the above directions, Petition No. 319/RC/2018 stands disposed of.

Sd/-

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सदस्य

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डॉ एम. के. अय्यर  
सदस्य

Sd/-

पी. के. पुजारी  
अध्यक्ष

### **TIME DRIFT REPORT STATUS**

<b>SL.NO</b>	<b>PGCIL</b>	<b>STATUS</b>
1	BNC (PG)	REPORT NOT RECEIVED/ACTION NONE
2	BADARPUR (PG)	REPORT NOT RECEIVED/ACTION NONE
3	Silchar(PG)	REPORT NOT RECEIVED/ACTION NONE
4	MARIANI (PG)	REPORT NOT RECEIVED/ACTION NONE
5	HAFLONG (PG)	REPORT NOT RECEIVED/ACTION NONE
6	Mokokchang(PG)	REPORT NOT RECEIVED/ACTION NONE
7	RANGIA (PG)	REPORT NOT RECEIVED/ACTION NONE
8	Aizawl(pg)	REPORT NOT RECEIVED/ACTION NONE
9	SALAKATI(PG)	REPORT NOT RECEIVED/ACTION NONE
10	BONGAGIGAON(pg)	REPORT NOT RECEIVED/ACTION NONE
11	DIMAPUR(pg)	REPORT NOT RECEIVED/ACTION NONE
12	Khliehriat(Pg)	REPORT NOT RECEIVED/ACTION NONE
	<b>ASSAM</b>	
13	DULLAVCHERRA	REPORT NOT RECEIVED
14	<b>NAGALAND(S)</b>	REPORT NOT RECEIVED
15	<b>MIZORAM(S)</b>	REPORT NOT RECEIVED
	<b>TRIPURA</b>	
16	SM NAGAR	REPORT NOT RECEIVED
17	79 TILLA	IRREGULAR
	<b>ARUNACHAL PRADESH</b>	
18	CHIMPU	REPORT NOT RECEIVED
	<b>GENERATION</b>	
19	AGBPP	REPORT NOT RECEIVED
20	DOYANG	REPORT NOT RECEIVED
21	PALATANA	IRREGULAR

### **Time Drift Corrective Action Not taken**

Sl. NO.	ENTITY	LOCATION	TIME DRIFT STATUS (MIN)	STATUS
1	ASSAM	AZARA-BONG	-04:08	Meter replaced due to high time drift but due to inaction drift >4
2	ASSAM	AZARA-SIL	-04:33	Meter replaced due to high time drift but due to inaction drift >4
3	ASSAM	DULLAVCHERRA	+02:20	No action taken

### **Locations not sending weekly SEM data**

Sl. No.	LOCATION NOT REPORTING	STATUS
1	UDAIPUR	DATA NOT SENT
2	SONABIL	DATA NOT SENT