

North Eastern Regional Power Committee

Agenda For

143rd OCC Sub-Committee Meeting

Time of meeting : 10:00 Hrs.

Date of meeting : 12th April, 2018 (Thursday)

Venue : "Hotel Nandan", Guwahati.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 142nd MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 142nd meeting of Operation Sub-committee held on 14th March, 2018 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 22nd March, 2018.

The Sub-committee may confirm the minutes of 142nd OCCM of NERPC as no comments/observations were received from the constituents.

ITEMS FOR DISCUSSION

B.1. ACTION TAKEN:

1. IMPLEMENTATION OF PROJECTS FUNDED FROM PSDF:

The status as informed in 142nd OCC:

State	Protection System	ADMS	Capacitor Installation	SAMAST**
Arunachal Pradesh	Requisition of funds by May-June 2018.	Clarification submitted to Techno-Economic Sub-group.	-	SLDC to apprise SERC of the project.
Nagaland	SE(C&O) informed that work is in progress.	Clarification submitted to Techno-Economic Sub-group.	To re-submit proposal to NERPC for Study.	Documents and relevant papers have been furnished to Nagaland SERC as desired by Chairperson, SERC. SERC has requested for a presentation at Kohima/Nagaland by the SAMAST group
Mizoram	-	Clarification submitted to Techno-Economic Sub-group.	Appraisal Committee is yet to approve	To furnish action plan.

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Manipur	Remaining tenders referred to Higher Tendering Committee. All LOAs by Feb'18.	Clarification submitted to Techno-Economic Sub-group.	Submitted to NERPC for Study before sending to NPC/NLDC.	NERPC/NERLDC members to meet SERC /MSPCL higher officials in 2 nd week of Feb'18.
Tripura	To submit UC by 04.02.18. Material 90% received at site.	Clarification submitted to Techno-Economic Sub-group.	To submit proposal to NERPC for Study.	NERPC/NERLDC members to meet TSERC /TSECL higher officials in 1 st week of Feb'18.
Assam	Remaining tenders' bidding document under scrutiny. All LOAs' by Aug'18.	Clarification submitted to Techno-Economic Sub-group.	-	DPR finalized.
Meghalaya	MePTCL-PLCC LoA by Feb'18 MePGCL -LOA completed.	Clarification submitted to Techno-Economic Sub-group.	-	DPR finalized.

The status of implementation of the above schemes (physical as well as financial progress) may please be reviewed and the entities are requested to expedite implementation of the schemes. The entities may also be advised to furnish status as per format by first week of every month on regular basis to Member Convener, PSDF Project Monitoring Group (AGM, NLDC, POSOCO) with a copy to NPC & NERPC. The LOAs of R&M Scheme are to be furnished to NERLDC/NERPC regularly.

States may please intimate the latest status.

2. Long Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 142 nd OCC	Latest status
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	NERPC to pursue with NPC regarding exact status.	
400KV 80MVAR Bus Reactor at Palatana	OTPC	Unavailability of critical spare. By 30.04.2018 - CoD.	
132 kV P K Bari – Silchar I & II	NERTS	Ckt#II – By Mar'18.	
DHEP Unit 2	NEEPCO	GT failure. By Apr'18	

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400/220 kV, 315 MVA ICT-II at BgTPP	NTPC	By Apr'18	
Replacement of R-ph bushing of 63MVAR L/R at Balipara for 400kV Balipara-Bongaigaon -II (<i>out since 17.02.18</i>)	NERTS	By Mar'18 (Subject to receipt of recommendation from OEM for replacement of Bushing at site).	

Utilities may please intimate the latest status.

3. Furnishing of various data for reliable grid operation:

Data regarding	Status as of 142nd OCC		Latest status
DAS output for FRC calculation	Event Date: 30.01.18; Doyang & RHEP provided information. Event Date: 20.02.18; Doyang, & OTPC provided information. NERLDC once again requested all generators to provide DAS data at the earliest for FRC calculation.		
Operating Procedures	Items	Data submitted by	
	OP of States	Submitted only by AEGCL and MePTCL	
	OP of HVDC	Not Submitted	
	OP of Transmission System	Not submitted by any constituents	
	OP of Generating Stations	Not submitted by any generators	
	OP of GIS	Not submitted by any constituents	
Data related to Power Map.	Items	Data submitted by	
	Communication (PLCC/OPGW/GPRS/SAT/Satellite)	List of lines mailed by NERLDC on 9 th January'18	
Data related to Single Line Diagram.	State SEM Location	Only Meghalaya submitted	
Patrolling report(s) for T/L.	-		

NERLDC may please inform the status.

4. Monitoring of Corrective actions as decided in PCC forum:

Name of the Element	Action to be taken	Name of Utility	Status as of 142 nd OCC	Latest status
132 kV Dimapur - Doyang 1 & 2 Lines	Installation of Numerical Relay at Doyang	NEEPCO	By Dec'18	
132kV PK Bari-Kumarghat	Installation of Line differential relay	NERTS	By Dec'18	
132kV PK Bari	Installation of Numerical Relay under R&M (<i>high priority</i>)	TSECL	By Mar'18	
AGTCCPP- LFO	AVR replacement	NEEPCO		

B.2. OPERATIONAL PERFORMANCE AND GRID DISCIPLINE DURING MARCH, 2018

As per the data made available by NERLDC, the grid performance parameters for March, 2018 are given below:

NER PERFORMANCE DURING MARCH, 2018

States	Energy Met (MU)		w.r.t. Feb,18 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Feb,18 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Mar,18
	March-18	February-18		March-18	February-18		
Ar. Pradesh	63.73	62.22	2.43	64.85	63.02	2.90	-1.73
Assam	655.39	641.17	2.22	682.41	652.58	4.57	-3.96
Manipur	68.54	70.65	-2.99	69.63	71.33	-2.38	-1.57
Meghalaya	149.39	187.08	-20.15	149.39	187.08	-20.15	0.00
Mizoram	47.75	51.36	-7.03	48.50	51.93	-6.61	-1.55
Nagaland	61.80	57.91	6.72	70.14	66.25	5.87	-11.89
Tripura	114.09	100.59	13.42	115.76	101.17	14.42	-1.44
Region	1160.69	1170.98	-0.88	1200.66	1193.37	0.61	-3.33

States	Demand Met (MW)		w.r.t. Feb,18 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Feb,18 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Mar,18
	Mar-18	Feb-18		Mar-18	Feb-18		
Ar. Pradesh	124	128	-3.13	138	138	0.00	-10.14
Assam	1446	1481	-2.36	1472	1501	-1.93	-1.77

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Manipur	178	191	-6.81	185	197	-6.09	-3.78
Meghalaya	307	311	-1.29	307	312	-1.60	0.00
Mizoram	91	94	-3.19	100	103	-2.91	-9.00
Nagaland	120	122	-1.64	148	150	-1.33	-18.92
Tripura	256	237	8.02	257	238	7.98	-0.39
Region	2250	2333	-3.56	2283	2387	-4.36	-1.45

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

AVERAGE FREQUENCY (Hz)

Month---->	Mar-18	Feb-18	Month---->	Mar-18	Feb-18
Total Generation in NER (Gross)	1222.310	1180.627		% of Time	% of Time
Total Central Sector Generation (Gross)	974.427	884.266	Below 49.9 Hz	12.99	9.69
Total State Sector Generation (Gross)	247.883	296.360	Between 49.9 to 50.05 Hz	79.29	80.25
Inter-Regional Energy Exchange			Above 50.05 Hz	7.72	10.06
(a) NER-ER	126.9	94.64	Average	49.97	49.98
(b) ER-NER	133.22	242.16	Maximum	50.25	50.21
(c) NER-NR	40.99	175.52	Minimum	49.68	49.70
(d) NR-NER	135.96	111.18			
© Net Import	101.29	83.18			

C. OLD ITEMS

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

During 142nd OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 142nd OCC Meeting	Latest status
a. New Elements			
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	ICT-1 - Apr'18	
2	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	Leakage in underground portion of pen stock. After inspection final date would be intimated.	
3	Pare HEP of NEEPCO (2 x 55 MW)	Unit #1 - Mar'18	
4	400 kV D/C Silchar - Melriat line of PGCIL	June, 2018.	

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5	220kV Rangia - Salakati of AEGCL	May, 2018.	
6	132kV Monarchak – Surjamaninagar D/C of TSECL	Apr'2018	
7	400kV D/C Balipara – Kameng	ROW issues. 1 st week of Apr'18.	
8	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Ar. Pradesh - Mar'18 Manipur, Nagaland – CoD Mizoram-ToC date to be confirmed.	
9	400/220 kV 315 MVA ICT-II at Bongaigaon	Tied up with GIS. By June'18.	
10	220/132 kV, 160MVA ICT-II at Balipara	ICT#II - delayed, Sept''18	
11	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	Sept, 2018.	
12	400/132 kV, 1x315 MVA ICT-III at Silchar	May, 2018.	
13	Replacement of 2x315 MVA ICTs with 2x500 MVA ICTs at Misa (PG)	ICT-I : May'18 ICT-II : Aug'18	
14	400 kV Silchar – Misa D/C	2019	
15	1x125 MVAR Bus Reactor at 400 kV at Balipara	March, 2018(LOA date).	
16	1x125 MVAR Bus Reactor at 400 kV Bongaigoan	March, 2018(LOA date).	
17	Tuirial HEP of NEEPCO	Unit #I -CoD pending Communication and Connection Agreement. Unit #II - Feb'18	
18	33kV bay at 220kV Mariani(AS) S/Sn	Take up with APDCL. Load security payment is under process. APDCL will install meter.	
19	33kV Tezu-Tezu(AP)	-	

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20	33kV bay for 132kV Badarpur(PG) S/Sn	APDCL submitted estimate to PG_Badarpur recently.	
21	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	To be taken up by NERTS with MePDCL.	
22	Construction of 132 kV Imphal (PG) - Yurembam III & IV lines with high capacity conductor by MSPCL	By last week of Apr'18	
23	LILO of 132kV Aizawl-Jiribam at Tipaimukh by MSPCL	April'18	
b. Elements under breakdown/ upgradation			
24	Up-gradation of 132 kV Lumshnong-Panchgram line	To be approved by Techno-Economic sub-group for funding from PSDF.	
25	Switchable line Reactors at 400kV Balipara & Bongaigoan	April'18	
26	PLCC Panels at Loktak end of Loktak - Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Oct'2018	
27	LILO of 132kV Ranganadi - Itanagar (Chimpu) at Pare of Ar. Pradesh	Bay 1 at RHEP for Pare: Delayed Bay 2 at RHEP for Itanagar: Delayed	
28	Re-conductoring of 132kV Umiam Stg#I - Umiam Stg-III	DPR prepared and submitted for approval	
29	Upgradation of ULDC FO node	Target completion : June 2018	
30	HTLS re-conductoring of 132kV Agartala - RC Nagar - II	Ckt#II- Mar'18	

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31	Re-conductoring of Imphal (PG)- Yurembam 132 kV S/C POWERGRID line with high capacity conductor by NERTS	Apr'18	
32	Up gradation / modification of bay equipment at Imphal (PG) by POWERGRID and at Yurembam by MSPCL	Apr'18	
33	Up gradation of bay equipment at AGTCCPP by POWERGRID for 132kV AGTCCPP- Agartala D/C	-	

Concerned constituents may kindly intimate the status.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

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

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

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

The Committee may discuss and approve the proposed shutdown by Generating Stations as given in Annexure - D.2 below.

D.2 Outage Planning Transmission elements

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

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

In 134th OCCM, it was decided that all communication related shutdown be approved in OCC forum only.

In 142nd OCCM, SE (O&P), NERPC suggested that henceforth shutdown list may be prepared under following categories:

- (i) New Construction Related Shut Down
- (ii) Existing System Improvement Related Shut Down.
- (iii) Existing System Normal Maintenance Related Shut Down
- (iv) Communication Related Shutdown
- (v) R&U works Related Shut Down under PSDF

The forum further decided that the modalities of communication related shutdown should be finalised. Members requested NERPC to invite POWERGRID telecom in next OCCM alongwith with officials (handling communication issues) from all utilities for this purpose.

The sub-Committee may kindly discuss and approve the transmission line outages proposed by Constituents for April,2018-May,2018 at Annexure- D.2., which is available in the website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of November, 2017 to January, 2018:

NETC and POWERGRID have submitted the outage data for the month of November, 2017 to January, 2018. So the attributability of outage of the said elements may please be finalized.

In 142nd OCCM, NERLDC informed the forum that the draft procedure has been prepared and the same shall be circulated shortly. NERPC and NETC were requested to provide their comments on the draft Procedure by 31st March'18.

Members may please discuss.

D.4 Assessment of Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) by SLDC on respective Inter-State Transmission Corridor

Updated PSS/E Base Cases have been **mailed to all the SLDCs on 02.04.18**. All **SLDCs** are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of Apr'18 using these cases, and submit the study cases and results to NERLDC by **20.04.18**.

NERLDC has assessed the state control area wise, state subsystem wise and group of control-area wise TTCs for NER Grid, on behalf of SLDCs of NER. The study results will be presented in the meeting. SLDCs are requested to check the TTC of their control areas as computed by NERLDC and **give comments, if any, by 20.04.18**.

If no comments received from any SLDCs of NER, TTC, ATC & TRM figures of State control area and group of control areas as assessed by NERLDC will be considered as final and may be uploaded on website.

As per discussions in 122nd OCC meeting of NERPC, all SLDCs of NER may host the assessed TTC / ATC / TRM figures on their website for information dissemination.

Members may discuss.

D.5. Implementation of SPS for transfer of 160 MW power to Bangladesh through Tripura-Bangladesh link:

In Special Meeting on SPS, UFR etc. held on 23.06.17, Chief Manager, NERTS, POWERGRID presented the draft scheme to implement the suggested SPS for transfer of 160 MW power to Bangladesh through Tripura-Bangladesh link. The Sub-Committee discussed the suggested schemes in detail and agreed in principle to implement the schemes.

The forum requested NERPC to take up the matter with CEA/CTU/NLDC for implementation at the earliest after vetting in OCC forum.

In 142nd OCC SE (O&P), NERPC informed that NERPC has already written letter to ED, NLDC in this regard and the reply is awaited.

NERPC may please intimate the status.

D.6. SPS mock testing & existing SPS scheme related:

The 138th OCC forum requested NERTS to prepare a draft sequence of operation for each SPS and present in next OCC for ratification. The date for SPS 2 and SPS 3 mock testing will also be finalized in next OCC Meeting.

NERPC vide letter dated. NERPC/SE(O)/OCC/2018 dated 08.02.2018 has requested OTPC to implement the changes as early as possible.

In 141st OCCM, Manager, OTPC informed that the modifications would be implemented by 25.02.2018. He further requested that necessary actions be carried out by NERPC/NERLDC subsequently, so that shutdowns related to Palatana ATS

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may be availed without generation reduction. In case of emergency, OTPC has agreed to reduce their generation as per grid requirement.

OTPC vide mail dated. 26.02.18 has intimated that Modified SPS-2&3 has been taken into service w.e.f. 26.02.18(10:45hrs) with 15ms time delay at OTPC end.

In 142nd OCCM, GM,NERLDC informed that though currently s/d of Palatana ATS is being allowed without generation backing down, a mock test would be very fruitful. The forum after detailed deliberation requested NERPC to schedule mock test with representatives from NERTS, TSECL, OTPC, NERLDC & NERPC at the earliest.

Members may please discuss.

D.7. Update on Real Time Energy Assessment for Effective Grid Management:

In 139th OCCM, CDAC representative stated that they would require the proprietary protocol from the meter manufacturer(s) to proceed further with the Project. DGM(MO), NERLDC explained that as per practice followed in other Regions like NR, ER etc., AMR provider, Meter manufacturer and Powergrid sign a tripartite agreement to enable passing of the protocol to AMR provider. A sample of draft agreement in ER (TCS is AMR provider) was provided to CDAC and it was advised that CDAC should initiate process and circulate a draft agreement for the present case. CDAC agreed to do the needful and stated that they would develop protocol converter accordingly.

CDAC has furnished the draft tripartite agreement which is to be signed between CDAC, POWERGRID-NERTS and meter manufacturer(s).

In 140th OCCM, NERPC intimated that the process of signing tripartite agreement between CDAC, Powergrid and L&T was in progress. He requested NERTS to expedite the matter.

In 141st OCCM, all the SLDCs confirmed the receipt of server at their premises. DGM,SLDC,AEGCL informed that static IP and SIMs have been procured by them.

In 142nd OCCM, DGM (AM) NERTS requested NERPC to send the Tripartite Agreement for signature of GM, NERTS urgently.

NERPC/NERTS may please intimate the status.

D.8. Recording of operational instructions over VOIP in RLDC:

As per 139th OCC discussion establishment of recording system for all real time instructions and conversations thro' VOIP network was supposed to be established within Feb'18. It is very important to establish the recording system at the earliest as all verbal communication/ conversations among RLDCs, SLDCs and stations are getting lost. Recording status at SLDC also may be discussed.

In 142nd OCCM, Manager, NERTS informed that re-tendering is in process and order would be placed by Mar'18/ April'18. Delivery would be by May'18/ June'18.

POWERGRID may please intimate the latest status.

D.9. Telemetry & Voice Communication Problem:

Telemetry problem: Annexure-D.9 (as on 04.04.2018) attached in tabular format.

Voice Communication problem: Annexure-D.9 (as on 04.04.2018) attached in tabular format.

1. RHEP, DOYANG all type of voice communication out:

All type of voice communication (BSNL Land line/Mobile/VOIP) with RHEP and **DOYANG** is out since 25th March and 15th February'18 respectively. In view of the outage of voice communication system shutdown co-ordination, scheduling, reporting as well as realtime grid operation is very much affected.

2. SLDC Kahilipara and AIZAWL dedicated voice communication out.

Dedicated voice communication(VOIP) with SLDC Kahilipara is out since 21st march'18.Communication with SLDC Aizawl is also out since last week(28.03.18).Due to outage of these communication links system operation is severely affected.

3. DIMAPUR S/S telemetry as well as voice communication are out since fire incident.

Since the firing incident on 15th January,2018 the telemetry as well as dedicated voice communication (VOIP)of Dimapur POWERGRID station is under outage. Due to this, system operation is severely affected. So it is very important to restore telemetry as well as dedicated voice communication at the earliest.

Members may please deliberate for resolution of the issue(s).

D.10. Low voltage issue in Tripura, Mizoram & Nagaland Power Systems

POWERGRID Dimapur S/S is restored by 24th February'18. Even after restoration of Dimapur S/S, system voltage Aizawl and MELRIAT during morning and evening peak hours drops to 122 kV. NERLDC is taking all available corrective action by opening bus Reactors at Aizawl, Kumarghat, Imphal but still voltage remains low. Capacitive compensation at local level is necessary.

In 141st OCCM, it was decided that NERLDC/NERPC would conduct studies regarding Low voltage problem in Tripura, Mizoram in consonance with studies carried out by TSECL and P&ED Mizoram. Regarding funding for capacitor banks installation NERPC would take up the issue with IA/NLDC.

In 142nd OCCM, SE(O&P), NERPC informed that a software for capacitor bank installation has been developed by SRPC. This may be used for determining capacitor bank studies i.r.o. Tripura/Mizoram.

NERPC/TSECL/P&ED Mizoram may please intimate status.

D.11. Integration of new RTUs at RHEP:

GE supplied RTU at RHEP will be provided for accommodating the two new 132 kV extension bays being constructed by us at RHEP in the first-second week of March 2018. Integration of new RTU with existing RTU at RHEP and NERLDC control centre shall be required. Hence special permission may be required through appropriate forum in this regard.

In 142nd OCCM, Sr. Manager, NEEPCO informed that RTU procurement is under tendering process and would be commissioned by Dec'18.

Members may please discuss.

D.12. Balipara PMU voltage problem while switching 400 kV Balipara-Bong-3

To contain the high voltage everyday NERLDC open 400 kV lines. But whenever 400 kV Balipara Bongaigaon line-3 opens, it has been observed that the 400 kV voltage at Balipara PMU dips from 417 kV to 192 kV. This type of voltage dip occurs regularly during hand tripping of the above said line.(Attached mail dated 3/2/18).Corrective action is necessary at BALIPARA end.

In 142nd OCCM, NERLDC highlighted that whenever 400 kV Balipara Bongaigaon line-3 is opened to control Over Voltage, it has been observed that the 400 kV voltage at Balipara PMU dips from 417 kV to 192 kV. This type of voltage dip occurs regularly during hand tripping of the above said line and is creating a problem for real time operators. NERLDC also informed that the issue was taken up with NERTS previously but rectification is yet to be done.

DGM(AM), NERTS informed that OEM has been called to rectify the issue.

NERTS may please update latest status.

D.13. URTDSM Project in NER:

- The Notification of Award for URTDSM Project is placed on 15-01-2014.
- The Project dead line to complete is on 16-01-2016 (24 months from NOA)
- At present Control Centre Hardware System at NERLDC, SLDC-NEHU, SLDC-Kahilapara installed but not powered up.

Quick Implementation of URTDSM project will help the Grid Operator for better visibility of high accurate real time data with a high speed data sampling (25samples/sec) and also Analytical software for linear state estimation, parameter estimation etc.,

Advance User Interface will help the Grid Operator for oscillation monitoring, Voltage, Frequency, Phase Angle, Active Power Contours on geo-special dynamic pictures.

URTDSM Project monthly progress is to be reviewed in OCC for smooth and speedy completion of the Project.

In 142nd OCCM, SE(O&P), NERPC stated that the URTDSM project has been discussed in various forum of NERPC and is still under implementation. NERLDC informed that the project has been delayed by almost two years which is hampering

monitoring grid parameters. A presentation in this regard would be made by DGM (URTDSM), NERLDC in the next OCC & NETeST Meetings.

NERLDC may please deliberate.

D.14. CT Ratio of Transmission Lines & Enhancement of Loadability of lines in NER:

As deliberated in 125th OCC meeting held on 14th September, 2016 at Guwahati double jumpering of bay and line before the CT upgradation work was to be completed, so that full capacity of CTs can be utilized for loading the lines.

Latest status as per 142nd OCCM:

Name of the line	CT Ratio at either end (current)		CT Ratio at either end (required)		No. Of CTs required		Latest 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	June'18
132 kV Jiribam-Haflong	400/1	400/1	600/1	600/1	3 by PGCIL	4 by PGCIL	June'18
132 kV Khandong - Umrangso-Haflong	300/1	400/1	600/1	600/1	3 at Khandong by NEEPCO, 3 at Umrangso by AEGCL	3 at Umrangso by AEGCL, 3 at Haflong by PGCIL	NEEPCO, PGCIL-Complete AEGCL-To update
132 kV D/C Doyang - Dimapur	300/1	600/1	600/1	600/1	3 by PGCIL & 6 by NEEPCO		PGCIL-Sep'18 NEEPCO-To update
132 kV Khandong - Khliehriat-I	300/1	300/1	600/1	600/1	3 by NEEPCO	3 by PGCIL	PGCIL-Sep'18 NEEPCO-done
132 kV Khandong - Kopili I & II	300/1	300/1	600/1	600/1			PGCIL-Sep'18 NEEPCO-done

DGM(MO), NERLDC informed that for 132kV Dimapur – Dimapur CT ratio at Dimapur (NAG) end has been adopted as 1200/1. This is causing tremendous error in reading. EE(Trans), DoP Nagaland assured that the matter would be looked into and he would revert back to the forum.

Concerned utilities may please intimate the status.

D.15. Mapping of feeders:

In 7th NPC meeting held on 08.09.17 it was requested that RPCs may please give the details/ progress of feeder mapping to NPC.

In 142nd OCCM, Sr. Engineer, NERLDC clarified that feeders designated for UFR operation is to be mapped in SCADA. The forum requested all SLDCs to kindly give the status.

Name of State/area	No. of UFR locations	No. of locations RTU installed	No. of locations mapping done
Ar. Pradesh	1		
Assam	13		
Manipur	4		
Meghalaya	7		
Mizoram	5		
Nagaland	3		
Tripura	3		

SLDCs may please intimate the status.

D.16. Ensuring proper functioning of Under Frequency Relays(UFR) & df/dt Relays:

In 7th 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.

In 142nd OCCM, SE(O&P),NERPC informed that as mandated periodical inspection of UFR needs to be carried out. In this regard he requested help of NERTS by providing suitable kits.

DGM(AM),NERTS stated that Frequency Injection Kit is available in PGCIL stations and any logistical help may be provided. He further requested that an action plan in this regard may be devised and handed over for future course of action.

A detailed action plan for UFR inspection is attached at Annexure **D.16**

Members may please discuss.

AGENDA ITEM FROM NERPC:

Follow up action(s) w.r.t. Enquiry Committee Recommendations

Not completed items as on 2015.

D.17. Absorption of Reactive Power by generators:

Details of AVR installation for grid connected generating stations:

Name of generating station	Name of utility/State	Status of AVR installation	Whether reactive power absorption as per capability curve (Y/N)
Khandong HEP	NEEPCO	YES	To be confirmed
Kopili II HEP	NEEPCO	YES	To be confirmed
Kopili HEP	NEEPCO	YES	To be confirmed
Doyang HEP	NEEPCO	YES	To be confirmed
Ranganadi HEP	NEEPCO	YES	To be confirmed
AGBPP	NEEPCO	YES	To be confirmed
AGTCCPP	NEEPCO	YES	Y
TGBPP	NEEPCO	YES	Y
Turial HEP	NEEPCO	YES	To be confirmed
Loktak HEP	NHPC	NO	-
Palatana GBPP	OTPC	YES	Y
BgTPP	NTPC	YES	Y
Umiam HEP Stg I through IV	Meghalaya	YES	To be confirmed
Umtru HEP	Meghalaya	YES	To be confirmed
Leshka HEP	Meghalaya	YES	To be confirmed
Rokhia GBPP	Tripura	NO	-
Baramura GBPP	Tripura	NO	-
Likimro HEP	Nagaland	NO	-
Bairabi GBPP	Mizoram	NO	-
LTPS	Assam	YES	To be confirmed
NTPS	Assam	YES	To be confirmed
CTPS	Assam	YES	To be confirmed
Langpi HEP	Assam	YES	To be confirmed

For testing of reactive power absorption capabilities a draft procedure (**Annexure-D.17**) has been prepared by NERLDC with inputs from Southern Region where similar tests have been conducted. Members are requested to provide their valuable comments. Generators where AVR is not installed may please provide the time schedule for installation.

Concerned utilities may please update the status.

D.18. Audit of PSS:

An action plan for PSS audit of generating stations is attached at **Annexure D.16**.

Members may please discuss.

D.19. Possibility of Voltage Collapse Prediction:

This was covered in the workshop by M/s POWERTECH from 22.02.18 to 24.02.18. The recommendations submitted to MoP may be implemented in due course of time.

Members may please discuss.

AGENDA ITEMS FROM NERLDC:

D.20. Furnishing Technical and Commercial data for computation of PoC Charges and Losses for Q2 of 2018-19 (Jul 2018 – Sep 2018):

In the 3rd Validation Committee meeting for PoC application period Oct'15-Dec'15, held on 30th September 2015, at NLDC conference Hall, CERC had proposed a methodology for ratification of projected data at RPC form.

All the power utilities are requested to furnish Technical and Commercial data for computation of PoC Charges and Losses for Q2 of 2018-19 (Jul 2018 – Sep 2018) by 30th Apr'18.

Members may please discuss.

D.21. Review of SPS 1 & 4 and Islanding Scheme 2:

SPS-1:

As per design, when both Modules of Palatana CCGT trip, a signal will be generated from trip relay of the Modules. This signal should then trip the CB of 132 kV Silchar – Srikona D/C, **132 kV Silchar – Panchgram S/C & 132 kV Silchar –Dullavcherra S/C** lines at Silchar. Subsequent to tripping of 132 kV Silchar – Panchgram line, a signal will be generated from trip relay of 132 kV Silchar –Panchgram line. This signal should trip the CB of 132 kV Badarpur – Panchgram line at Badarpur.

SPS-4:

As per design, when 400 kV Silchar – Byrnihat line and 400 kV Silchar – Azara line trips (with no generation from Palatana), a signal will be generated from trip relays at Silchar. Also, in case of outage of either 400 kV Silchar – Byrnihat line or 400 kV Silchar – Azara line, if other line trips, signal will be generated from trip relays at Silchar. This signal should then trip the CB of 132 kV Silchar – Srikona D/C, **132 kV Silchar – Panchgram S/C & 132 kV Silchar –Dullavcherra S/C** lines at Silchar. Subsequent to tripping of 132 kV Silchar – Panchgram line, a signal will be generated from trip relay of 132 kV Silchar –Panchgram line. This signal should trip the CB of 132 kV Badarpur – Panchgram line at Badarpur.

132 kV Silchar (PG)- Hailakandi (AEGCL) D/C was commissioned in 30th November'17. After commissioning of 132 kV Silchar (PG)- Hailakandi (AEGCL) D/C, the network configuration changed due to non-existing of 132 kV Silchar – Panchgram S/C & 132 kV Silchar –Dullavcherra S/C. Currently after operation of SPS 1 & 4, only 132 kV Silchar – Srikona D/C lines will trip which will lead to cascading tripping in Southern Part of NER.

In view of the above, it is requested to deactivate the SPS 1 and SPS 4 until review of the SPS with new network configuration.

Load-generation balance of Island no 2 consisting of Island comprising of generating units of AGTPP (Gas), generating units at Baramura (Gas), Rokhia (Gas) & Gumati (Hydro) and loads of Tripura system & Dullavcherra area (Assam) has changed since commissioning of 132 kV Surajmaninagar- Comilla D/C lines. In recent disturbances in Tripura system, Island no. 2 could not survive due to load-generation balance mismatch.

In view of the above, it is requested to review Island No. 2 at the earliest.

NERLDC may please deliberate.

D.22. Status of Implementation of AGC Pilot Project in NER at BgTPP, NTPC:

As deliberated in 141st OCC Meeting of NEPC at Guwahati on 14th February 2018 BgTPP, NTPC was identified for implementation of AGC Pilot Project in NER. A meeting was held at NLDC on 27th March 2018 regarding AGC pilot project at Barh, Bongaigaon and Mauda Stg-II. Representative from NTPC Barh, NTPC Bongaigaon and NTPC Mauda Stg-II was also present. Minutes of the Meeting is attached in **Annexure -D.22.**

For implementation of AGC Pilot Project at BgTPP, NTPC, redundant communication is required from BgTPP, NTPC to NLDC. NERTS, POWERGRID is required to look in the matter.

NERLDC may please deliberate.

D.23. Mock exercise of Black Start procedure of ISGS:

As per report of enquiry committee on Grid Disturbance in NR on 30th Jul'12 & in NR, ER & NER on 31st Jul'18, there is requirement of more periodic mock exercises to ensure preparedness of all stakeholders involved.

So it is very important to do the mock testing of black start of KHEP (Kopili/Khandong), AGTCCPP (RCNagar) and DOYANG, RHEP and LOKTAK HEP. It is proposed to do the testing in the 2nd half of April'18 and 1st half of May'18

NERLDC may please deliberate.

METERING RELATED ITEMS

D.24. Replacement of meters:

In 7th NPC meeting held on 08.09.17 it was decided that NPC Secretariat may develop a framework for replacement of meters after taking inputs from RPCs on the practice being followed by the utilities. In this regard, a concept/note was given at Annexure-D.22 of Agenda of 142nd OCC meeting.

It was agreed in 142nd. OCC meeting that reply to the queries would be furnished by NERLDC.

The reply has been prepared and is attached (Annex-D.24)

OCC may discuss.

D.25. Procurement of additional 70 Laptops:

Revised Target as intimated by NERTS in 142nd. OCC:

- e-RA: 17.03.18
- LOA: by 1st. week of April'18
- Supply: May'18

NERLDC would provide break-up of physical locations where 70 Laptops are to be supplied to take care of GST issues.

The physical locations for 70 Laptops is attached (Annex-D.25)

Status may be discussed.

D.26. Installation of new L&T SEMs in NER:

As per 142nd. OCC, the status was as under:

- Pare HEP: by 18.03.18
- Kameng HEP: NERTS to install within 2 days, NEEPCO to ensure availability of site personnel for necessary coordination.

NERTS may update about new installations.

D.27. AMR in NER:

NERTS stated the target as below in 142nd. OCC meeting:

- Tender: 20.03.18
- Bid sale: till 20.04.18
- OBD: 27.04.18
- LOA: 15.06.18

NERTS may update status.

D.28. Testing of SEMs at accredited laboratory:

In the 142nd. OCC meeting, Manager, NERTS informed that current estimate is based on all 234 SEMs in NER with appx. Cost being INR 22lakhs(@8140/meter). DGM(MO),NERLDC clarified that testing is required only for meters which have been in service for more than 5yrs but less than 10yrs. NERTS was requested to obtain fresh estimate on finalization of number of Meters to be tested.

Accordingly, no. of meters to be tested has been worked out and is attached (Annex-D.28)

Matter may be discussed.

D.29. Procurement of DCD:

In the 142nd OCC meeting, NERTS representative intimated that LOA for the DCDs would be issued by May'18.

Status may be discussed.

D.30. Erratic reading of SEM:

1. Dullavcherra end of 132 KV Dullavcherra-Dharmanagar feeder
2. Jiribam(PG) end of 132 kV Jiribam(PG)-Jiribam(Manipur)

In the 142nd OCC meeting, it was agreed that NERLDC would provide both end readings to NERTS for analysis. The readings were mailed to NERTS accordingly.

Status may be discussed.

D.31. Commissioning of RS-485 scheme in all ISGS of NER:

In the 142nd OCC meeting, NERTS informed that Kopili HEP had been identified as the pilot project. In this regard vendors have been approached and quotations would be received within 21.03.18. Regarding extensive training by L&T on metering issues it was decided that after laptops are delivered and RS-485 is implemented in at least one station, the training would be held.

A list of ISGS locations for RS-485 implementation along with no. of Meters is attached (Annex-D.31)

Status may be discussed.

D.32. SEM for two 132kV extension bays at RHEP:

Status as per 142nd OCC meeting:

- For 132kV RHEP-Chimpu – by Mar'18
- For 132kV RHEP-Itanagar – by Mar'18

Status may be discussed.

D.33. Providing 50 SEMs, 6 Laptops and 6 DCDs to TSECL:

In the 141st. OCC meeting, it was decided that 3 DCDs out of those to be supplied to TSECL would be retained by NERTS on loan basis in view of requirement of additional DCDs for Pare and Kameng, These would be replenished after procurement of new DCDs.

In 142nd. OCC meeting, Sr.Manager, TSECL informed that by 31.03.18 the materials would be collected from Kumarghat S/Sn of NERTS. He intimated that payment would released within 15 days of receipt of materials.

Status may be discussed.

D.34. DCD of Sonabil sub-station of Assam faulty since last 2 months:

DCD replacement / alternative arrangement for Meter data downloading to be arranged.

In 142nd. OCC Meeting, DGM(MO), NERLDC suggested that personal laptop may be used to collect and send SEM reading at Sonabil. AEGCL agreed. NERTS would provide USB-Optical port cable.

Status may be discussed.

D.35. Installation of VINPLUS in Udaipur (TSECL) PC:

In the 142nd. OCC meeting, TSECL representative intimated that there was some problem in the Computer at Banduar (Udaipur) and since then VINPLUS has not been working in the PC. He requested NERTS to depute its representative to re-install VINPLUS.

NERTS agreed to do the needful.

Status may be discussed.

ADDITIONAL AGENDA ITEM
AGENDA ITEM FROM OTPC

D.36 Tripping of 132 KV lines, and charging instruction to charge on dead bus

On 25.03.2018 At 10:02 hrs, 132KV line-01 got tripped on Distance protection and Fault received Zone-2 at distance (16.11 km), Breaker was not open at Udaipur end, manually opened by TSECL . Heavy Dip observed in OTPC 132 KV system which lead to tripping of critical auxiliary. Charged from OTPC side on dead bus.

On 26.03.2018 At 17:47 hrs, 132KV line-02 got tripped on over voltage protection. Charged from OTPC side on dead bus.

In general practice transmission lines first charge from receiving end and generators synchronise the same to avoid propagation of fault up to generator, which may lead to tripping or damage to system in case fault persist.

OTPC may please deliberate.

D.37 Tripping of 400 KV lines

On 30.03.2018 At 16:51 Hrs 400KV Line -1 Distance protection acted and Fault received R-Phase Zone -2 at Distance (205km) – Auto reclosed.

At 16:54 Hrs 400 KV Line-2 tripped on Distance protection and Fault received B-Phase Zone -1 at distance (169 km). – Main Breaker open due to Auto recloser kept in Non-Auto mode from 10:57 Hrs as per NERLDC instruction for OPGW work.

Agenda for 143rd OCC Meeting to be held on 12th April, 2018

If 400 KV line-1 did not come an auto recloser function in time or Fault duration sustained for more duration, it can lead to tripping of OTPC generation as well as NER Grid black out.

On 02.04.2018 At 12:52 Hrs 400 KV Line-2 tripped on Distance protection and Fault received R-Phase Zone-1 at Distance (77.57 km) - Main Breaker open due to Auto recloser kept in Non-Auto mode from 09:33 Hrs as per NERLDC instruction for OPGW work.

OTPC may please deliberate.

Any other item:

Date and Venue of next OCC

It is proposed to hold the 144th OCC meeting of NERPC on second week of May, 2018. The date & exact venue will be intimated in due course.

ANALOG AND DIGITAL DATA STATUS OF 02/04/2018 OF POWERGRID/ISGS

Sl. No.	RTU STATION	ANALOG DATA	DIGITAL DATA
1.	BALIPARA	Data of 220 kV Balipara-Sonabil Line 1 is wrong	- F_R3_R (BONGA_PG LINE 2 REACTOR), F_R4_R (BONGA_PG LINE 1 REACTOR), F_R2_R (BNC_PG LINE 1 REACTOR), E_05 CB data SUSPECT.
2.	BONGAIGAON	400kV Bonga-BTPS 1 and 2 MW suspect. 400 kV Bongaigaon-Azara Line reactor suspect.	F_28(Tie CB between Aipurduar-2 and Balipara-3), F_21(BTPS LINE 1), F_06(400 kV ALIPURDUAR 1), F_10(tie between balip-2 & reactor-2), F_20(BTPS-2), F_21(BTPS-1), B_01_R(Tertiary Reactor-1), B_02_R(tertiary Reactor-2) SUSPECT. CB Status of lines turns to suspect as Line Shutdowns.
3.	SALAKATI	All data OK except Bus 1 data	D_04 and D_08 Suspect.
4.	DIMAPUR	All data suspect	All data suspect
5.	IMPHAL	20 MVAR Reactor Suspect	OK
6.	ITANAGAR	All data suspect	All data suspect
7.	KOLASIB	All data suspect	All data suspect Since 22/05/2017
8.	MISA	ok	F_04 (400/220 kV ICT 1), B_03_R (Tertiary Reactor 3), E_L3 (Kopili-3), E_07 (220 kV B/C), F_01(BALIPARA_PG Line 2), B_01_R (Tertiary Reactor 1), B_02_R (Tertiary Reactor 2), E_L1, E_L2, E_L3, E_L4, E_L5, E_L6, E_L7, E_L8, E_L9, E_06 data suspect.
9.	MARIANI	All data ok	All data ok
10.	BNC (HVDC)	Firing Angle of pole 1 & 2, 400 kV Ranganadi- BNC Line I & II position swapped at BNC end, SUBAN_NH 3(BNC to SUBAN Line3) MW&MVAR Data Suspect, 132 kV Transfer Bus Data Suspect.	F_01(ICT-1), F_02(Tie between ICT-1 & ICT-2), F_03(ICT-2), F_04(SUBAN-4), F_4R_R(SUBAN-4 Reactor), F_05(Tie between SUBAN-3 & SUBAN-4), F_06(SUBAN-3), F_R3_R(SUBAN-3 Reactor), F_R2_R(SUBAN-2 Reactor), F_R1_R(SUBAN-1 Reactor), F_08(Tie Between SUBAN-1 & SUBAN-2), F_09(SUBAN-1), F_13(Filter-3), F_14(Filter-3 main), F_23(pole-1), F_2W(Tie between bus-3 & 4), F_1W(Tie between Bus-1 & 2), F_25(Bus reactor-2), F_26(Tie Between Bus Reactor-2 & Ranga-1), F_28(Pole-2 Bus-4), F_29(Pole-2 Bus-2), F_31(Tie Between Ranga-2 & Balip-2), F_36(Tie Between Balip-1 & Balip-3), F_38(Filter-2), F_39(Tie Between Filter-2 & Filter-3), F_40(Filter-1), F_42(Tie Between Balip-4 & Bus Reactor-1), F_43(Bus Reactor-1), D_01(ICT-1 132 KV side), D_02(ICT-2 132 KV Side), D_03(BNC-1), D_04(BNC-2)
11.	ROING	All data suspect	All data suspect

12.	TEZU	All data suspect	All data suspect
13.	SILCHAR	AZARA and Killing line reactors connection reversed,132kV Line-1 & 2 MELRI_PG Data Suspect	D_11, D_12(MELRI_PG Line 1 & 2)
14.	KOPILI	Bus frequency and 220/132 kV 160MVA ICT 1 data is suspect	D_L4 (Khandong_NO Line 1), E_05(220/132 kV 160 MVA ICT) data Suspect.
15.	KATHALGURI	All data ok	All data ok
16.	RANGANADI	All data suspect	All data suspect
17.	KOPILI EX NO	33 KV bus voltage suspect, 132 kV Bus 2 Voltage suspect, 220 kV Bus 4 & 3 voltage data wrong, XFMR_S ED_T1 Data wrong.	D_06(ICT-1).

Annexure-D.16

As per Enquiry Committee recommendation/Grid Code periodical UFR inspection and audit of PSS at CSGS is to be carried out. A draft schedule in this regard is given below:

Name of State	Stages for which UFR inspection	Remarks	Quantum inspected(MW)	Name of ISGS for PSS Audit	Nominated officials	Nodal officer(s)
Arunachal Pradesh	All stages	Only one location i.e. Lekhi	20	Ranganadi HEP	DoP AP..... NERTS..... NERLDC..... NERPC.....	
Assam	Stg-I&II	10 locations	115.5	BgTPP, AGBPP	AEGCL..... NERTS..... NERLDC..... NERPC.....	
Manipur	Stg-I&II	2 locations	11	Loktak	MSPCL..... NERTS..... NERLDC..... NERPC.....	
Meghalaya	Stg-I&II	3 locations	30	Kopili, Kopili II, Khandong	MeECL..... NERTS..... NERLDC..... NERPC.....	
Mizoram	Stg-I	2 locations	5.09	-	P&ED Mizoram..... NERTS..... NERLDC..... NERPC.....	
Nagaland	Stg-I	One location i.e. Mokokchung	6	Doyang	DoP Nagaland..... NERTS..... NERLDC..... NERPC.....	
Tripura	Stg-I &II	3 locations	21	Palatana, AGTCCPP	TSECL..... NERTS..... NERLDC..... NERPC.....	
			208.59(appx. 50%)			

Procedure for Reactive Capability Testing of Generators

A. Specific Requirements:

1. Scheduling of any tests shall first be coordinated with the system operator. System operators will assist in determining the amount of variation from scheduled voltage that is acceptable. When scheduling, the seasons and times of day that are conducive to the required Reactive Power capabilities shall be considered.
2. The over excited reactive capability validation shall be conducted for about two hours and leading (under excited) reactive power test for about one hour. Data for the under-excited reactive capability validation may be recorded as soon as a limit is encountered. Steady Real and Reactive Power output should be maintained during the data collection interval. Data should be collected with all auxiliary equipment needed for normal operation in service.
3. For hydrogen-cooled generators, the hydrogen pressure should be at the maximum operation pressure. If the maximum designed hydrogen pressure cannot be maintained for normal operation, then the reason for this condition shall be documented and the appropriate generator capability curve shall be used. Additional engineering evaluation may be required to ensure expected reactive capabilities are achievable.
4. When the maximum reactive power capabilities are validated, the reactive power at the generator terminals i.e. the generator step-up transformer (GT) primary (LV side, after auxiliaries), and the GT secondary (HV side) shall be documented. The corresponding MW outputs shall also be recorded.
5. During the validation, the scheduled and actual voltages at the system bus and the generator terminals shall also be recorded. In addition, the existing GT, UAT, ST tap setting shall be documented.
6. Reactive power testing for both over-excitation and under-excitation should be done at rated load and at reducing loading levels.
7. AVR should be in service.
8. If GT, ST, UAT taps are off-nominal, test should be repeated after changing the taps (may be when the unit is under outage).

9. It is to be ensured that over-excitation trip (V/f) does not occur until the generator terminal voltage is above 108%. During the test, it is expected that generator terminal voltage may reach 105% and this should not cause tripping through V/f protection.
10. The load-drop compensation setting to be indicated.
11. Details of relay settings of generator protection, control mode of operation, droop setting, range of operating parameters as per OEM shall be furnished by the generating station for unit wise about a week advance to NERLDC & NERPC.
12. Testing will be done well within the limits of parameters prescribed by the OEM and will be discontinued in case of any abnormality like excess noise / vibration / temperature / pressure / current rating / voltage rating / fluctuation and etc., observed during the testing
13. No maintenance activities shall be planned on any of station equipments during testing.
14. Necessary Advance communication of the testing schedule on day ahead basis will be to all the LTA / MTOA / STOA customers of the generating station by the Generator / Seller as well as by RLDC / SLDC. The revision of schedule, if any due to testing process, the same will be effected in the implemented schedule prepared in the following day.

B. Detailed Procedure

B.1. Pre-Condition

In order to obtain the steady state MVAR capability of a generating unit, perform the following tests. Operating conditions should be as close to normal as practicable, including loading, unit temperatures (field, etc.) and pressures (hydrogen, boiler, etc.). Tests should be performed during periods of operation which maximize the MVAR in/output of the machine. Therefore, testing should be performed during a period when system voltage is most advantageous to yield these results. When possible other synchronous machines or power system components should be used, to obtain the most advantageous terminal voltage during these tests.

Ensure that controls such as volts/hertz limiters and UELs (see B) are coordinated and at proper settings prior to testing to prevent unnecessary operation of volts/hertz relays or loss of excitation relays.

B.2. Lagging Reactive Capability Test

While operating in a steady state mode at near rated output, raise excitation in automatic voltage control mode until one of the following conditions occurs:

- a. The 100% MVA rating of the machine is reached (reach capability curve)
- b. Rated field current or field voltage is reached;
- c. Terminal voltage limit is reached (105-110%, depending on unit);
- d. Generator temperature limits are reached (either stator winding or field winding);
- e. The maximum/over excitation limiter is reached/alarms;
- f. Maximum auxiliary bus voltage is reached.

Hold unit at this level for a minimum of 15 minutes (30 minutes is a preferable duration) or till the temperature stabilizes then take the measurements outlined in 3. Repeat the test at reduced loading (MW) level.

B.3. Leading Reactive Capability Test

While operating in a steady state mode at almost rated load, lower excitation in automatic voltage control mode until one of the following conditions occurs:

CAUTION -

Determine first the expected MVAR limiting point, and do not proceed past that point. If this point is reached without activating the under-excitation limiters (UEL)/minimum excitation limiters (MEL) return to normal excitation and determine why the limiter is not functioning. Also, ensure that all transformer taps throughout the power plant are coordinated so the terminal voltage can reach the minimum (90-95%, depending on unit) without causing problems to the auxiliary power further in the plant.

- a. UELs are activated;
- b. 100% MVA rating is reached;
- c. Generator temperature limits are reached;(either stator or field)
- d. Minimum auxiliary bus voltage is reached;
- e. Minimum terminal voltage is reached.

Take measurements outlined in B.3.

B.4. Measurements & reporting:

- a. Gross MW output at both test points;
- b. Gross MVAR output limits of generator reached in tests A and B;
- c. Generator terminal voltage at maximum positive and negative MVARs;
- d. Actual field current at both test points;
- e. Machine MVA rating, both original nameplate rating and tested rating, if different;
- f. Generator rated terminal voltage and rated field current;
- g. Auxiliary bus voltage at minimum and maximum points;
- h. Ambient temperature before conducting the lagging and leading tests

B.5. The following machine parameters may be recorded for use during future testing (in addition to values being reported):

- a. Generator field voltage;
- b. Rotating exciter field current and voltage (if appropriate) ;
- c. Generator stator currents;
- d. Field current

PRECAUTIONS:

If the generator does not normally operate in these regions, strip chart recording of exciter quantities may be helpful for problem resolution. All relay targets on the generator protection and excitation system should be reset before testing. Some excitation systems transfer to manual or backup controllers if over-excitation is detected. If this happens, record the level at which it occurs and reset the control to automatic before placing the unit back in normal service. If the machine trips for any reason during these tests, specify which element tripped and why it tripped. Correct the problem and retest the unit.

C. Commercial conditions

C.1. General

- a. All efforts shall be made to carry out the test during the period when generation Scheduled from the station is less than its declared capability (DC).
- b. The units other than the testing in the same stage/station (as the case may be) will be adjusted to ensure minimum impact of UI. However, the following is proposed for insulating the generator from penalties.

C.2. ISGS Generating Unit

- a. **Rationale behind the Proposal:** Schedules can be adjusted both on positive UI as well as Negative UI as per the current practice explained below by adjusting the schedules.
- b. Any deviations of actual station/stage generation (ex-bus) as the case may be w.r.t the schedule due to the testing of the identified unit will be taken care of by making schedule station/stage (as the case may be) generation = actual station/stage generation in order to insulate the concerned generating station from being subjected to any financial penalties under the existing UI mechanism and the drawls of the beneficiaries in the form of the station shall be deemed to have been revised accordingly, during the period of test.

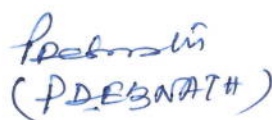
C.3. State Generators / other than mentioned at item no (b) & (c):

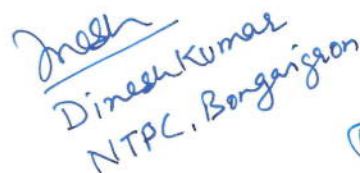
- a. **Rationale behind the Proposal:** Since states in NER are not having intrastate ABT & they can adjust the generation of the state as whole. The following is proposed
 - I. As mutually agreed by the states & generators.

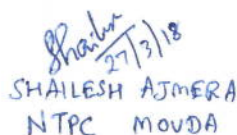
Minutes of the meeting held on 27th March at NLDC, POSOCO
Regarding Automatic Generation Control (AGC) pilot project at Barh, Bongaigaon and Mauda-stg-II

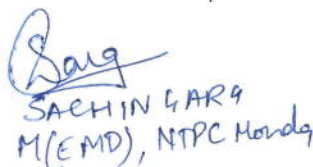
1. Representatives from NLDC, NRLDC, NTPC CC, NTPC Barh, Bongaigaon and Mauda were present. List of participants is given as Annexe-I. WRLDC, ERLDC, NERLDC were connected through Video Conference (VC).
2. GM I/C NLDC welcomed the participants. In the opening remarks, it was mentioned that following the CERC Order on 6th December 2017 on AGC pilot project, new pilot projects were identified at NTPC Barh in Eastern Region, NTPC Mauda in Western Region and NTPC Bongaigaon in North Eastern Region. It was explained that AGC pilot project at NTPC Dadri is on continuous operation since 4th January 2017. Continuous accounts are being issued by POSOCO to NRPC. So, to expand this pilot project in other regions in line with CERC orders new plants are being envisaged to be added to the AGC pilot project.
3. A presentation was made by POSOCO on the implementation of secondary control and the first pilot project implemented at NTPC Dadri stg-II. Details of the implementation were shared with the members.
4. NTPC mentioned that second pilot project at NTPC Simhadri is under progress. NTPC Simhadri are in the process of issuing the award to M/S Siemens through single tender by second week of April 2018.
5. NTPC Mauda, Barh and Bongaigaon confirmed that their units are compliant of accepting the set points in NTPC Dadri model.
6. RLDCs mentioned that Secondary Control implementation and CERC orders are discussed in RPC forums.
7. It was decided that a joint survey will be made by RLDCs/NLDC and POWERGRID at the RLDC and the Power Plant to identify the communication requirements. Dual communication channel from RLDC / NLDC to Power Plant will be explored and reported to NLDC.
8. Mauda mentioned that Ethernet VOIP connection is available recently at their end and they will confirm on the stability of the communication link to WRLDC/NLDC.
9. Considering the compatibility and integration issue with NLDC software (procured through M/S Siemens on limited tender basis during the first pilot project at Dadri stg-II) and experience of implementation, it was proposed/suggested to award the tender to M/S Siemens for smooth implementation of the pilot projects in all the five regions. It was discussed that since this a pilot project and expeditious commissioning is necessary, procurement may be done on a single tender basis. After the discussions NTPC agreed to take up with M/S Siemens regarding the survey and requirements.
10. After discussion it was decided that a local survey will be made by Barh, Bongaigaon and Mauda and they will send the requirements to M/s siemens.

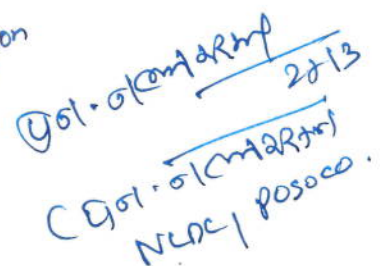

(Somas)


(P. DEBNATH)


Dinesh Kumar
NTPC, Bongaigaon


27/3/18
SHAILESH AJMERA
NTPC MOUDA


SACHIN GARG
M(EMD), NTPC Mouda


28/3
G. S. CHANDRA
NLDC | POSOCO

Annexe-I

List of participants

POSOCO Representatives

1. S. R. Narasimhan, GM I/C, NLDC, POSOCO
2. Debasis De, GM (SL), NRLDC
3. N.Nallarasan, DGM(SO), NLDC, POSOCO
4. Harish Rathour, Chief Manager, NLDC, POSOCO

NTPC Representatives

5. Somes Bandyopadhyay, AGM(OS), NTPC
6. Shailesh Ajmera, NTPC Mauda
7. Sachin Garg, NTPC Mauda
8. Dinesh Kumar, NTPC Bongaigaon
9. P. Debnath, NTPC Barh
10. Uday Shankar, DGM(OS), NTPC

Concept/Note on framework for replacement of SEMs

Status Report from NERPC

1. DETAILS OF SEMS INSTALLED IN NER SYSTEM

Sl. No.	Utilities	No. of Locations	Elster Make	Secure Make	L&T Make		Total
				A-Type	B-Type	A-Type	
			A	B	C	D	A+B+C+D
1	AGBPP (NEEPCO)	1				21	21
2	AGTPP (NEEPCO)	1				11	11
3	DOYANG (NEEPCO)	1				8	8
4	KHANDONG (NEEPCO)	1				10	10
5	KOPILI (NEEPCO)	1				15	15
6	KOPILI-II (NEEPCO)	1				2	2
7	RANGANADI (NEEPCO)	1				12	12
8	LOKTAK (NHPC)	1				8	8
9	PALATANA (OPTCL)	1	4			15	19
10	NTPC-BTPS	1				14	14
11	KAMENG (NEEPCO)	1				12	12
12	PARE (NEEPCO)	1				11	11
13	Ar. PRADESH	2		1		1	2
14	ASSAM	23	5	3	1	32	41
15	MANIPUR	4	1			8	9
16	MEGHALAYA	5				12	12
17	MIZORAM	4				9	9
18	NAGALAND	3	2	1		7	10
19	TRIPURA	6	2	0	1	12	15
20	POWERGRID	21	47	0		110	157
	TOTAL	80	61	5	2	330	398

2. DETAILS OF METER FAILURE IN PAST 3 YEARS - Failure reported mainly in Elster make meters. All locations of Main meters in NER replaced with L&T make. L&T meter failure reported from Palatana & Ranganadi on time drift correction.

3. TIME TAKEN FOR REPLACEMENT OF FAULTY SEMs – Normally 2 to 3 weeks taken to replace meters.

4. HOW REPLACEMENT OF METERS CARRIED OUT – Generally replacements are done from spares maintained at stores.

5. TIME TAKEN FOR FRESH PROCUREMENT OF SEMs – Two years taken for SEM procurement.

6. PRACTICE OF KEEPING SPARE SEMs – 5 to 10% of total SEMs in the Region.

7. ANY OTHER ISSUES PERTAINING TO SEMs – Meter time drift is a serious issue, provision to input the GPS signal for auto correction of time drift is need of the hour.

STATE-WISE LOCATION DETAILS

(FOR DISTRIBUTION OF 70 LAPTOPS FOR METERING ACTIVITIES)

ARUNACHAL PRADESH

1. KAMENG (NEEPCO)
2. PARE (NEEPCO)
3. NIRJULI (PG)
4. ZIRO (PG)
5. ROING (PG)
6. ITANAGAR (AP)
7. NAHARLAGUN (AP)
8. SLDC

ASSAM

1. KATHALGURI (NEEPCO)
2. KOPILI (NEEPCO)
3. KHANDONG (NEEPCO)
4. KOPILI STG-2 (NEEPCO)
5. BADARPUR (PG)
6. BISWANATH CHARIALI (PG)
7. BALIPARA (PG)
8. SALAKATI (PG)
9. HAFLONG (PG)
10. NEW MARIANI (PG)
11. RANGIA (PG)
12. SONABIL (AS)
13. MARIANI (AS)
14. PANCHGRAM (AS)
15. GOHPUR (AS)
16. TINSUKIA (AS)
17. HAILAKHANDI (AS)
18. KAHELIPARA (AS)
19. SARUSAJAI (AS)
20. BTPS (AS)
21. UMRANGSOO (AS)
22. AGIA (AS)

23. SONAPUR (AS) **FUTURE** (To be kept at Misa)
24. DULLAVCHERRA (AS)
25. PAVOI (AS)
26. BOKAJAN (AS)
27. BACK-UP NERLDC
28. SPARE AT MISA 03 Nos.

MANIPUR

1. IMPHAL (PG)
2. JIRIBAM (PG)
3. NINGTHOUKONG (MN)
4. RENGPAANG (MN)
5. KARONG (MN)
6. THOUBAL (MN) **FUTURE** (To be kept at Imphal-PG)
7. TIPAIMUKH (MAN) **FUTURE** (To be kept at Imphal-PG)
8. SLDC

MEGHALAYA

1. KHLIERIAT (PG)
2. BYRNIHAT (PG)
3. KHLIERIAT (ME)
4. LUMSHNONG (ME)
5. SLDC
6. NERLDC

MIZORAM

1. AIZAWL (PG)
2. MELRIAT (PG)
3. KOLASIB (MZ)
4. SLDC

NAGALAND

1. DOYANG (NEEPCO)
2. DIMAPUR (PG)
3. DIMAPUR (NG)
4. KOHIMA (NG)
5. KOHIMA (TBCB) **FUTURE** (To be kept at Dimapur-PG)
6. SLDC

TRIPURA

1. AGTCCPP (NEEPCO)
2. KUMARGHAT (PG)
3. AGARTALA (T & L OFFICE POWERGRID)
4. SURJAMANI NAGAR (TR)
5. UDAIPUR (TR)
6. DHARMANAGAR (TR)
7. PK BARI (TBCB)
8. SLDC

SEM LIST FOR TESTING

SN	NAME OF BAY/FEEDER	SEM SL.NO.
MISA (PG)		
1	220KV Dimapur-1	NP 8643-A
2	220KV Dimapur-2	NP 8640-A
3	220KV Kopili-1	NP 8641-A
4	220KV Kopili-2	NP 8636-A
5	220KV ICT#1	NP 8599-A
6	220KV Kopili-3	NP 8603-A
7	220KV New mariani	NP 8608-A
8	220KV Old Mariani	NP 8605-A
9	220KV ICT#2	NP 8638-A
10	400KV Balipara-1	NP 5299-A
11	400KV Balipara-2	NP 5300-A
12	400KV ICT#1	NP 5291-A
JIRIBAM(PG)		
13	JBM-AZL	NP7798A
14	JBM-BDP	NP8623A
15	JBM-LKT-II	NP 7797A
16	JBM-PL	NP 8499A
17	JBM-HFG	NP 7796A
18	6.3MVA TRANSFORMER	NP 8501A
19	JBM-JBM	NP 8500A
BADARPUR(PG)		
20	SLR # 1 (BDP end)	NP-8493A
21	SLR # 2 (BDP end)	NP-8495A
22	KHLT Bay	NP-6874A
23	BDP(PG) END OF PANCHGRAM FEEDER	NP-6871A
24	KOLASIB Bay	NP-6873A
25	JIRIBAM Bay	NP-6870A
26	KUMARGHAT Bay	NP-7799A
HAFLONG (PG)		
27	Khandong Bay	NP-8502-A
28	ASEB Bay	NP-8494-A
29	Jiribam Bay	NP-8656-A
SILCHAR (PG)		
30	132kV Badarpur-1	NP-8662A
31	132kV Srikona-1	NP-8664A
32	132kV Srikona-2	NP-8665A
33	132kV Badarpur-2	NP-8663A
34	132kV Hailakandi-2	NP-8666A
35	132kV Imphal-1	NP-8571A
36	132kV Imphal-2	NP-8570A
37	132kV Panchgram	NP-8667A
38	132kV P.K.Bari-1	NP-8569A
39	132kV P.K.Bari-2	NP-8563A
40	400kV Palatana-1	NP-8660A

SN	NAME OF BAY/FEEDER	SEM SL.NO.
41	400kV Palatana-2	NP-8659A
42	400kV Brynihat	NP-8661A
43	400kV Azara	NP-8561A
44	132kV Silchar-1 at Srikona S/S	NP-8562A
45	132kV Silchar-2 at Srikona S/S	NP-8668A
ZIRO (PG)		
46	132kV Ranganadi-Ziro T/L (Ziro end)	NP-6878-A
BALIPARA(PG)		
47	400 kV Bongaigaon # 1	NP - 8655
48	400 kV Bongaigaon # 2	NP - 8653
49	400 kV Bongaigaon # 3	NP - 8654
50	400 kV Bongaigaon # 4	NP - 8585
51	400 kV RHEP # 1	NP - 5310
52	400 kV RHEP # 2	NP - 5308
53	400 kV Misa #1	NP - 8594
54	400 kV Misa # 2	NP - 5285
55	220 kV Samaguri	NP - 5307
56	132 kV Khupi	NP - 5306
57	132 kV Depota	NP - 6149
58	132 kV Gohpur	NP - 6150
59	400/220/33 kV ICT # 1 (HV)	NP - 5309
60	220/132 kV ICT # 1 (HV)	NP - 6868
61	220/132 kV ICT # 1 (LV)	NP - 6891
62	220/132 kV ICT # 2 (HV)	NP - 6151
63	220/132 kV ICT # 2 (LV)	NP - 6890
64	400/220/33 kV ICT # 2 (HV)	NP - 5811
65	400/220/33 kV ICT # 2 (LV)	NP - 5800
NIRJULI(PG)		
66	132KV NDTL(NIRJULI END)	NP-6031A
67	132KV GITL(NIRJULI END)	NP-5771A
68	50 MVA ICT I	NP 5825A
69	50MVA ICT-II	NP-5824A
ARUNACHAL		
70	132KV RANGANADI-LEKHI(LEKHI END)	NP-8372A
IMPHAL (PG)		
71	Imphal -II 132kV Bay	NP-8670-A
72	Loktak -II 132kV Bay	NP-8672-A
73	Imphal-I 132kV Bay	NP-8378-A
74	Dimapur 132kV Bay	NP-8669-A
75	Ningthoukhong 132kV Bay	NP-8576-A
76	ICT - I	NP-8581-A
77	ICT - II	NP-8647-A
JIRIBAM(MN)		
78	JIRIBAM(MAN) END OF JIRIBAM(PG)FDR	NP-8645-A

SN	NAME OF BAY/FEEDER	SEM SL.NO.
YUREMBUM, MSPCL		
79	Imphal -I 132kV Bay	NP-8374-A
80	Imphal -II 132kV Bay	NP-6950-A
NINGTHOUKHONG, MSPCL		
81	Loktak 132kV Bay	NP-8375-A
KARONG, MSPCL		
82	Kohima 132kV Bay	NP-8373-A
DIMAPUR, PG+ ASEB		
83	KOHIMA	NP-8472-A
84	ICT 1 LV	NP-8802-A
85	ICT2 LV	NP-6889-A
86		NP-8478-A
87	NAGALAND POWER HOUSE	NP-5777-A
88		NP-6032-A
89	BOKAJAN POWER HOUSE	NP-8482-A
90		NP-7587-A
SALAKATI(PG)		
91	Alipurduar# 1	NP-7581-A
92	Alipurduar# 2	NP-5303-A
93	Gelephu	NP-8800-A
KUMARGHAT(PG)		
94	EK Bari Bay	NP-6860-A
95	Aizawl Bay	NP-6861-A
96	Badarpur Bay	NP-6862-A
97	RC Nagar Bay	NP-6863-A
EAST KANCHANBARI , TSECL		
98	Silchar1 Bay	NP-4501-A
99	Silchar2 Bay	NP-8564-A
MARIANI(PG)		
100	Misa	NP8591A
101	Kathalguri	NP8596A
SMNAGAR		
102	S.M.NagarBay-I of S.M.Nagar-Comilla line	NP-9078-A
103	S.M.NagarBay-II of S.M.Nagar-Comilla line	NP-9076-A
BONGAIGAON(PG)		
104	New Siliguri#1	NP-8468A
105	New Siliguri#2	NP-8469A
106	ICT HV SIDE	NP-5318A
KHLIEHRIAT(PG)		
107	132kV Powergrid-Khandong Feeder-I(PGCIL end)	NP 6883 A
108	132kV Powergrid-Khandong Feeder-II(PGCIL end)	NP 6884 A
109	132kV Powergrid-Badarpur Feeder (PGCIL end)	NP-8477-A
110	132kV Powergrid-MeECL Feeder-I(PGCIL end)	NP 6881 A
111	132kV Powergrid-MeECL Feeder-II(PGCIL end)	NP 6880 A

SN	NAME OF BAY/FEEDER	SEM SL.NO.
	RANGIA(PG)	
112	Rangia-Deothang -Rangia End	NP-8368-A
113	Rangia-Deothang -Deothang End	NP-8380-A
	AGTCCPP	
114	AGTPP GTG-2	NP-6858
115	AGTPP GTG-4	NP-6864
116	AGTPP GTG-3	NP-6859
117	AGTPP STN TRF-2	NP-6852
118	AGTPP STN TRF-1	NP-6853
119	AGTPP GTG-1	NP-6857
	RHEP	
120	RANGANADI END OF 132KV ZIRO FDR	NP-5278
121	RANGANADI END OF 132kV NIRJULI FDR	NP-5792
122	RANGANADI END OF 400KV BLP-2	NP-5817
123	RANGANADI END OF 400KV BLP-1	NP-6033
124	RANGANADI 400/132KV AUTO TFR-2	NP-5275
125	RANGANADI STN.TFR-1	NP-5276
126	RANGANADI GT-1	NP-5277
127	RANGANADI GT-2	NP-5813
128	RANGANADI GT-3	NP- 5814
129	RANGANADI STN.TFR-2	NP-5815
130	RANGANADI 400/132KV AUTO TFR-1	NP-5816
131	RANGANADI END OF 33KV PARE-2	NP-7664
	PALATANA	
132	PALATANA END OF SLCHAR I FDR	NP- 7583
133	PALATANA END OF UDAIPUR I FDR	NP-7603
134	PALATANA ST I	NP-7602
135	PALATANA END OF SM NAGAR FDR	NP-8381
136	PALATANA ICT (HV Side)	NP-8382
137	PALATANA ST II	NP-7584
	MEGHALAYA	
138	BYRNIHAT END OF 220KV MISA-I	NP-6856
139	BYRNIHAT END OF 220KV MISA-II	NP-5302
140	KHLRT(MeSEB) END OF KHLRT(PG) FDR-1	NP-6865
141	KHLRT(MeSEB) END OF KHLRT(PG) FDR-2	NP-6866
142	KHLRT END OF KHANDONG-1 FDR	NP-6883
143	KHLRT END OF KHANDONG-2 FDR	NP-6884
	TRIPURA	
144	DHARMANAGAR END OF DULLAV FDR	NP-6892-B
145	P'KANCHANBARI END OF K'GHAT(PG) FDR	NP-6875
146	PK'BARI end of 132 kV Silchar-2	NP-8564
147	AGARTALA END OF AGTPP-1 FDR	NP-6850
148	AGARTALA END OF AGTPP-2 FDR	NP-6851
149	SM Nagar end of Palatana	NP-8471
150	Udaipur end of Palatana	NP-8470

SN	NAME OF BAY/FEEDER	SEM SL.NO.
	ASSAM	
151	TINSUKIA END OF 220KV KTG FDR-I	NP-8383
152	TINSUKIA END OF 220KV KTG FDR-II	NP-8386
153	PAILAPOOL END OF JIRIBAM FDR	NP-8498
154	SONABIL END OF 220KV BALIPARA	NP-5795
155	SONABIL END OF 132KV BALIPARA	NP-6147
156	MARIANI END OF 220KV KATHALGURI	NP-6888
157	MARIANI END OF 220KV MISA	NP-6886
158	MARIANI END OF 33 KV CHANKI	NP-6893
159	PANCHGRAM END OF BDP(PG)FDR	NP-6872
160	SAMAGURI END OF 220KV MISA-1	NP-5797
161	PANCHGRAM END OF LUMSHONG FEEDER	NP-7595A
162	SAMAGURI END OF 220KV MISA-2	NP-5795
163	DULLAVCHERA END OF 132 KV DHARMANAC	NP-6876
164	HAILAKANDI END OF SILCHAR-II	NP-7596A
165	HAILAKANDI END OF SILCHAR-I	NP-5301A
166	220KV SALAKATI_BTPS#1(BTPS End)	NP-8476A
167	Gohpur END OF 132KV NIRJULI FDR	NP-6907-A

TOTAL NO OF METER TO BE TESTED

167

SEM LIST FOR RS-485 SCHEME

Sl.NO	Utilities	EXISTING METER	FUTURE METER **	Total
1	AGBPP (NEEPCO)	21	0	21
2	AGTPP (NEEPCO)	14	2	16
3	DOYANG (NEEPCO)	12	0	12
4	KHANDONG (NEEPCO)	15	0	15
5	KOPILI (NEEPCO)	15	0	15
6	KOPILI-II (NEEPCO)	4	0	4
7	RANGANADI (NEEPCO)	17	2	19
8	LOKTAK (NHPC)	12	0	12
9	PALATANA (OPTCL)	15	0	15
10	KAMENG	12	0	12
11	PARE	11	0	11
12	NTPC-BTPS	10	0	10
	TOTAL	158	4	162

** Check Meters to be installed.