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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Website: www.nerpc.nic.in

No. NERPC/SE (O)/OCC/2018/***5151-5188*** Dated: December 04, 2018

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, Dongtieh-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, Dongtieh, 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 150th OCC Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 150th OCC Meeting held at Guwahati on the **14th November, 2018** for your kind information and necessary action. The minute is also available on the website of NERPC, **www.nerpc.nic.in**.

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

Encl: As above

भवदीय/Yours faithfully,

बि. लिंगखोइ / B. Lyngkhoi
निदेशक / **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.

निदेशक / **Director/ SE**

North Eastern Regional Power Committee

MINUTES OF THE 150th OPERATION COORDINATION SUB-COMMITTEE MEETING OF NERPC

Date : 14/11/2018 (Wednesday)

Time : 10:00 hrs

Venue : "Hotel Nandan", Guwahati.

The List of Participants in the 150th OCC Meeting is attached at **Annexure – I**

Shri P.K. Mishra, Member Secretary, NERPC welcomed all the participants to the 150th OCC meeting. He expressed satisfaction about large number of participation and hoped that the members would continue to contribute to the proceedings in a constructive manner.

Thereafter, Member Secretary requested Shri B. Lyngkhoi, Director (O&P) to take up the agenda for discussion.

Director (O&P), NERPC informed the members that in the 5th Project Steering Committee Meeting held at Guwahati on 12.11.2018 under the chairmanship of Joint Secretary, MoP various matters pertaining to NERPSIP and Comprehensive Scheme for strengthening of intra-state transmission and distribution system were discussed. Further, he apprised the members that Jt. Secretary MoP has nominated him as the Nodal Officer for NERPSIP, Comprehensive Scheme and SAUBHAGYA. He requested all the State Utilities to furnish the progress of works every month so that the same can be forwarded to Ministry of Power.

The forum welcomed the step taken by MoP and assured Director (O&P), NERPC to comply the same and also hoped that many bottlenecks would be cleared now because of his nomination.

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF 149th MEETING OF OPERATION SUB-COMMITTEE OF NERPC.

The minutes of 150th meeting of Operation Sub-committee held on 14th November, 2018 at Guwahati were circulated vide letter No. NERPC/SE (O)/OCC/2016/4556-4591 dated 22nd November, 2018.

The Sub-committee confirmed the minutes of 149th 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 150th OCC:

State	R&U scheme	ADMS	Capacitor Installation	SAMAST**
Arunachal Pradesh	10% fund requisitioned. Tender by Dec'18	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal.
Nagaland	Pack-A: Completed Pack-B: Dec'18 Pack-C: Dec'18 Pack-D: Completed.	Revised DPR yet to be submitted	To re-submit proposal to NERPC for Study.	DPR submitted for Techno-Economic Appraisal
Mizoram	LOAs completed. 2nd installment of funds received. Quantity variation submitted 20.09.18. Erection complete by Dec'18.	Revised DPR submitted	Appraisal Committee is yet to approve	DPR submitted for Techno-Economic Appraisal
Manipur	LOAs issued. Completion by Nov'18.	Revised DPR submitted	Submitted to NERPC for Study before sending to NPC/NLDC.	DPR submitted for Techno-Economic Appraisal
Tripura	Tentative Completion by 31.12.2018	Revised DPR submitted	To submit proposal to NERPC for Study.	DPR submitted for Techno-Economic Appraisal
Assam	Substation auxiliary and diagnostics tools - Tendering in process. LOA by Sep'18.	Revised DPR submitted	-	DPR submitted for Techno-Economic Appraisal

Meghalaya	MePTCL Balance items LOA by Oct'18 MePGCL – Erection complete by Mar'19	Revised DPR submitted. Query referred to DISCOM	-	DPR submitted for Techno-Economic Appraisal

Deliberation of the sub-Committee:

Director (O&P), NERPC informed that the following:-

- For ADMS the proposal for common tendering would be put up in the next TCC/RPC meeting.
- Regarding Capacitor Bank Scheme for Manipur and Mizoram some queries have been raised by NPC. He requested MSPCL and P&ED Mizoram to address them as early as possible.

The Sub-Committee noted as above.

Action: All state utilities/NERPC.

2. Outage of Important Grid Elements:

Name of the Element	Name of Utility	Status as informed in 150th OCC
63MVAR Reactor at Byrnihat to replace with 80MVAR Reactor	MePTCL	7th SCM MoM to be revised. MePTCL may initiate preparation of bid documents etc for the tendering process.
Repairing of R-ph bushing of 63MVAR L/R at Balipara for 400kV Balipara-Bongaigaon -II (*out since 17.02.18)*	NERTS	Bushing repaired, oil filtration is in progress a7nd work will be completed by Nov'18
Outage of 420kV 80MVAR L/R for 400kV Bongaigaon-NSLG-I at Bongaigaon - (out since *04.07.18*)	NERTS	By Jan'19*(Regional Spare will be utilized for restoration)*
132kV Dimapur - Imphal (*out since 25.07.18*)	NERTS	Expected restoration by Jan'19
63 MVAR B/R-4 at 400kV Biswanath-Chariali(*out since 27.04.18*)	NERTS	Erection work in progress - By Dec'18
132 kV, 20MVAr Bus Reactor at Roing out of service since 08:00 Hrs of 16.08.18 (*Shutdown approved till 1600 Hrs of 31st August'18*)	NERTS	By Nov'13

The Sub-Committee noted as above.

Action: All concerned utilities & NERPC.

3. Furnishing of various data for reliable grid operation:

Data regarding	Status as of 150th OCC
DAS output for FRC calculation	Event date: 30.10.2018: Khandong, Palatana, Kopili, Ranganadi, Doyang submitted the data. Loktak, Pare and BgTPP not submitted.
Patrolling report(s) for T/L**.	Patrolling report and vegetation clearance self-certification to be immediately submitted for 132kV Balipara-Khupi, 132kV Dimapur-Kohima & 132kV Aizawl - Kumarghat
Submission of Capability Curve	It NERLDC requested the generators to provide the capability curve at the earliest. Agenda may be dropped. The matter will be reviewed on quarterly Basis.

The Sub-committee noted as above.

Action: All utilities as above.

4. DIFFERENCE IN ACTUALS VS LGBR:

Energy Requirement:

Name of State	Jun 18 (actual)	Jun18 (LGBR)	Jul 18 (actual)	Jul18 (LGBR)	Aug 18 (actual)	Aug 18 (LGBR)	Sep 18 (actual)	Sep 18 (LGBR)
Ar. Pradesh	70.76	65.89	72.49	66.28	76.34	77.02	74.16	71.19
Assam	913.96	864.22	998.64	952.10	1039.01	970.21	950.19	934.64
Manipur	67.74	64.86	72.38	65.08	70.53	76.98	69.88	69.64
Meghalaya	143.28	142.00	169.75	155.00	162.17	159.00	150.14	164.00
Mizoram	43.66	42.44	46.53	45.43	58.96	44.80	58.04	39.37
Nagaland	78.16	76.55	82.22	80.84	80.88	79.25	80.49	76.88
Tripura	121.77	123.16	144.97	123.51	179.61	127.98	192.00	125.18

Energy Availability:

Name of State	Jun18 (actual)	Jun18 (LGBR)	Jul18 (actual)	Jul18 (LGBR)	Aug 18 (actual)	Aug 18 (LGBR)	Sep 18 (actual)	Sep 18 (LGBR)
Ar. Pradesh	74.78	83.78	77.75	99.88	81.81	96.23	81.12	82.62
Assam	898.04	892.17	975.84	992.22	991.95	967.37	987.64	859.96
Manipur	101.66	102.23	111.82	129.88	109.25	126.69	177.79	110.48
Meghalaya	236.66	254.18	293.16	312.29	285.36	322.71	276.17	308.96
Mizoram	79.19	82.67	85.38	97.31	92.74	99.89	111.76	89.77
Nagaland	78.35	83.84	79.00	99.30	84.88	99.50	81.24	87.96
Tripura	255.49	242.47	294.08	308.19	312.05	294.40	309.44	268.15

Demand:

Name of State	Jun18 (actual)	Jun18 (LGBR)	Jul18 (actual)	Jul18 (LGBR)	Aug 18 (actual)	Aug 18 (LGBR)	Sep 18 (actual)	Sep 18 (LGBR)
Ar. Pradesh	138.12	131.00	130.38	136.00	135.88	148	131.92	143
Assam	1782.35	1761.14	1862.54	1761.36	1833.85	1752.66	1865.26	1787.60
Manipur	179.48	163.70	174.16	162.83	177.32	173.10	184.39	168.04
Meghalaya	325.51	298.94	333.95	308.22	325.43	314.92	317.42	328.18
Mizoram	102.57	85.16	100.77	92.62	99.09	92.62	95.47	95.23
Nagaland	129.40	152.90	132.89	153.75	134.32	139.63	142.07	148.77
Tripura	280.66	307.24	298.12	322.71	291.86	327.32	296.01	359.46

Deliberation of the sub-Committee:

Sr. Manager, TSECL informed that Tripura mismatch is due to agreement of additional 60MW supply to Bangladesh, which was not incorporated in LGBR. After detailed deliberation, it was decided that all SLDCs would furnish the reasons for mismatch at the earliest.

The Sub-committee noted as above.

Action: All SLDCs.

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

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

NER PERFORMANCE DURING OCTOBER, 2018

	Energy Met (MU)		w.r.t. Sep,18 % inc (+) /dec (-)	Energy Reqr. (MU)		w.r.t. Sep,18 % inc (+) /dec (-)	% inc (+) /dec (-) of energy reqr vs met. In Oct,18
States	**Oct-18**	**Sep-18**		**Oct-18**	**Sep-18**		
Ar. Pradesh	66.14	69.06	-4.23	66.76	69.79	-4.34	-0.93
Assam	809.08	939.37	-13.87	833.04	975.15	-14.57	-2.88
Manipur	70.86	67.60	4.82	71.55	68.31	4.74	-0.96
Meghalaya	146.70	156.29	-6.14	146.70	156.32	-6.15	0.00
Mizoram	62.20	49.85	24.77	62.71	50.51	24.15	-0.81
Nagaland	67.23	69.95	-3.89	75.57	78.29	-3.47	-11.04
Tripura	129.05	136.76	-5.64	130.28	137.94	-5.55	-0.94
Region	**1351.26**	**1488.88**	**-9.24**	**1386.60**	**1536.31**	**-9.74**	**-2.55**

	Demand Met (MW)		w.r.t. Sep,18 % inc (+) /dec (-)	Demand in (MW)		w.r.t. Aug,18 % inc (+) /dec (-)	% inc (+) /dec (-) of Demand vs met. In Oct,18
States	**Oct-18**	**Sep-18**		**Oct-18**	**Sep-18**		
Ar. Pradesh	125	130	-3.85	138	138	0.00	-9.42
Assam	1704	1809	-5.80	1785	1865	-4.29	-4.54
Manipur	185	182	1.65	187	184	1.63	-1.07

Meghalaya	336	317	5.99	336	317	5.99	0.00
Mizoram	97	93	4.30	99	95	4.21	-2.02
Nagaland	131	138	-5.07	134	142	-5.63	-2.24
Tripura	269	293	-8.19	269	296	-9.12	0.00
Region	**2700**	**2850**	-5.26	**2790**	**2921**	-4.48	-3.23

REGIONAL GENERATION & INTER-REGIONAL EXCHANGE IN MU

Month---->	**Oct-18**	**Sep-18**
Total Generation in NER (Gross)	1592.154	1662.196
Total Central Sector Generation (Gross)	1156.509	1219.719
Total State Sector Generation (Gross)	397.224	442.477
Inter-Regional Energy Exchange		
(a) NER-ER	**1.00**	**51.53**
(b) ER-NER	**405.33**	**531.26**
(c)NER-NR	**478.92**	**464.63**
(d)NR-NER	**0.00**	**3.56**
© Net Import	-74.59	18.66

AVERAGE FREQUENCY (Hz)

Month---->	**Oct-18**	**Sep-18**
	% of Time	% of Time
Below 49.9 Hz	11.71	13.21
Between 49.9 to 50.05 Hz	79.34	80.23
Above 50.05 Hz	8.95	6.05
Average	49.97	49.97
Maximum	50.20	50.20
Minimum	49.69	49.57

Deliberation of the sub-Committee:

NERLDC gave a presentation on the grid performance for the month of October'18 **(Annexure-B.2-a).** NERLDC also highlighted that Daily, Weekly and Monthly Voltage Deviation Report, Frequency Deviation Report and System Reliability Report for October'18 was already mailed to all the constituents for necessary actions. Further, it was informed that members may access these reports from NERLDC website under the tab CERC KPI Reports. NERLDC informed the forum about the number of lines kept open on high voltage. Forum express concern about the same and requested the generators to absorb MVAR. NERLDC again requested for early restoration of reactors which are under long outage and commissioning of new reactors at the earliest as mentioned in Sl. No. B.1.2 and C.1 so that it does not require to open lines for maintaining voltage profile within IEGC band.

The Sub-Committee noted as above.

ITEMS FOR DISCUSSION

C. OLD ITEMS

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

During 149th OCC meeting, the status as informed by different beneficiaries is as follows:

SN	Items	Status as given in 149th OCC Meeting		Status as given in 150th OCC Meeting	
		Timeline for completion	Furnishing of detail parameters	Timeline for completion	Furnishing of detail parameters
a. New Elements					
1	400/220kV, 315 MVA ICT-1 of NTPC at Bongaigaon	By Nov'18	To be submitted to NERLDC.	By Jan'19	To be submitted to NERLDC.
2	Kameng HEP of NEEPCO two units (2 x 150 MW) Next two units (2x150 MW)	To be reviewed	Already submitted.	To be reviewed	Already submitted.
3	400 kV D/C Silchar - Melriat line of PGCIL	Oct'18	To be submitted to NERLDC.	Nov'18	To be submitted to NERLDC.
4	132kV Monarchak – Surjamaninagar D/C of TSECL	By Dec'18	To be submitted to NERLDC	By Jun'19	To be submitted to NERLDC
5	SLDCs (Ar. Pradesh, Manipur, Mizoram, Nagaland)	Completed for all SLDC except Nagaland. Nagaland - DoCO By 15.01.2019.	Not applicable.	Completed for all SLDC except Nagaland. Nagaland - DoCO By 15.01.2019.	Not applicable.
6	400/220 kV 315 MVA ICT-II at Bongaigaon	Dec'18	Already submitted	Dec'18	Already submitted
7	220/132 kV, 160MVA ICT-II at Balipara	ICT#II - by Dec'18	To be submitted to NERLDC.	ICT damaged in transit. To be reviewed	To be submitted to NERLDC.
8	220/132 kV, 1x160 MVA ICT with GIS Bay at Kopili	Dec'18	To be submitted to NERLDC.	Dec'18	To be submitted to NERLDC.

9	33kV bay at 220kV Mariani(AS) S/Sn	Demand note for CTPT unit pending from Assam. To be expedited by APDCL. Latest status to be submitted ASAP.	Not applicable.	Demand note for CTPT unit pending from Assam. To be expedited by APDCL. Latest status to be submitted ASAP.	Not applicable.
10	33kV bay for 132kV Badarpur(PG) S/Sn	To be expedited by APDCL. Latest status to be submitted ASAP.	Not applicable.	To be expedited by APDCL. Latest status to be submitted ASAP.	Not applicable.
11	Dedicated 33kV feeder at Khliehriat Substation from Lumshnong.	By Oct'18	Not applicable.	By Nov'18	Not applicable.
12	Construction of 132 kV Imphal (PG) - Yurembam III lines with high capacity conductor by MSPCL	RoW problem not resolved. Tentative Completion: Oct'18. NERPC to take up with MD, MSPCL.	To be submitted to NERLDC.	Not required as decided by MSPCL. To be dropped.	To be submitted to NERLDC.
13	LILO of 132kV Aizawl-Jiribam at Tipaimukh by MSPCL	NERPC to take up with MD, MSPCL.	To be submitted to NERLDC.	Referred to TCC/RPC	To be submitted to NERLDC.
b. Elements under breakdown/upgradation					
14	Up-gradation of 132 kV Lumshnong-Panchgram line	Consent of AEGCL received by MePTCL. Scheme renamed as Upgradation of 132kV Khliehriat-Panchgram line with HTLS conductor.	Not applicable.	Could not be updated due to absence of MePTCL representative.	Not applicable.
15	Switchable line Reactors at 400kV Balipara & Bongaigoan Ckt # 1 & 2	Completed except Bong#2 LR of Balipara which is under restoration	Not applicable	Completed except Bong#2 LR of Balipara which is under restoration. By 20.11.2018.	Not applicable

16	PLCC Panels at Loktak end of Loktak – Ningthoukhong 132 kV feeder and Loktak - Rengpang 132 kV feeder	Oct'2018	Not applicable.	Dec'18	Not applicable.
17	Upgradation of 132kV Silchar-Imphal to 400kV	Matching with schedule of MSPCL.	To be submitted to NERLDC	To be kept on hold till restoration of 132kV Dimapur-Imphal**	To be submitted to NERLDC
18	Replacement of CTs and installation of Bus Bar Protection at 220kV Misa	By Dec'18	Not applicable	By Dec'18	Not applicable
19	Upgradation of 132kV Bus bar at Umiam Stg-III to ACSR Zebra	MePGCL to send proposal to NLDC/NPC.	Not applicable	MePGCL to send proposal to NLDC/NPC.	Not applicable

Deliberation of the sub-Committee:

**GM (AM), NERTS apprised the forum of that the upgradation of Silchar-Imphal Circuit 3 1 & 2 form 132kV to 400kV can be taken up by POWERGRID by December 2018. However, for the purpose, following sequence is as follows:

The upgradation of 132KV Silchar-Imphal # 1 & 2 to 400KV level has to be carried out in a sequential manner one after the other circuit as per the following:

A. **Upgradation of Silchar-Imphal Ckt-1 to 400Kv level**

Step 1: 132Kv Silchar-Imphal – 1 at Imphal end to be kept in transfer mode for connection of 132KV CB and Isolators to LV side of 400/132Kv ICT-2. The same is already completed.

Step 2: Continuous S/D of Silchar-Imphal -1 for 4 days is required for following activities:

a. Termination of existing Silchar-Imphal -1 line to 400KV yard of Silchar and Imphal Ss.

b. Shifting of Sil-1 132KV line CT connection to LV side of ICT-2 and carrying out of differential stability test of ICT-2 at Imphal Ss.

c. Replacement of old MOM box with new MOM box for 132Kv transfer, line & bus isolator connection from Sil-1 bay to LV side of ICT-2 at Imphal Ss.

d. Dismantling of wave trap, LA and line CVT at Imphal Ss.

e. End to end Commissioning of PLCC link for Circuit-1.

Step 3: Charging of Silchar – Imphal – 1 at 400KV level from Silchar end and energization of ICT-2 from 400KV side at Imphal end. The transformer is to be kept at ideal charging (without loading) for 24 Hrs as per norms.

Step 4: Shut down of 132KV Bus for 5 hrs for phasing of transformer at LV side. Subsequently Sil-Imp-1 line will be loaded at 400Kv level.

A. **Upgradation of Silchar-Imphal Ckt-2 to 400Kv level**

The same procedure is to be repeated for conversion of 132KV Silchar-Imphal -2 to 400Kv level after successful completion of Circuit-1 conversion.

Further, GM (AM), NERTS informed the forum that one circuit of 132kV Silchar – Imphal # 1 & 2 will be enough to cater the requirement of Manipur in the event of outage of 132kV Dimapur – Imphal Line. In addition, presently, there is hardly any tripping of 132kV Silchar – Imphal Line.

Director (O&P), NERPC informed that during the Special Meeting held on 25.09.2018 it was stated that in case of any exigencies in 400kV Silchar- Imphal, heavy load shedding has to be imposed by the State which is against the Govt.'s decision to provide 24x7 power supply to the consumers. He stated that State SLDC has carried out the system studies and the results clearly shown that Manipur power condition is not adequate especially during the lean hydro season. Hence, up gradation of 132kV Silchar-Imphal D/C Line may be taken up, preferably, after having redundant connectivity between Dimapur and Imphal.

The Sub-Committee noted as above.

Action: All state utilities/central utilities/NERPC.

D. NEW ITEMS

D.1 Generation Planning (ongoing and planned outages)

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

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

Plants	Reservoirs level in meter as on 31-10-18	MU content	Present DC (in MU)	No of days as per current generation
Khandong + Kopili stg II	716.65	17.08	0.462 + 0.0735 = 0.53550	32
Kopili	606.67	96.969 + 4x17.08 = 165.289	4.49600	40
Doyang	315.65	12.65	0.16175	78
Loktak	768.23	179	1.0970	163

b. Proposed DC

Plants	Reservoirs level in meter as on 31-10-18	MU Content	Proposed DC (MU)	No of days as per current Generation (Upto March'19)
Khandong + Kopili STG II	716.65	17.08	0.113867	150
Kopili	606.67	(96.969+ 4x17.08) 165.289	1.101927	150
Doyang	315.65	12.65	0.084333	150
Loktak	768.23	179	1.193333	150

Thus, for maintaining the generation availability of NER Region it is requested to all hydro generations to judiciously plan the utilization of water and furnish the day ahead declared MU such that NER Region does not face lack of generation availability in the upcoming lean hydro season.

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

Deliberation of the sub-Committee:

NEEPCO informed that for Kopili-II & Khandong HEP 6MU/ month or 0.2MU/day declaration is sufficient as per the trend for the last 10-15 years. Manager, NHPC

informed that the proposed DC is acceptable, however he requested that it may not be increased any further so that normative generation is possible in March-April'19.

After detailed deliberation the forum agreed for the following DC/day:

Plants	DC/day (MU)
Khandong + Kopili STG II	0.162
Kopili	1.102
Doyang	0.135
Loktak	1.193

Director, NERPC mooted the proposal that during RHEP plant shutdown, the unallocated power in NER(approx. 15%) may be temporarily allocated to NER constituents to mitigate the crisis. The forum after detailed deliberation requested NERPC to explore the feasibility.

The Committee discussed and approved the proposed shutdown by Generating Stations and the same has already been uploaded in the website of NERPC.

D.2 <u>Outage Planning Transmission elements</u>

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, Director (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 finalized. Members requested NERPC to invite POWERGRID telecom in next OCCM alongwith with officials (handling communication issues) from all utilities for this purpose.

Deliberation in the Meeting:

NERLDC highlighted that OCC forum approves the S/D after lots of discussion but it is observed that some of the shutdowns are not being availed. Details of Shutdown not availed and shutdowns applied on D-3 basis is as below:

Total S/D approved	Total S/D availed	Total S/D not availed	Total S/D deferred by NERLDC	Total S/D availed on D-3 basis	Total S/D not applied on D-3 basis
109	85	21	3	101	8

NERLDC highlighted that the inordinate delay in revival of elements under S/D for ISTS licensees is coming very high which is affecting the secure operation of the grid. Details for the month of October'18 are as below:

Transmission Licensee	Total Delay	Avg. Delay	Max. Delay
POWERGRID	96:12	02:49	22:11
NETC	06:22	03:10	05:10
ENICL	02:42	02:42	02:42

The sub-Committee discussed and approved the proposals received from the constituents regarding transmission elements and generating units for November, 2018-December, 2018 and the same has already been uploaded in website of NERPC.

D.3 Estimated Transmission Availability Certificate (TAC) for the month of June, 2018 to August,2018:

NETC and POWERGRID have submitted the outage data for the month of July, 2018 - September, 2018. So the attributability of outage of the said elements may please be finalized.

Deliberation in the Meeting:

The Sub-Committee ratified the attributability from July, 2018 - September, 2018.

The Sub-Committee noted as above.

Action: Concerned transmission utilities/NERLDC/NERPC

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 01.10.18. All SLDCs are requested to assess the Total Transfer Capability (TTC), Transmission Reliability Margin (TRM) and Available Transfer Capability (ATC) for the month of November'18 using these cases and submit the study cases and results to NERLDC by 22.10.18.

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 the TTC of their control areas as computed by NERLDC and give comments, if any, by 22.10.18.

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 websites for information dissemination.

Deliberation in the meeting

NERLDC informed the forum that on request of AEGCL 4 days training program on PSSE w.e.f 22nd to 25th Oct'18 was imparted to officials of AEGCL. AEGCL thanked NERLDC and informed the forum that they were benefited from the training and requested to provide training for the second batch.

NERLDC has assessed TTC of each state control area of NER, each state subsystem on behalf of SLDCs of NER and group of control-area wise TTCs for NER Grid for the month of December'18(considering N-1):

States	Off Peak	Peak
Arunachal	227	217
Assam	1696	1770
Manipur	256	245
Meghalaya	170	168
Mizoram	116	116
Nagaland	166	164
Tripura (including Bangladesh)	97	73

NERLDC requested all the utilities to update the PSSE version.

The Sub-Committee noted as above.

Action: All SLDCs/STUs.

D.5. Update on Real Time Energy Assessment for Effective Grid Management:

NERLDC has provided public IP of its server.

b) Following list of location for meters replacement / installation were submitted for the CDAC project -

SL NO	FEEDER NAME	STATUS	METER TO BE REPLACED/INSTALLED BY PGCIL
1	SRIKONA END OF 132kV SILCHAR FDR -1	REPLACE	1
2	SRIKONA END OF 132kV SILCHAR FDR -2	REPLACE	1
3	DEOMALI END OF 220 KV KATHALGURI FEEDER	REPLACE	1
4	PK'BARI -1 END OF 132 KV SILCHAR-1	REPLACE	1
5	PK'BARI -1 END OF 132 KV SILCHAR-2	REPLACE	1
6	PAVOI END OF 132 KV BNC-1	REPLACE	1
7	MOKOK(S) END OF DOYANG	REPLACE	1
8	MOKOK(S) END OF MOKOK-MOKOK-1	REPLACE	1
9	MOKOK(S) END OF MOKOK-MOKOK-2	REPLACE	1
10	KHUPI END OF 132 KV BALIPARA	INSTALL	1
11	LEKHI END OF 132 KV PARE	INSTALL	1
12	KHUPI END OF 132 KV KAMENG	INSTALL	1
13	ZUANGTUI END OF MELRIAT	INSTALL	1
14	LUANGMOL END OF AIZAWL	INSTALL	1

M/s CDAC has informed that pilot testing of Meter data acquisition of L&T Energy meters (2 No.) has been planned during 12th – 16th Nov 2018. The location identified for Pilot Testing is 400kV Azara Grid Sub-station, Assam

No. Of meters: 2 No.

AZARA END OF 400kV SILCHAR FDR

AZARA END OF 400kV BONGAIGAON FDR

Deliberation in the meeting

DGM(MO), NERLDC informed that under pilot project, one TARA device has been installed at Azara S/S on 12.11.2018 with the SEM of Silchar feeder. DGM(MO), NERLDC, AGM-Assam SLDC, Manager(MO)-NERLDC and CDAC representatives were present during the process.

M/s CDAC is in the process of installing GUI at NERLDC server and after that continuous data receipt for two weeks would be tested. Subsequent to that, installation process in all NER locations would commence.

Regarding SIM for TARA devices,it was decided that NERPC would write to the nodal officers and respective department heads for procurement of SIM and handing over of the same to M/s CDAC at the earliest.

The Sub-Committee noted as above.
Action: All utilities/NERPC.

D.6. Recording of operational instructions over VOIP in RLDC:

Status as updated in 149th OCCM: NERTS informed that LOA already placed. Supply by 1month. Details of LOA shared with NERLDC.

Deliberation in the meeting

GM(AM), NERTS informed that the materials have been dispatched by party and are now in transit.

The Sub-Committee noted as above.
Action: NERTS

D.7. 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.

Discussions as per previous meetings:-

- Inspection for Mawphlang completed.
- Inspection for Baghjap, Sankardevnagar and Sipajhar under Assam would be tentatively done in the first week of November, 2018.

Deliberation in the meeting

Director (O&P), NERPC informed for the Assam stations as above UFR inspection is envisaged to be done on 1st/2nd week of Dec'18. He requested the support of AEGCL, NERTS and NERLDC for the same.

The Sub-Committee noted as above.

Action: NERPC/NERTS/NERLDC/AEGCL.

D.8 Non-availability of SOE records of Biswanath Chariali, Ranganadi, Dimapur & Bongaigaon:

Latest status

HVDC Biswanath Chariali :

All signals were integrated as per project approved list. The same was also jointly checked with RLDC end during commissioning. Thus, additionally SOE and other signals apart from approved list needs approval of competent authority.

POWERGRID requested NERLDC for forwarding copy of any communication vide LD & C / HVDC CC was intimated to implement the list as submitted now for further approval / implementation. In this reg, email from NERTS was given to RLDC on 14.8.18

Dimapur: Fire incident. By Nov'18.—present status/target: Dec'18

For RHEP RTU integration works complete by Dec'18.

Deliberation in the meeting

NERLDC informed the forum that the issue regarding SOE records for Biswanath Chariali has been resolved. After detailed deliberation it was decided to drop the agenda item.

The Sub-Committee noted as above.

Action: NERTS/NERLDC/NEEPCO.

D.9. VSAT for power system communications in NER:

As per discussion in 10th NETeST meeting it was decided that VSAT for remote station connectivity would be explored. NERTS was requested to prepare DPR and present in 147th OCC.

In 147th OCCM DGM(AM), NERTS informed that 2 Service Providers have been approached, however no quotation has been received till date. The forum noted that since the scheme deems sufficient financial involvement, RPC approval is required. NERTS suggested that a Committee may be formed for Comprehensive project. After detailed deliberation it was decided that since at present no list of stations are available which require VSAT communication, the stations of Roing, Tezu and Namsai would be given priority. NERTS was requested to prepare the DPR for VSAT communication i.r.o. above three station at the earliest.

In 148th OCC meeting, NERTS informed that they have received quotation from AIRTEL as per which financial implication will be around Rs. 60368800.00 in which recurring cost is Rs. 59944000.00 per annum. The recovery mechanism may be deliberated before placing the agenda to 19th TCC / NERPC Meeting.

Meanwhile POWERGRID is exploring High Bandwith Lease Line connectivity (MPLS from Airtel).

GM, NERLDC opined that VSAT option for entire NER should be explored in line with the scheme operational under KPTCL

In 149th OCCM DGM(AM), NERTS informed that Leased Line Connectivity has been explored for Roing, Tezu & Namsai with recurring expenditure amounting to INR 28 lakhs. DGM(SL), NERLDC through a presentationhighlighted the VSAT scheme for NER whose main advantages are as follows:

- Direct communication link from Control Centre avoiding repeater stations and last mile problems.
- Reliable Communication System with more than 99.9% network uptime.
- Proven Technology.
- Quick to deploy remote stations. Typically a remote station can be added to the existing network within a week.
- With proper installation and link engineering the network can withstand adverse rain and wind conditions(Extn C Band Techlogy with Apdative Modulation).

The approximate financial involvement for the project considering 150 stations:
Capital Expenditure: INR 17 Cr
Operational Expenditure: Royalty: 61.85 lakhs, AMC: 1.13Cr Total: 2Cr(approx.)

DGM(SL), NERLDC opined that the OPGW network planned for NER does not encompass redundant connectivity for tail-end stations. The VSAT network would not only provide alternate path for all stations but would ensure reporting of data even in case of terrestrial exigencies.

MePTCL representative opined that since already so much emphasis has been given to OPGW connectivity for transmission of power sector data, the additional cost is not justified unless deemed to be of the utmost necessity.

Members from various utilities expressed apprehension regarding time delays in transmission of data and dependability of the system on weather conditions.

After detailed deliberation the forum decided that (subject to MePTCL concurrence):

- Pilot project to be executed at Byrnihat station. The data would be transmitted from Byrnihat to KPTCL(via satellite) to SRLDC to NLDC to NERLDC. This would be kept in monitoring mode in the interim.
- NERPC to take up with proper authorities for funding from suitable sources.

Deliberation in the meeting

Director, NERPC informed that the matter was discussed at length in the 11th NETeST meeting and it was decided that a visit to KPTCL would be done on the 10th of December, 2018 with members from NERLDC, AEGCL and NEEPCO to assess the technical feasibility. Members requested that the financial aspect particularly the burden of recurring cost may be considered before any sort of involvement.

The Sub-Committee noted as above.

Action: NERTS/NERLDC/NERPC.

D.10. DIMAPUR_PG Voice communication and telemetry out since Feb'18.

In 148th OCCM DGM(AM), NERTS informed that Dimapur substation phone is working OK since March'18 (VOIP number 23640213). The same was restored along with power system restoration. Under urgency in March18, NERTS had collected one telephone from SLDC end and same was later replenished. For data, he informed that the same would be corrected by Nov'18.

Deliberation in the meeting

NERTS informed that Dimapur communication would be restored by Dec'18.

The Sub-Committee noted as above.

Action: NERTS

D.11 Update on PDMS:

The tender for ''Web based Protection Database Management System and Protection Setting Calculation Tool'' was published on 31.07.2018. After due bid evaluation the LOI was issued to successful bidder i.e. M/s PRDC vide letter dated.01.10.2018. M/s PRDC will present the action plan and high level design document.

Members from all the utilities are requested to nominate the nodal officer for PDMS. The forum may also finalise the Project Monitoring Group.

In 149th OCCM M/s PRDC presented the high level design document, broadly divided into the following:

- Vol I: High Level Plan and Design
- Vol II: Network Modelling and Power System Studies
- Vol III: Hardware and Software Infrastructure
- Vol IV: Mi-PDMS and Mi-PSCT
- Vol V: On-site service after Go Live.

AEGCL enquired about the telemetry status affecting the studies and hardware at SLDC required for the project. EE,SLDC, MeECL enquired how 33kV data is to be collected.

M/s PRDC gave the following clarifications:

- Telemetry status will not affect the studies, wherever SCADA data is inaccurate/absent log sheet of respective stations would be referred.
- No hardware is required at SLDC premises. Server, storage and other associated hardware would be installed at NERPC.
- For 33kV stations respective utility has to furnish the data. If required M/s PRDC would visit the central offices of the utilities.

The forum also decided that Assam would be the pilot state. Network development, data collection and modeling would start with Assam.

Deliberation in the meeting

The forum nominated the following officials as nodal officers:

Sl. No.	Name of utility/State	Name of the officer

	DoP Arunachal Pradesh	Shri Domo Kamduk, JE
	Manipur/MSPCL	Shri M. Budhachandra Sharma, GM
	Meghalaya/MeECL	Shri B. Nikhla, EE(SP)
	Nagaland	Shri Nitovi Wotsa, EE, SLDC
	Tripura/TSECL	Shri Shankar Chaudhuri, Sr. Manager
	Mizoram	Shri Benjamin Tlumtea, EE
	NERTS	Shri Devaprasad Paul, DM
	NEEPCO	Shri Joypal Roy, SM
	NTPC	Shri Rajendran, Manager
	OTPC	Shri S.R.Das, Manager, OTPC
	NHPC	Shri Yugandhar, Manager

PRDC representative informed the following:-

- Data collection for Assam Intra-state system has started with extraordinary support from AEGCL.
- PSCT (Protection Setting Calculation Tool) laptops have been delivered to NERPC.
- A training program has been conceived in the first week of December,2018 with the primary purpose of handing over PSCT laptops and introductory training on PSCT.

After detailed deliberation the following were decided:-

- AEGCL/APDCL would host the training program at Guwahati.
- Duration and dates would be finalized after discussion with M/s PRDC. Same would be intimated to all the constituents in due course of time.

GM(AM), NERTS stated that presently outage of reactors in NER grid is causing unprecedented over voltages. He suggested that a study may be done to assess the requirement of reactive compensation to mitigate these unforeseen voltage rise. The forum requested M/s PRDC to kindly carry out the study on behalf of NERPC and submit the same before the forthcoming SCM/TCC/RPC meeting.

The Sub-Committee noted as above.

Action: PRDC/NERPC.

D.12 Checking of RTU at RHEP:

Inspite of being healthy RTU in RHEP end, there is a repetitive communication from NERLDC for checking of RTU in our side. The problem may lies in the communication link.

In 149th OCCM DGM(SL), NERLDC clarified that S900 RTU has intermittent data transmission. The same was confirmed when team from NERLDC, NERTS visited RHEP. The bays have to be transferred to the existing C264 RTUs for 132kV RHEP-Chimpu D/C. For this MFTs are to be procured by NEEPCO. This has to be accelerated.

Director (O&P), NERPC requested NEEPCO to extend data upto the nearest wideband location through PLCC. Sr.Manager, NEEPCO informed that if ABB person is present with help of NERTS PLCC issue may be resolved. DGM(AM), NERTS agreed to extend all possible support.

Deliberation in the meeting

Sr. Manager, NEEPCO informed that ABB would visit RHEP by 21.11.2018 and the work would be completed by Nov'18. NERTS informed that the scheme for connecting RHEP via BNC has been proposed to NEEPCO by POWERGRID, NEEPCO may review and take up.

The Sub-Committee noted as above.

Action: NEEPCO

D.13 Telemetry Availability Status at NERLDC from Constituents (as on 31-10-2018):

Sl. No.	Name of the Constituents	Total Analogue Data points	Total Digital Data points	Total Data Points	Analogue Data points Reporting	Digital Data Points Reporting	Total Reporting	Total Percentage of data Availability
1	Arunachal Pradesh	106	152	258	7	11	18	6.97%
2	Assam	1217	1731	2948	509	523	1038	35.00%
3	Manipur	180	255	435	60	93	125	35.17%
4	Meghalaya	409	388	797	238	57	295	37.01%
5	Mizoram	79	50	129	9	7	16	12.40%
6	Nagaland	237	270	507	13	2	15	2.95%
7	Tripura	524	715	1239	133	133	266	21.46%
8	PGCIL	616	1052	1668	388	688	1076	64.51%
9	NEEPCO	202	286	488	109	136	245	50.20%
10	NTPC	31	49	80	23	49	72	90%
11	OTPC	41	85	126	40	81	121	96.8%
12	NHPC	18	29	47	17	28	45	95.74%
13	**NER**	**3671**	**5092**	**8763**	**1555**	**3557**	**3357**	**38.31%**

Deliberation in the meeting

Director(O&P), NERPC informed that the matter of poor availability of telemetry system was discussed at length in the 11th NETeST meeting and it was decided that a Sub-group would be formed of NETeST which would meet on 22.11.2018 at NERPC Shillong.

The Sub-Committee noted as above.

Action: All utilities, NERPC.

D.14 Maintaining Healthiness of +/- 800 kV Multi-Terminal HVDC BNC-Alipurduar-Agra

During the last three months it has been observed that frequent tripping of HVDC poles are taking place for +/- 800 kV Multi-Terminal HVDC BNC-Alipurduar-Agra.

400 kV Kishenganj-Patna D/C and 400 kV Purnea- Biharshariff D/C lines are on prolonged outage due to tower collapse and there is high hydro power generation in Sikkim and North Eastern Region. An account of the above, reliability of +/- 800 kV Multi-Terminal HVDC BNC-Alipurduar-Agra is very important. Any incident involving further tripping in the corridor may become a cause for major grid disturbance and system separation affecting Cross- Border transaction of power.

It is requested to share a copy of Frequency Controller settings adopted at Biswanath Chariali.

Deliberation in the meeting:

GM(AM), NERTS informed that the frequency controller settings has been communicated to NERLDC. The same is given below:

Stage-I: 180MW/hz

Stage-II: 125MW/hz

The agenda may be dropped.

The Sub-Committee noted as above.

Action: NERTS.

D.15 Ratification of projected demand and generation for Q4 of 2018-19 (Jan'19 to Mar'19)

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 forum.

Projected demand and generation of NER constituents to be considered in the base case for POC transmission charge and loss calculations for Q4 (Jan'19 to Mar'19) will be presented in the meeting (also attached at **Annexure-D.15**) for ratification by the constituents.

DoP Arunachal Pradesh, DoP Nagaland and TSECL is yet to submit the data for Q4 (Jan'19 to Mar'19).

Deliberation in the meeting:

The Sub-Committee ratified the projected demand and generation for Q4 of 18-19 with the following modifications:

- Loktak generation - 105MW.
- Assam demand - 1550 MW
- Manipur Demand - 210 MW
- Arunachal Pradesh demand -134 MW

The Sub-Committee noted as above.

D.16 Frequent tripping of NETC lines in the month of Oct'18

Frequent tripping of lines owned by NETC observed in the month of Oct'18. Details are as follows:

Sl No	Element Name	Outage Date & Time	Revival Date & Time	Outage Duration
1	400 kV Palatana - Silchar 1 Line	06-10-18 12:06	06-10-18 12:17	0:11:00
2	400 kV Bongaigaon - Byrnihat Line	09-10-18 14:23	09-10-18 15:29	1:06:00
3	400 kV Azara - Silchar Line	15-10-18 2:11	15-10-18 2:22	0:11:00
4	400 kV Palatana - Silchar 1 Line	17-10-18 9:00	17-10-18 10:04	1:04:00
5	400 kV Palatana - Silchar 2 Line	17-10-18 9:00	17-10-18 9:26	0:26:00
6	400 kV Azara - Silchar Line	27-10-18 11:49	27-10-18 12:07	0:18:00
7	400 kV Byrnihat - Silchar Line	28-10-18 7:36	28-10-18 8:04	0:28:00
8	400 kV Azara - Silchar Line	31-10-18 13:19	31-10-18 13:38	0:19:00

Prima facie, it appears that the faults were due to vegetation infringement in all the events mentioned except for tripping of 400 kV Bongaigaon – Byrnihat line on 9th Oct'18.

For safe and secure operation of NER grid, and specifically the southern part of NER and Bangladesh (South Comilla), healthiness of entire link of 400 kV Palatana – Silchar – Bongaigaon to be ensured.

NETC is requested to intimate the root cause of events mentioned and action taken.

Deliberation in the meeting:

NERLDC informed the forum that there had been frequent tripping in the 400 kV Palatana- Silchar- Azara/Byrnihat- Bongaigaon corridor during the month of October'18. Prima facie, it appears that the faults were due to vegetation infringement. NERLDC emphasized that for safe and secure operation of NER Ggrid, and specifically the southern part of NER and Bangladesh (South Comilla), healthiness of entire link of 400 kV Palatana – Silchar – Azara/Byrnihat- Bongaigaon to be ensured.

NETC informed that vegetation clearance has been hampered due to RoW issues at Hailakandi and Karimganj. Recently compensation problems have been resolved. The forum referred the matter to the next Sub-group meeting on 22.11.2018.

The Sub-Committee noted as above.

D.17 Connectivity of capital area of Nagaland through 132 kV Kohima – Wokha – Sanis – Doyang link

Frequent tripping of 132 kV Dimapur – Kohima line was observed in the month of Oct'18. Details are as follows:

ID	Element Name	Outage Date & Time	Revival Date & Time	Reason End1	Reason End2	Length_ Capacity
1	132 kV Dimapur (PG) - Kohima Line	15-10-18 9:52	15-10-18 10:01	DP, Z-I, B-E	B-E, 44.53 km	44.5
2	133 kV Dimapur (PG) - Kohima Line	20-10-18 3:56	20-10-18 4:20	DP, Z-I, B-E	N/A	44.5
3	134 kV Dimapur (PG) - Kohima Line	22-10-18 10:15	22-10-18 10:34	DP, Z-I, B-E	DP, Z-I, B-E	44.5
4	135 kV Dimapur (PG) - Kohima Line	22-10-18 11:25	22-10-18 11:40	DP, Z-I, B-E	Earth Fault, B-E	44.5
5	136 kV Dimapur (PG) - Kohima Line	22-10-18 12:26	22-10-18 15:25	DP, Z-I, B-E	DP, Z-I, B-E, FD =37 KM	44.5

Due to tripping of this line, power supply to the capital area of Nagaland is affected as 132 kV Kohima – Wokha line and 132 kV Karong – Kohima lines are normally kept open.

DoP Nagaland is requested to keep 132 kV Kohima – Wokha – Sanis – Doyang link in service for reliable operation of capital area of Nagaland power system.

Deliberation in the meeting:

Director(O&P), NERPC stated that 132kV Dimapur - Kohima shifting works on account of diversion of NH-29 has resulted in volatile grassroot situation. This has resulted in the frequent tripping of the lines due to broken conductor, encroachment etc. The forum hoped that when the said works would be completed the number of trippings for 132kV Dimapur - Kohima would reduce. Till then DoP Nagaland was requested to ensure uninterrupted service of Kohima through 132 kV - Kohima -Wokha - Sanis -– Doyang lines and 132 kV Dimapur- Kohima lines.

The Sub-Committee noted as above.
Action: DoP Nagaland.

D.18 Coal Availability Declaration by BgTPP:

During the on-going coal shortage condition in NTPC BgTPP, it has been observed that BgTPP reduces the DC on day ahead basis or takes out one unit stating the reason as coal shortage. In such a condition it becomes very difficult for NERLDC for managing power availability in NER Region and planning for meeting the demand of the region in a very short period of time. It is therefore requested to BgTPP to do proper planning for efficient utilization of the coal available.

It is also requested to furnish the coal availability on weekly basis to NERLDC atleast5 days in advance for proper planning and utilization of the available coal.

Deliberation in the meeting:

NERLDC informed the forum that the day ahead DC declared during entitlement by BgTPP was 465 MW. However, in R1 they have suddenly reduced their DC to 232 MW which is half of their previous day DC siting coal availability problem.

NTPC representative apprised the forum about the present scenario:-

- Coal storage is possible only for 3 days at the most.
- Sometimes generation is reduced though full DC is given because of non-receipt of coal rakes at the station.

After detailed deliberation it was decided that:-

- NTPC will regularly update NERLDC/NERPC about coal availability.
- DC declared by the Station in the morning 0800 Hrs for the next day would not be revised for the reason of coal non availability.
- While declaring DC, coal available at site only would be considered, not the coal in transit.
- Declaration of DC needs to be done with proper planning so that downward revision of DC would not be required.
- While declaring DC in the remarks column BgTPP, NTPC need to be mentioned the current coal stock and expected availably of coal for next three days.

The Sub-Committee noted as above.

Action: NTPC.

D.19 Wrong Shortfall (MU) Data in Night Data of SLDC Assam and SLDC Tripura

The daily shortfall energy (MU) in the Night Data excel file furnished by SLDC Assam (cell no. AH26) and SLDC Tripura (cell no. Y26) is regularly shown as zero, although shortfall in peak/off-peak hours (MW) is non-zero value.

As the PWC Reporting Software is live at NERLDC, with wrong Shortfall (MU) Data, the NERLDC control room is facing issues in making the various reports sent to various offices including Ministry of Power.

Deliberation in the meeting:

NERLDC informed the forum that the daily shortfall energy (MU) in the Night Data excel file furnished by SLDC Assam and SLDC Tripura is regularly shown as zero, although shortfall in peak/off-peak hours (MW) is non-zero value, which is causing a problem in Reporting software. SLDC Assam and SLDC Tripura agreed to correct the data ASAP.

The Sub-Committee noted as above.

Action: SLDC Assam, SLDC Tripura.

D.20 Multiple tripping of important transmission lines:

Following lines have tripped multiple number of times in Oct-18:

a. 132 kV Dharmanagar (TSECL) –Dullavcherra (AEGCL)

Outage Date	Outage Time	Revival Date	Revival Time	Reason End1	ReasonEnd2
08-Oct-18	08:07:00	08-Oct-18	17:32:00	E/F	E/F
09-Oct-18	07:55:00	10-Oct-18	07:44:00	E/F	O/C B-ph, 19.2 km
10-Oct-18	09:51:00	10-Oct-18	13:15:00	E/F	N/A
14-Oct-18	13:13:00	15-Oct-18	17:41:00	E/F	Z-2, Dir. O/C,B Phase, FD=16 KM
16-Oct-18	10:57:00	16-Oct-18	16:47:00	E/F	E/F
17-Oct-18	10:07:00	18-Oct-18	07:11:00	E/F	E/F
18-Oct-18	09:24:00	30-Oct-18	07:42:00	No Trip	B-ph,Z1,36.3km

b. 220 kV Mariani (PG) – Mokokchung(PG) I

Outage Date	Outage Time	Revival Date	Revival Time	Reason End1	Reason End2
07-Oct-18	06:02:00	07-Oct-18	07:01:00	DT received	Over Voltage Stage-I
08-Oct-18	02:52:00	08-Oct-18	06:14:00	DT received	Over Voltage Stage-I
13-Oct-18	12:43:00	13-Oct-18	13:37:00	DT received	Over Voltage Stage-I
20-Oct-18	03:58:00	20-Oct-18	08:52:00	DT received	Over Voltage Stage-I
21-Oct-18	21:25:00	22-Oct-18	07:05:00	DT received	Over Voltage Stage-I
22-Oct-18	23:30:00	23-Oct-18	06:26:00	DT received	Over Voltage Stage-I

Deliberation in the meeting:

AEGCL has requisitioned shutdown of 132kV Dharmanagar-Durlavcherra from 16-11-18 to 19-11-18 and 24-11-18 & 25-11-18 for the purpose of vegetation clearance. This is expected to reduce the trippings.

TSECL representative informed that TSECL has tested (and found OK) the Tripura section of the line by sectionalizing at Churaibari. The forum decided that the frequent tripping of 132kV Durlavcherra-Dharmanagar be discussed in Sub-group meeting.

GM(AM), NERTS informed that the overvoltage settings of 220kV Mariani-Mokokchung -I (changed to 112%) have been revised w.e.f.12.11.2018.

The Sub-Committee noted as above.

Action: AEGCL/TSECL.

D.21 Sudden change in DC of BgTPP and Kopili on 2nd November'18.

On 02-Nov-18, NERLDC have experienced huge difficulty in managing the over drawl of Assam/Tripura /NER during full day. The reason for the same is related to abrupt change in DC by BgTPP & Kopili.

In case of BgTPP, it has been observed that the day ahead DC declared during entitlement by BgTPP was 465 MW. However, in R1 they have suddenly reduced their DC to 232 MW which is half of their previous day DC. In such a situation it becomes difficult for the beneficiaries to manage their schedule as well as load pattern.

In case of Kopili, it has been observed that they have suddenly changed their DC due to non -revival of shutdown of Kopili Unit-4. As a result, 41 MW of deviation occurred in NER region which could have been controlled if the shutdown were planned properly.

Deliberation in the meeting:

For BgTPP kindly refer to discussion in item **D.18.**

NEEPCO informed that on 02.11.2018 there was no change in DC from NEEPCO side. Further, he clarified that Unit#4 was under shutdown which was returned on 16:00hrs. However at 17:00hrs when it was tried to be synchronized rotor earth fault was detected. Accordingly DC for 03.11.2018 was modified by 23:00hours.

It was decided that the matter would be discussed in next OCC with detailed data.

The Sub-Committee noted as above.

D.22. Procurement of additional 70 Laptops:

NERTS intimated the following in 149th. OCC meeting:

(a) **Laptop:**

Laptop received at all the Locations (as detailed below):-

- Misa (Assam - 30 Nos.),
- Nirjuli (Arunachal Pradesh - 08 Nos),
- Kumarghat (Tripura - 08 Nos),
- Khliehriat (Meghalaya - 06 Nos),
- Aizawl(Mizoram - 04 Nos),
- Dimapur (Nagaland - 06 Nos,
- Imphal (Manipur - 08 Nos.)

(b) **Paper License:**

- Under Tendering:
- Completion in all respect by December 2018

Deliberation in the meeting

NERTS informed the present status: The tender documents for the above is under preparation.

Expected Tendering: 20-11-2018.

OBD: 20-12-2018

LOA/NOA: 31.12.2018

Expected Completion: 31.01.2019

Forum re-iterated the need of Laptops at the earliest and requested NERTS to stick to the timeline.

The Sub-Committee noted as above.

Action: NERTS.

D.23. Installation of new L&T SEMs in NER:

NERTS informed the following in 149th. OCC meeting:

- **Khandong:** Completed
- **Mizoram:** Installation after replacement of existing C&R Panels by Mizoram as discussed in last OCCM.
- **Loktak:** Status to be updated by NHPC Loktak.
- **NTPC-BgTPP:** As per the communication of NERTS on 24.09.18, six nos. of SEM is under diversion for replacement by October 2018.

Deliberation in the meeting:

NERTS informed the present status: Khangdong: Completed. Issue may be dropped

Mizoram : Status same as above/No Change

Loktak : NHPC informed that for 132kV Loktak-Imphal-2 , 132kV Loktak - Jiribam and 132kV Loktak-Rengpang at least 1-2 hrs shutdown is required to replace the SEMs. The forum advised NHPC to submit requisition separately.

NTPC-BgTPP :- Installation completed.

The Sub-Committee noted as above.

Action: NHPC, P&ED Mizoram, NTPC

D.24. Procurement of DCD:

NERTS informed the following in 149th. OCC:

Schedule for procurement:

- **Placement of Award: 25.11.2018**
- **Tentative Delivery : 31.12.2018**

NERLDC has already provided state-wise (location specific) distribution as below:

SN	State	Storage Location	Qnty.	Stations to be covered
1	Assam	Misa (PG) SS	5	BNC (PG), SONABIL (S), SILCHAR (PG), GOHPUR (S), NTPC-BgTPP (U)
2	Assam	Misa (PG) SS	9	To be kept as Spares
3	Meghalaya	AM (PG), Shilling	1	Byrnihat (S)

4	Manipur	Imphal (PG) SS	2	Imphal (PG) & Thoubal (S) SS
5	Mizoram	Aizawl (PG) SS	1	Aizawl (PG)
6	Tripura	Kumarghat (PG) SS	2	AGTPP-NEEPCO & Agartala T/L Office
7	Nagaland	Dimapur (PG) SS	2	Kohima S/S & Mokokchang S/S
8	Arunachal	Nirjuli (PG) SS	3	KAMENG-NEEPCO, PARE-NEEPCO & CHIMPU S/S

Deliberation in the meeting:

NERTS informed the present status:

- **Placement of Award: 25.11.2018**
- **Tentative Delivery : 31.12.2018**

The Sub-Committee noted as above.

Action: NERTS

D.25. Time drift in SEMs.

NTPC reported vide e-mail dated 30/08/18 that time drift correction at BgTPP end could not be done due to DCD issue. Since all 3 main meters have drifted by more than 5 minutes new L&T make meters may be installed.

It was intimated by NERTS in 148th. OCC meeting that Communication in regard to replacement of SEM received from NERLDC on 06.09.2018/12.09.2018 through mail. Same has been taken up. Replacement planned by 25-09-2018(SEM meter to be diverted from Misa to Bongaigaon S/S).

Deliberation in the meeting:

Replacement/Installation at NTPC completed.

The Sub-Committee noted as above.

Action: NERTS

D.26 Replacement of SEMs.

NERTS informed the status in 149th OCC as follows:

SN	*LOCATION*	*FEEDER NAME*	*STATUS*
1	BNC	BNC END OF PAVOI-I	Meters already made available at site. Replacement by 15.10.18
2	BNC	BNC END OF PAVOI-II	
3	BNC	PAVOI END OF BNC-I	
4	BNC	33 KV BNC-1	
5	BNC	33 KV BNC-2	

6	PK BARI	PK'BARI end of 132 kV Silchar I	Replacement by October'18
7	PK BARI	PK'BARI end of 132 kV Silchar II	
8	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-I (M)	Already discussed in Item No. D.32
9	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-II (M)	
10	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-I (C)	
11	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-II (C)	
12	GOHPUR	GOHPUR END OF 132 NIRJULI FEEDER	Meter under diversion. Replacement by 31.10.18

Deliberation in the meeting:

Present Stratus

SN	***LOCATION***	***FEEDER NAME***	***STATUS***
1	BNC	BNC END OF PAVOI-I	Meters already made available at site. Replacement was planned. However, site has repaired the Elster DCD and Elster meters which have no time drift are still in service. Since SEM are healthy and DCD for Elster meter is repaired, forum may review replacement requirement.
2	BNC	BNC END OF PAVOI-II	
3	BNC	PAVOI END OF BNC-I	
4	BNC	33 KV BNC-1	
5	BNC	33 KV BNC-2	
6	PK BARI	PK'BARI end of 132 kV Silchar I	
7	PK BARI	PK'BARI end of 132 kV Silchar II	Completed
8	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-I (M)	
9	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-II (M)	Completed
10	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-I (C)	
11	NTPC	NTPC END OF 400 KV NTPC(B'GAON)-B'GAON(PG)-II (C)	
12	GOHPUR	GOHPUR END OF 132 NIRJULI FEEDER	Completed.

Regarding sl no 1 to 5, it was decided that the ELSTER meters would be replaced by L&T meters.

The Sub-Committee noted as above.

Action: NERTS

D.27 Utilization of Laptop for Metering

TSECL intimated that the problem of Laptop has been resolved and they would start sending data using Laptop.

Deliberation in the meeting:

It was decided to drop the item.

The Sub-Committee noted as above.

D.28 Non-receipt of SEM data:

SL.NO	LOCATION	FEEDER NAME
	ASSAM	
1	TINSHUKIA	TINSUKIA END OF 220KV KTG FDR-I
2	TINSHUKIA	TINSUKIA END OF 220KV KTG FDR-II
4	SONABIL	SONABIL END OF 220 KV BALIPARA-1 FDR
5	SONABIL	SONABIL END OF 132KV BALIPARA FDR
6	KAHILIPARA	KAHELIPARA END OF UMTRU-1 FDR
7	KAHILIPARA	KAHELIPARA END OF UMTRU-2 FDR
8	BTPS (AS)	220 BTPS(ASSAM) - NTPC LINE
9	UMRANGSOO	UMRANGSOO END OF 132 KV KHANDONG
10	UMRANGSOO	UMRANGSOO END OF 132 KV HAFONG
	ARUNACHAL PRADESH	
11	DEOMALI	DEOMALI END OF 220KV KATHALGURI FDR
	TRIPURA	
12	UDAIPUR	UDAIPUR END OF PALATANA
	NAGALAND	
13	KOHIMA	KOHIMA END DIMAPUR (PG)
14	KOHIMA	KOHIMA END OF KARONG
15	SANIS	SANIS END OF DOYANG
16	MOKUKCHANG	MOKUKCHANG END OF DOYANG
	MANIPUR	
17	RENGPANG	RENGPANG END OF LOKTAK

WEEKLY SEM data from above locations not sent to NERLDC.

Status as informed by various utilities in 149th. OCC meeting:

SL.NO	LOCATION	FEEDER NAME	Status
	ASSAM		
1	TINSUKIA	TINSUKIA END OF 220KV KTG FDR-I	Tinsukia visited on 09.10.18, DCD display problem
2	TINSUKIA	TINSUKIA END OF 220KV KTG FDR-II	
4	SONABIL	SONABIL END OF 220 KV BALIPARA-1 FDR	DCD defective
5	SONABIL	SONABIL END OF 132KV BALIPARA FDR	
6	KAHILIPARA	KAHELIPARA END OF UMTRU-1 FDR	No display in DCD. Already intimate to
7	KAHILIPARA	KAHELIPARA END OF UMTRU-2 FDR	

			NERLDC.
8	BTPS (AS)	220 BTPS(ASSAM) - NTPC LINE	Old CMRI defective
9	UMRANGSOO	UMRANGSOO END OF 132 KV KHANDONG	CMRI not available. Also NERTS does not collect data from Umrangso
10	UMRANGSOO	UMRANGSOO END OF 132 KV HAFONG	
	ARUNACHAL PRADESH		
11	DEOMALI	DEOMALI END OF 220KV KATHALGURI FDR	DCD not available
	TRIPURA		
12	UDAIPUR	UDAIPUR END OF PALATANA	Software issue. After laptop is received.
	NAGALAND		
13	KOHIMA	KOHIMA END DIMAPUR (PG)	No representative
14	KOHIMA	KOHIMA END OF KARONG	
15	SANIS	SANIS END OF DOYANG	
16	MOKUKCHANG	MOKUKCHANG END OF DOYANG	
	MANIPUR		
17	RENGPANG	RENGPANG END OF LOKTAK	ICT put in service one week back. Start to SEND data after receipt of laptop

Deliberation in the meeting:

It was noted that wherever DCD was not available, same would be provided after procurement of DCD or Laptop.

Regarding Rengpang, MSPCL representative requested for installation of one SEM which was agreed. NERTS would do the needful.

The Sub-Committee noted as above.

D.29 Errors in WBES Scheduling software:

SLDC Meghalaya has encountered some errors in WBES Scheduling software. The details are attached at **Annexure-D.29.**

Deliberation in the meeting:

EE,SLDC, MeECL informed that for 25.10.2018 Rev.(0) has full requisition of Meghalaya from AGBPP while Rev.(1)/(2) has full surrender. This anomaly is further supplemented by the fact that nobody uploaded but requisition done in case of Meghalaya for AGBPP. After detailed deliberation it was agreed that there might be

issues in initial teething period, respective utilities may directly take up with NERLDC for fast resolution of the issues without waiting for OCC.

Also a feedback workshop would be organised by NERLDC

The Sub-Committee noted as above.

Action: NERLDC.

D.30 Utilization Certificate for Deposit Work of Construction of 33kV Transmission Line and Associated Bay from 220kV Mariani S/S(ASEB) to 220kV New Mariani S/S of POWERGRID

An amount of Rs.100,34,749.00 was deposited to ASEB (vide DD N.o. 059528 Dated 04.08.2015 of Rs.7,81,032.00 + DD No. 914008 Dated 06.01.2014 for Rs.92,53,717.00 both Axis Bank) for the deposit work. As on date POWERGRID have received provisional utilization of Rs.59, 34,884.00 as detailed below:--

i) Rs. 45, 47,620.00 from DGM, APDCL.

ii) Rs.13,87,264.00 from AGM, 22kV Gid S/S AEGCL.

Balance utilization to be Received: Rs.40,99,865.00

The above work has been completed long back, but final utilization certificate has not been issued till date inspite of repeated requests by POWERGRID. ASEB to resolve the issue at the earliest for issue of final utilization certificate.

Deliberation in the meeting:

APDCL was requested to issue the utilization certificate at the earliest.

The Sub-Committee noted as above.

Action: APDCL.

D.31 Transit damage of CGL Make , 160 MVA SN: T11073/1 consigned to Balipara S/S for replacement of 2nd 50 MVA , 220/132kV Transformer at Balipara S/S.

Under NERSS III Package replacement of existing 2x50 MVA, 220/132kV ICTs at Balipara S/S in NER was awarded to M/s GE T&D India Limited. Out of the two Transformers, one Transformer is already replaced and in service. The 2nd 220/132kV Transformer (CGL Make, 160 MVA SN: T11073/1) against Balipara S/S under NERSS-III was dispatched from CGL, Mumbai for replacing the old 2nd 50 MVA Transformer. The existing old 2nd 50 MVA Transformer was taken out and dismantled on 04.08.2018 for necessary modification of the foundation pad for commissioning of the New 160MVA, CGL Make Transformer which was planned in October/Novemver-2018.

However, during Transit, the CGL make new Transformer met with an accident which lead to the damage of the Transformer. Accordingly, after physical /external inspection of the Transformer at accident site, the contractor has been advised to take back the Transformer to their works for joint internal inspection in association with POWERGRID and thereafter submit rework procedure for rectification required in the said Transformer unit to POWERGRID for necessary approval. Due to this , there will be inordinate delay in commissioning of the 2nd 220/132kV 160 MVA Transformer/Outage of 50 MVA 220/132kV Transformer at Balipara S/S. As the cause is beyond the control of POWERGRID, the outage period may be considered/declared deemed available.

Deliberation in the meeting:

GM(AM), NERTS informed the latest status regarding delay in commissioning of 220/132kV 160MVA ICT-II at Balipara. He further stated that since the 50MVA ICT has been taken out of service, appropriate planning may please be done to handle any contingency. Also he informed that no deemed availability is required by NERTS.

The Sub-Committee noted as above.

Action: NERTS.

D.32 Generation Planning of Loktak HEP and deemed availability:

In continuation to the Special meeting on dismantling of towers of 132KV Dimapur-Imphal line held at Imphal on dtd. 25.10.2018 it is understood that the cooperation of Loktak Power Station is required for maintaining Voltage/Load Profile of Manipur. We are happy to cooperate, however in case of any effect on the Plant Availability Factor due to above activity, forum is requested to consider such a reduction as deemed availability till the onset of Monsoon.

Deliberation in the meeting:

Pls refer to discussion in item **D.1.** Manager, NHPC opined that higher generation on request may render Loktak out of water before monsoon. In such a scenario, availability of plant will reduce. So deemed availability may please be considered. Director, NERPC concluded that at present such decisions are not welcoming and in case such a rarest of rare situation arises then the same may be discussed.

The Sub-Committee noted as above.

D.33 Workshop in November 2018 in connection with development of accurate dynamic simulation model for Indian grid:

World Bank is providing technical assistance to POSOCO for development of a dynamics model for Indian power system and has engaged M/s DIgSILENT Pacific to provide advice on development of suitable dynamic models. A preliminary visit in October 2018 to NTPC-Dadri and POWERGRID-Dadri stations to extract necessary data from manufacturer data sheets of equipments at Dadri-Thermal, Dadri-Gas, Dadri-Solar, and Dadri-HVDC has been conducted. The experience was very helpful and needs to be replicated across the country for developing accurate models for power system studies.

Considering the complexity of India's power system and likely integration of high quantum of RE generation to the grid, efforts of all stakeholders of power system operation, planning and regulations are necessary. During the second visit of DIgSILENT Pacific officials in November 2018, interactions are planned among system operators {NLDC / RLDCs / SLDCs}, State Transmission utilities (STUs), transmission licensees and generating companies, on 20th November 2018. The interactions are designed to focus on the necessity for validated dynamics models, specific challenges for this task, responsibilities for different utilities and the need for regulatory intervention.

Utilities are requested to participate in the interactions along with concerned officials of your organisation involved in dynamic simulations during 10:00 Hrs to 16:00 Hrs on 20th November 2018 at NRPC Conference Hall, 1st Floor, 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi - 110016. SLDCs may kindly ensure participation by STUs and state GENCOs for effective interaction.

Deliberation in the meeting:

NERLDC informed the forum that during the second visit of DIgSILENT Pacific officials in November 2018, interactions are planned among system operators {NLDC / RLDCs / SLDCs}, State Transmission utilities (STUs), transmission licensees and generating companies, on 20th November 2018. NERLDC requested all constituents to attend the workshop physically. MePTCL requested NERLDC to explore the chances of joining the workshop through VC.

The Sub-Committee noted as above.

D.34 Guidelines and Best Practices for Ease of obtaining electricity connection by consumers

NERPC may please give a presentation on the subject.

Deliberation in the meeting:

Director, NERPC gave a presentation prepared by CEA(*attached at* **Annexure-D.34**). He requested members from various DISCOMS to furnish their comments at the earliest.

The Sub-Committee noted as above.

Action: All DISCOMs.

D.35 Designing and standardizing Toolkit for Discom Staff.

NERPC may please give a presentation on the subject.

Deliberation in the meeting:

Director, NERPC gave a presentation prepared by CEA(*attached at* **Annexure-D.35**). He requested members from various DISCOMS to furnish their comments at the earliest.

The Sub-Committee noted as above.

Action: All DISCOMs.

ADDITIONAL AGENDA ITEMS

AGENDA ITEMS FROM DoP AR.PRADESH:

D.36 Endangering of human life due to maintenance malpractices.

SE, SLDC, Ar. Pradesh informed that during shutdown of 132kV Pare-Chimpu-I T/L on 23.10.18 the earth switch was not operated properly at Pare end. Since the works were at the crossing of River Bikram the team was faced immense difficulty and their lives were endangered. The forum after detailed deliberation requested NEEPCO to desist from such actions in the future and also advised all utilties to follow the laid down basic maintenance procedures.

The Sub-Committee noted as above.

Action: All utilities.

D.37 Non-return of shutdown within the stipulated time frame.

On 09.11.2018 daytime shutdown of 132kV Ziro-Daporizo was taken by NERTS. However, the shutdown was returned at 18:46Hrs. This unexplained and inordinate delay resulted in major area of Arunachal Pradesh being in the dark, since this line is radial going upto Namsai. The forum requested all utilities to strictly maintain the shutdown timelines so as not to cause inconvenience to other utilities and states. For the winter season shutdown is to be strictly returned by 15:00hrs without fail.

The Sub-Committee noted as above.

Action: All utilities.

AGENDA ITEMS FROM NERTS:

D.38 Intimation of R&U works by state utilities.

GM(AM), NERTS reiterated that recently for R&U works at 132kV Srikona sub-station, the Line Differential Relay at Srikona for 132kV Silchar-Srikona was dismantled without prior intimation to NERTS. Presently LDP is not in service for the said line. After detailed deliberation, it was decided that for erection/commissioning works in the premises of any utility if the bay or bay equipments or equipments of any other utility/third party is to be dismantled/modified/upgraded/removed or any other works, the third party is to be informed and integration may be done after mutual discussion. Director (O&P), NERPC requested all the utilities executing various works especially R&U works to keep updated affected utilities viz. NERTS etc. about the various status of works. Further it was decided that all state utilities would provide schedule of works to nearest NERTS station head with copy to GM(AM), NERTS for necessary sanction.

The Sub-Committee noted as above.

Action: All state utilities.

Date & Venue of next OCC meeting

It is proposed to hold the 151st OCC meeting of NERPC on second week of December, 2018. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

*****

Annexure-I

List of Participants in the 150th OCC Meeting held on 14th November, 2018

SN	Name & Designation	Organization	Contact No.
1.	Sh. N.Perme, SE (SO&PSC)	Ar. Pradesh	09436288643
2.	Sh. K. Gogoi, DGM,SLDC	Assam	09435301799
3.	Sh. Dipesh Ch. Das, AGM (LDC)	Assam	09954110254
4.	Sh. Bimal Ch. Borah, AGM, SLDC	Assam	09475119248
5.	Sh. Pintu Dekargin, AGM (Comm)	Assam	09401516094
6.	Sh. Ashutosh Bhattacharjee, AGM (P&E)	Assam	09435332928
7.	Sh. G.K.Bhuyan, DGM (P&E)	Assam	09854015601
8.	Sh. K.Goswami, Consultant (Comm)	Assam	09864020019
9.	Smti. Khoisnam Steela, DGM (Comm.)	Manipur	08730831103
10.	Smti. Laishram Ritu, DGM (SO),	Manipur	09612882984
11.	Sh. T. Gidon, EE, SLDC	Meghalaya	09774479956
12.	Sh. Y. Iakai, AE, MePTCL	Meghalaya	09402133552
13.	Sh. Kitbok Kynjing,AE	Meghalaya	09485170070
14.	Sh. Lalbiaksanga, SE, SLDC	Mizoram	09436140932
	No Representative	**Nagaland**	**-**
15.	Sh. Debabrata Paul, Sr. Manager	Tripura	09436500244
16.	Sh. Mrinal Paul, Manager, SOD	Tripura	09436137022
17.	Sh. Anil Debbarma, DGM, SOD, SLDC	Tripura	09612589150
18.	Sh. Joypal Roy, Sr. Manager (E/M)	NEEPCO	09435577726
19.	Sh. Pankaj D. Chowdhury, Sr. Mgr (E/M)	NEEPCO	09862585337
20.	Sh. T. Taji, Sr. Manager (KHEP)	NEEPCO	09436042053
21.	Sh. Ashim Kumar Sarmah, Dy. Mgr	NEEPCO	09435078860
22.	Sh. B.Sutradhar, DGM	NERLDC	09436302714
23.	Sh. S.C. De, AGM	NERLDC	09436325369
24.	Smti. Momai Dey, Sr. Engineer	NERLDC	09436302716
25.	Sh. Keshab Borah, Asst. Engineer	NERLDC	07399276312
26.	Sh. P. Kanungo, DGM	PGCIL	09436302823
27.	Sh. U. Kataki, AGM	PGCIL	09435505418
28.	Sh. J.P.Jayaprakash, Sr. DGM (NERPSIP)	PGCIL	09435476615
29.	Sh. Somiran Das, DGM (Engg), NERPSIP	PGCIL	09436335240
30.	Sh. N.Yugandhar, M(E&C), LOKTAK PS	NHPC	09800003819

31.	Sh. Ratan Singh Basnet, AM	NETC	08811072489
	No Representative	**OTPC**	**-**
32.	Sh. Kangkan Paul, Dy. Manager	NTPC	09435029230
33.	Smt. D. Basu, Head ER	PRDC	09903010743
34.	Sh. Debabrata Paul, Sr. Engineer	PRDC	09903957283
35.	Sh. P.K. Mishra, Member secretary	NERPC	09968380242
36.	Sh. B. Lyngkhoi, Director (O&P)	NERPC	09436163419
37.	Sh. S. Mukherjee, AD	NERPC	08794277306

Generation Projection (Jan 2019 - Mar 2019)

				Generation declared Commercial from 1st Apr'18 to 30th Sep'18					Generation declared/expected to be declared Commercial from 1st Oct'18 to 31st Dec'18								
Sl. No.	Entities	Region	Projections based on 3 Years Data	Bus Name	Unit No.	Installed Capacity	Gen. considered	Sub Total	Bus Name	Unit No.	Installed Capacity	Gen. considered	Sub Total	TOTAL	Comments From DICs /Others (if any)	Figure as per Comments/ PoC Data	Projected Generation before normalization w.r.t projected All India Peak Demand
			(MW)			(MW)	(MW)	(MW)			(MW)	(MW)	(MW)	(MW)			(MW)
1	AGTPP, NEEPCO	NER	87											87	AS per NEEPCO	94	94
2	Doyang, NEEPCO	NER	44											44		51	51
3	Kopili, NEEPCO	NER	172											172		182	182
4	Kopili 2, NEEPCO	NER	25											25		20	20
5	Khandong, NEEPCO	NER	35											35		38	38
6	Ranganadi, NEEPCO	NER	405											405		401	401
7	AGBPP_Kathalguri	NER	231											231		220	220
8	Loktak, NHPC	NER	105											105			105
9	Palatana GBPP	NER	578											578	As per OTPC	680	680
10	Bongaigaon_NTPC	NER	468											468			468
11	Pare HEP NEEPCO	NER		Pare HEP	1	55	38	76						76	AS per NEEPCO	110	110
				Pare HEP	2	55	38										
12	Tuirial HEP NEEPCO			Tuirial HEP	1	60	42	42						42		54	54
13	Arunachal Pradesh	NER	0											0			0
14	Assam	NER	349											349	As per data given by Assam	211	211
15	Manipur	NER	0											0			0
16	Meghalaya	NER	206											206	As per data given by Meghalaya	261	261
17	Nagaland	NER	15											15			15
18	Tripura	NER	56											56			56
19	Mizoram	NER	11											11	As per data given by Mizoram	8	8
	TOTAL		2786					118					0	2904			2974

Note:

1. Projections are based on monthly maximum injection in the last 3 years from actual metered data.
2. Generation forecast has been done based on the following criteria
(i) If there is an increasing trend then last year average generation has been considered
(ii) Otherwise average of past three year average generation has been considered
3. In case of new generators where past data was not available following has been assumed
(i) 0.7 plf for hydro generators
(ii) 0.7 plf for thermal generators.
(iii) 0.3 plf for gas stations

DEMAND FORECAST USING PAST 3 YEARS DATA (Jan 2019 - Mar 2019)

										1	2	3	4		
	2015-16			2016-17			2017-18								
	Jan-16	Feb-16	Mar-16	Jan-17	Feb-17	Mar-17	Jan-18	Feb-18	Mar-18	2015-16 Average	2016-17Average	2017-18 Average	Projected Demand for (Jan 2019 - Mar 2019) before normalization	Data given by DICs	Comments
Arunachal Pradesh	117	135	113	120	135	138	134	128	124	122	131	129	134		
Assam	1,330	1,327	1,316	1,464	1,396	1,391	1,510	1,481	1,446	1,324	1,417	1,479	1,561	1625	As per data given by Assam
Manipur	166	158	155	163	162	158	195	191	178	160	161	188	198	221	As per data given by Manipur
Meghalaya	377	322	315	331	300	298	331	311	307	338	310	316	300	370	As per data given by Meghalaya
Mizoram	101	99	84	98	93	94	96	94	91	95	95	94	93	94	As per data given by Mizoram
Nagaland	122	118	114	121	147	122	124	122	120	118	130	122	127		
Tripura	219	227	248	223	223	228	262	273	256	231	225	264	272		

Notes

1. Projections are based on the past 3 years' monthly Peak Demand Met data available on the website of CEA
2. The above projections are being done for financial year 2018-2019 (Q4) i.e Jan 2019- Mar 2019
3. Projections are being done based on the forecast function available in MS Office Excel
4. CEA Reports can be accessed from the following links:

http://www.cea.nic.in/reports/monthly/powersupply/2018/psp_peak-01.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2018/psp_peak-02.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2018/psp_peak-03.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2017/psp_peak-01.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2017/psp_peak-02.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2017/psp_peak-03.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-01.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-02.pdf
http://www.cea.nic.in/reports/monthly/powersupply/2016/psp_peak-03.pdf

Guidelines & Best Practices for Ease of obtaining Electricity Connection by Consumers

By-
Vandana Singhal
Chief Engineer(DP&R), CEA
e-mail: cedpr-cea@gov.in

Introduction

- World Bank ranks 190 economies on various parameters.
- "Getting Electricity" - one of these parameters.
- During the past two years, India has made several reform initiatives because of which India's ranking has improved from 99 in the report 2015 to 26 in the report 2017.
- For "Getting Electricity", World Bank measures the performance on 4 parameters:
  - Number of procedures
  - Time for obtaining electricity connection
  - Cost for obtaining electricity connection upto 140kVA
  - Reliability of power supply.
- On the basis of consultation with various Discoms, draft Guidelines have been developed.

Step no 1: Submission of application to utility and conduct site inspection

Application Form

- Licensee shall make appropriate arrangements for filling and accepting the application by the applicant
- Both the options of hard copy as well as online submission through Mobile App/website to be made available by Licensee.
- Applications for new connection for 50 kVA and above, unless any other lower value as may be notified by the Commission from time to time, shall be submitted through online system only.

Documents required for submission with application form

- Identity proof
- Proof of address/ownership or legal occupancy over the premises for which new connection is being sought

- **Processing Application Form**

- In case of submission through Hard Copy, Licensee shall verify the application on the spot and if found in order, acknowledge through dated receipt.
- In case of online submission, a system generated acknowledgement to be issued forthwith.
- In case of any deficiency in the application, the same shall be intimated to the applicant within 2 days of the receipt of the application.
- In case the Licensee fails to intimate the applicant about any deficiencies in his application on the spot or within the stipulated 2 days, the application shall be deemed to have been accepted by the Licensee on the date of receipt of the application.

- **Field Inspection**
  - The date of inspection must be scheduled within two days from the date of receipt of application form.
  - If the applicant wishes to have a different date and time for field inspection, which is beyond the stipulated date & time, the excess time taken by the applicant shall not be considered for computation of total time taken for release of connection.
  - During the inspection, the licensee shall:
    - Fix the point of supply and the place where the meter and MCB etc. shall be installed, in consultation with the consumer
    - Record full address of the premises, if not provided in the application form, note down landmarks near the property and the pole number from where service connection is proposed to be given
    - Verify all other particulars mentioned in the application form

Field Inspection contd…

- On inspection, if the licensee finds any defect, licensee shall intimate the defects to the applicant on the spot under proper receipt in the prescribed format.
- The applicant shall get all defects removed within 30 days from receipt of intimation and inform the licensee. In case the applicant fails to remove such defects or fails to inform the licensee about removal of defects, the application form shall stand lapsed and the applicant will have to apply afresh.
- The date of re-inspection must be scheduled within 2 working days.
- If on re-inspection the defects pointed out earlier are found to persist, the application form shall stand lapsed and the applicant shall be intimated.
- If on inspection there are no defects found, or on re-inspection the defects noticed earlier are found to have been removed, the licensee shall issue a demand note, as per the load and type of connection within 2 days.

Step no 2: Load sanction, Demand Note generation and Payment

- Demand note shall contain following :
  - Details of sanctioned load
  - Details of works (including service line) to be undertaken for providing electricity supply
  - Charges for above mentioned works to be paid by the applicant as specified by the licensee and approved by the Commission from time to time
  - Amount of security deposit specified by the licensee and approved by the Commission from time to time.
- The applicant shall make the payment within 1 day of receipt of demand note.
- The applicant may request the Licensee for an extension of time for a maximum period of 15 days failing which the application form shall stand lapsed and the applicant shall be informed accordingly.
- Time taken by the consumer shall not be included in the overall timeline for releasing new electricity connection.

Total time taken for release of connection

S.No	Processes	Description	Time period
(1)	Submission of application to utility and conduct site inspection	Acceptance of Application	Zero date
		Field Inspection	Within 2 days of Acceptance of application
(2)	Load sanction, demand note generation and payment	Load Sanction and demand note	Within 2 days of Field Inspection
		Payment of demand note	Within 1 day of raising demand note
(3)	Utility extends connection and installs meter	Release of connection, where no RoW or road cutting permission is required	Within 2 days of receipt of payment
		Release of connection, where RoW or road cutting permission is required	Within 5 days of receipt of payment
		Total time for release of connection where no RoW or road cutting permission is required	Within 7 days of acceptance of application
		Total time for release of connection where RoW or road cutting permission is required	Within 10 days of acceptance of application

Connection where system augmentation is required in electrified areas:-

(i)	Where extension of line upto five poles is required	Within 15 days from the date of receipt of full payment against demand note.
(ii)	Where extension of lines or augmentation of DT capacityt, where peak load of transformer has reached 90% of its rated capacity	Within 2 months from the date of receipt of full payment against demand note.
(iii)	Where new Distribution Transformer is required	Within 4 months from the date of receipt of payment against demand note
(iv)	Where existing 11 KV network needs to be augmented	Within 6 months from the date of receipt of payment against demand note

- Where extension of supply requires erection and commissioning of new substation, the licensee shall submit to the Commission within 15 days of site inspection, a proposal for erection of such substation along with the time required for erection and commissioning of the same, and get the Commission's approval. The licensee shall commence electricity supply to the applicant within the time period approved by the Commission.


Thank you…

Distribution Policy & Regulations Division

Designing and Standardizing Toolkit for Discom Staff

By:-
Vandana Singhal
Chief Engineer(DP&R), CEA

INTRODUCTION

- As per the requirement of Ministry of Power, DP&R Division of CEA is preparing a document on "Designing and standardizing Standard Toolkit for Discom Staff.
- Purpose is to standardize the list of tools that form part of the **Toolkit** as well as the list of items that form part of **Personal Protective Equipment** (PPE) used by Discom staff.
- Toolkit - used by Discom staff when they go for attending to faults on a daily basis and for operation and maintenance of various equipment used in substation and electric lines.
- As per the discussions held in the meetings held at CEA and feedback received from Power Sector Skill Council, a draft document has been prepared.

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Standard Toolkit

Standard tool kit shall include following items along with proper box for each tool set:

S.No.	Description of Tools	Applicable Standard	Units	Qty
1.	Mechanical Crimping tool (2.5 Sq mm to 25 Sq mm)		Nos	01
2.	Insulation Tester	IS 11994	Nos	01
3.	Discharge Rod for 11 kV		Nos	01
4.	Neon Tester	IEC 60855	Nos	01
5.	FRP ladder (Fiber Reinforced Plastic)	IS 3696	Nos	01
6.	Torch (3 and 5 cell type)		Nos	01

3

Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
8.	Line Tester for LT		Nos	01
9.	Insulated Screw Driver (6" & 18") both way	IS 844	Set	01
10.	Insulated cutter/cutting plier		Nos	01
11.	Insulated Nose Pliers (6")		Nos	01
12.	Hammer 8 lbs.		Nos	01
13.	Hacksaw with Blades		Nos	01
14.	Chisel 8"		Nos	01
15.	Knife		Nos	01
16.	C headed Spanner		Set	01

4

Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
17.	Ring Spanner		Set	01
18.	Adjustable Wrench 12" & 18"		Nos	01
19.	Fuse Wire			
20.	LT Tapes		Nos	01
21.	Rubber Mat/Sheet		Set	01
22.	Brass Chain		Set	01
23.	5 way sorting clip		Set	02
24.	Insulated Tool tray		Set	01
25.	D. E. Spanner		Set	01
26.	On Line Tester HT		Nos	01

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Standard Toolkit

S.No.	Description of Tools	Applicable Standard	Units	Qty
27.	Tool Bag		Nos	01
28.	Allen Key Set (Complete)		Nos	01
29.	Box Spanner		Set	01
30.	Torque Wrench		Nos	01
31.	Rope for Pole Supporting-1 No. with B/D VAN		Nos	01
32.	Half Round File 12"		Nos	01
33.	Flat File 12"		Nos	01
34.	Manual Crimping Tool 1 No. (50 sq. mm to 300 sq mm.)		Nos	01
35.	Hand Held Hydraulic Crimping Tool (25 sq mm to 95 sq mm.)		Nos	01

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Personal Protective Equipment (PPE)

S.No.	Description of Tools	Applicable Standard	Units	Qty
1.	Safety Helmet	IS 4151-1993	Nos	01
2.	Safety Shoes	IS 4128-1980	Set	01
3.	Hand Gloves	IS 4770-1991	Set	01
4.	Safety Belt/Full Body Harmer (Nylon Rope 12mm-dia)	IS 3521-1989	Nos	01
5.	Safety Goggles		Nos	01
6.	Fluorescent Jacket	IS 15809-2008	Nos	01
7.	Caution/Danger Plate/ Men at work Board /Barricading Tape		Nos	01
8.	Headband Torch		Nos	01
9.	Gum Boots	IS 3738-1975	Set	01
10.	Nose Mask	IS 9473-2002	Set	01
11.	First Aid Box		Set	01
12.	Ear Plugs	EN 352-2:2002		
13.	Rain Coat	IS 7016-III/10075	Set	01
14.	PVC Cone			

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GENERAL CONSTRUCTION & TECHNICAL REQUIREMENTS:

- The plier & stripper shall be free from pits, cracks, scale, seams, fins & other defects.
- The plier & stripper shall be made from high grade carbon or alloy steel, solid-forged to shape.
- The insulating material shall be PVC or higher grade insulating material.
- The insulation shall cover the whole of the handle including the outer ends.

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GENERAL CONSTRUCTION & TECHNICAL REQUIREMENTS:

- The jaws & cutting edges shall be differentially heat treated/ oil-hardened and tempered. Plier & stripper shall have fully polished head and shall be given anti corrosive treatment to avoid corrosion.
- Insulating material shall adhere firmly to the handles & shall be such that it does not easily splinter or get damaged. The handle shall be shaped & finished to afford a comfortable grip.
- Handle insulation shall have a guard to prevent slipping of hand towards conductive head. Insulation shall withstand a voltage of 2800 V (rms) ac or 4000 V dc for two mins, without breaking down of insulation

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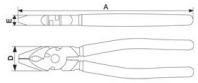
Combination Pliers :

- Conforming to IS 6149-1984 Grade II.
- The Pliers should made from high grade Steel, forged and differentially heat treated to give best performance.
- Fully insulated with quality plastic material sleeves ensures safe electrical working.

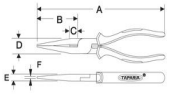
PROD .NO	A	B	C	D	L	WT. GMS
	210	39	16	27.5	12.0	325



Long Nose Plier:

- Conforming to IS 3552-1989.
- Features accurately machined and heat treated jaws. Holds very thin wires and cuts fine wires with ease.

PROD. NO	A	B	C	D	E	F	WT.G MS.
Long Nose 1430-6	170	50	12.0	16	9	2.0	135

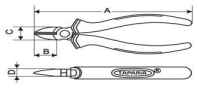


10

Side Cutting Pliers :

- Conforming to IS 4378-1990.
- Cutting edges should be sharp and precision machined to appropriate angle to cut thick and thin wires neatly with ease.

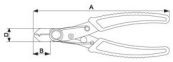
PROD. NO	A	B	C	D	WT.GMS
Stripper 1122-6	165	21	18.5	10.5	165



Wire Stripping Plier:

- Conforming to IS 5087-1969 Size, 6"

PROD. NO.	A	B	D	E	WT.GMS
WS 06(Econ)	154	18	15	4	62



11

Hammer with Handle:

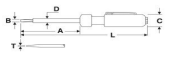
- Conforming to IS 841-1983.
- Drop forged from high grade carbon steel. Phosphated and painted to provide anti rusting properties..

PROD. NO	A	B	C	D	WT. GMS
WH 800 B/C	375	120	32	40	1050

Line Testers:

- Conforming to IS 5579-1985 .
- Line Tester should have high quality blade and cellulose acetate plastic Handle.
- Fully insulated blade ensures shock proof working. Distinct glow of Neon lamp identifies line 'live

PROD. NO.	HANDLE	A	TIP SIZE B x T	C	D	L	WT.GMS
815	Green	100	3.5 x 0.5	18	6	180	35



12

Screw Driver Sets with Neon Bulbs-

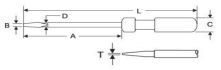
- Conforming to IS 844-1979

PROD. NO.	CONTENTS	NO OF BLADES
831	3.5 x 0.5, 4.3 x 0.6, 6 x 0.8, Poker Round, Poker Sq., Wooden Screw Type	8

Insulated Screw Drivers:

- Conforming to IS 844-1979

PROD .NO	TIP SIZE B xT	A	C	D	L	WT.GM S
832 I	3.5 x 0.5	200	17	3.5	275	40
934 I	5.0 x 0.6	100	22	5.0	186	50
826 I	6.0 x 0.8	250	22	6.0	336	90
829 I	8.0 x 1.2	300	28	8.0	405	180
928 I	10.0 x 1.2	250	34	10.0	377	275



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Socket Set 1/4" Square Drive:

- Forged from high grade Chrome Vanadium steel.
- Scientifically heat treated to give maximum strength and wear resistance.
- Nickel Chrome plating finish to enable rust prevention.

PROD. NO.	CONTENTS
S 1/4 H (17 Sockets + 6 Accessories)	Sockets-4,4.5,5,5.5,6,7,8,10,11,12,13,14
	Adapter-Hex 1/4 x SQ. 1/4
	Adapter Torx-T20,T25,T30,T40
	Accesories-A733 - T-HANDLE, A 743- EXTN. BAR, A 753- EXTN. BAR,A 773- UNIVERSAL JOINT, A 703- NUT SPINNER FLEXIBLE,A 715- RATCHET HANDLE

Allen Key Set (mm Sizes) Black Finish :

- Conforming to IS 3082-1988.
- Black Allen keys are made from Chrome Vanadium Steel.

PRODUCT NO.	SIZES
KM-9V(Box Packing)	9 Pcs. Set (1.5mm, 2mm, 2.5mm, 3mm, 4mm, 5mm, 6mm, 8mm, 10mm)

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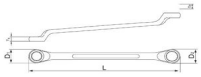
Double Ended Spanners Set (Chrome Plated)

PROD. NO.	CONTENTS
DEP 10	6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22,21x23, 24x27

Ring Spanner Set:

- Conforming to IS 2029-1998.
- Drop forged from high grade Chrome - Vanadium steel. Heat treated to give maximum strength and wear resistance.

ROD. NO.	CONTENTS
1812	6x7, 8x9, 10x11, 12x13, 14x15, 16x17, 18x19, 20x22, 21x23, 24x27, 25x28, 30x32



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Adjustable Wrench:

- It is used to open and close nuts and bolts in case of proper size spinner not being available.
- Common size are 8" (inch)12"(inch).
- Adjustable wrench are designed to provide a wide range of capacity in a single tool and are a convenient service wrench for distribution lineman.

Measuring Tape:

- It is used to measure length of wires, cable and space.
- These are made of cotton or metal strips bearing size of 10' (feet) to 100'(feet).

16

Electric Drill Machine:

- It is a portable electrically powered tool used for drilling the surface.

Tools trolley:

- Reinforced double wall frame with single piece casting for enabling high strength and long life.
- High quality ball bearing slides for enabling smooth drawer opening. Rear locking system avoids opening of the drawers.

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Pipe Wrench:

- It is used to open and close conduit, GI pipes and valves.
- Common size is 10 inch.
- The design of the adjustable Jaw allows it to lock in the frame, such that any forward pressure on the handle tends to pull the jaws tighter together.
- They are usually made of cast steel..

Chain Pulley:

- It is a Pulley with depressions in the periphery of its wheel or projections from it made to fit the links of a chain.
- The desired capacity chain pulley is good at center to lift heavy load for loading and unloading at site.

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Come along Clamp:

- It is used while laying of overhead lines.
- These are mainly used for holding conductors and ground wires in overhead transmission lines and various other industrial maintenance operations.
- These clamps are available in multiple diameters, weight and design that are ideal to use in electrical works.

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GENERAL SAFETY REQUIREMENTS :

- Pliers, strippers and hammer shall be manufactured and dimensioned in such a way that they protect the user from electric shock.
- When fully covered by insulating materials and used in the correct manner, minimize the risk of short-circuits between two parts at different potentials.
- The handle insulation of plier and strippers shall have a guard so that the hand is prevented from slipping towards the uncovered conductive parts of the head.

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Dangers of Electrical Shock:

- The severity of injury from electrical shock depends on the amount of electrical current and the length of time the current passes through the body e.g. 1/10 of an ampere of electricity going through the body for just 2 seconds is enough to cause death.
- For this reason, handheld tools that give a shock can be very dangerous. Usually, it takes about 30 mA of current to cause respiratory paralysis. Currents greater than 75 mA cause ventricular fibrillation (very rapid, ineffective heartbeat). This condition will cause death within a few minutes unless a special device called a defibrillator is used to save the victim.
- Heart paralysis occurs at 4 amps, which means the heart does not pump at all. Tissue is burned with currents greater than 5 amperes.

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Thank you

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