



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
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No. NERPC/SE (O)/OCC/2021/1041-1077

Dated: May 17, 2021

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. Engineer-in-Chief (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. ED, NERLDC, Dongtieh, Lower Nongrah, Lapalang, Shillong -793 006
24. Chief Engineer, GM Division, Central Electricity Authority, New Delhi – 110066
25. Chief Engineer (NPC), GM Division, Central Electricity Authority, New Delhi – 110066

Sub: Minutes of 20th NETeST Meeting.

Sir/Madam,

Please find enclosed herewith the minutes of 20th NETeST Meeting held at NERPC's Conference Hall, Shillong on the **20th April, 2021** 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,

बी. लिंगखोइ

बि. लिंगखोइ / B. Lyngkhohi
निदेशक / **Director(O)**

Copy to:

1. CGM, AEGCL, Bijuli Bhawan, Guwahati – 781001
2. CGM, APGCL, Bijuli Bhawan, Guwahati – 781001
3. CGM, DISCOM, Bijuli Bhawan, Guwahati – 781001
4. Head of SLDC, MeECL, Lumjingshai, SR Road, Umjarain, Shillong – 793022
5. Head of SLDC, Dept. of Power, Govt. of Arunachal Pradesh, Itanagar – 791111
6. Head of SLDC, Dept. of Power, Govt. of Nagaland, Dimapur – 797103
7. Head of SLDC, MSPCL, Imphal – 795001
8. Head of SLDC, P&E Deptt. Govt. of Mizoram, Aizawl – 796 001
9. Head of SLDC, TSECL, Agartala – 799001
10. Chief Engineer(Elect), Loktak HEP, Vidyut Vihar, Kom Keirap, Manipur- 795124
11. DGM (O&M), OTPC, Badarghat Complex, Agartala, Tripura – 799014
12. Director, NETC, 1st Floor, Corporation Tower, AMBIS Mall Complex, NH-8, Gurgoan – 122001.

— वी. लिंगरबेडु
निदेशक / Director

North Eastern Regional Power Committee

MINUTES OF THE 20th NER Telecommunication, SCADA & Telemetry

(NE-TeST) COORDINATION

SUB-COMMITTEE MEETING OF NERPC

Date : 20/04/2021 (Tuesday)
Time : 10:30 hrs
Venue : “NERPC”, Shillong.

The List of Participants in the 20th NETeST Meeting is attached at ***Annexure-I***.

Member Secretary, NERPC welcomed the participants to the 20th NETeST meeting of NERPC. He informed the forum that due to COVID19 pandemic situation we had to revert to online meetings. He emphasized the importance of communication system as SLDCs are penalized heavily because of the strict DSM regulation. He requested all the agencies involved in the project to fast track the completion of project and maintain the healthiness of communication systems.

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

A. CONFIRMATION OF MINUTES

CONFIRMATION OF MINUTES OF THE 19th MEETING OF “NORTH EASTERN TELECOMMUNICATION, SCADA & TELEMETRY (NETeST)” SUB COMMITTEE OF NERPC.

Director, NERPC informed that minutes of the 19th NETeST Meeting held on 20th January, 2021 at Shillong were circulated by NERPC vide letter No. NERPC/SE(O)/TeST/2020/4325-4362 dated 10th February, 2021.

The Sub-committee confirmed the minutes of the 19th NETeST Meeting with no modifications as comments/observations from NERLDC were not agreeable by the constituents.

A.1 Status of FO works under different projects:

Latest status of various FO Project in NER:

Project		No. of Links/Nodes	Status
ULDC Upgradation		17	All nodes completed.
MW Vacation		12	All links completed.
NER FO Expansion	Central Sector	16	12 Completed. 4 Pending.
	Manipur	11	10 Completed. 1 Pending
	Meghalaya	4	3 Completed. 1 Pending
	Mizoram	1	1 Pending.
	Nagaland	3	2 Completed. 1 Pending
	Tripura	12	10 Completed. 2 Pending

The status of NER FO Expansion project as given in 19th NETeST meeting:

States	Current Status	Comments/ Issues
Central Sector	400kV Bongaigaon (PG) - 220kV Salakati - 220kV BTPS	Target completion is April 2021. Work started along Silchar-Pllatana.
	400kV Mirza (Azara) - Byrnihat	
	400kV Silchar - Palatana	
	132kV Pare - Chimpu	
Manipur	132kV Imphal (State) - Karong	The line is under diversion by MSPCL. MSPCL will submit the tentative target of completion of diversion work by 29th January, 2021 to NERPC with a copy to NERLDC.
Mizoram	Aizawl - Zemabawk I	Stringing work is under progress. Target: March 2021.
Meghalaya	132kV Nehu - Neigreims	TCIL to start work soon. All necessary diversion of traffic may be taken care of while shutdown of the link. Target: March 2021.
Nagaland	132kV Doyang- Sanis Target: Feb/March 2021.	Target: March 2021. (OPGW) In addition, DoP, Nagaland has issued PO for PLCC installation to ABB.
Tripura	132kV Rokhia - Surjamani Nagar	Construction of Transmission Line and associated OPGW is still under progress. Tentative target for completion given by TSECL is March 2021.
	132kV Surjamani Nagar - Monarchak (NEEPCO)	

Deliberation in the meeting

All 17 nos. of nodes under ULDC upgradation project are completed. Further, all 12 nos. of links under MW vacation are also completed. AEGCL raised the issue of material reconciliation and training under MW vacation project. NERTS informed the forum that material reconciliation will be completed within 10 days. Other constituents also highlighted the need of training before the project is completed.

MS, NERPC requested NERTS to conclude the training before the project closure.

The status of pending links of NER FO Expansion project as given in 20th NETeST meeting is as follows:

States	Current Status	Comments/ Issues
Central Sector	400kV Bongaigaon (PG) - 220kV Salakati - 220kV BTPS	Work started along Silchar-Pilatana Line. Work was halted due to ROW issue at location 234/1, 237/0 and 238/1. Target completion is June, 2021 for Silchar –Palatana and Pare-Chimpu line.
	400kV Mirza (Azara) – Byrnihat	
	400kV Silchar – Palatana	For rest target completion is July, 2021 .
	132kV Pare – Chimpu	
Manipur	132kV Imphal (State) – Karong	MSPCL representative informed that line will be completed within three (03) months. NERTS informed the forum that 20kms. of link is already completed. The line is still under construction/diversion by MSPCL-Transmission. NERTS informed that if MSPCL can complete the line within three (03) months of period, then only M/s TCIL will be able to work on the link else NERTS may have to short-close the project (as the project is getting completed).
Mizoram	Aizawl – Zemabawk I	Target: May, 2021.
Meghalaya	132kV Nehu - Neigrims	TCIL to start work after completion of work at Pare- Chimpu line. Target: June 2021.
Nagaland	132kV Doyang- Sanis Target: Feb/March 2021.	Completed on 10.04.2021.
Tripura	132kV Rokhia - Surjamani Nagar	Tripura informed the forum that the line is under construction and will be completed by August-2021.
	132kV Surjamani Nagar - Monarchak	

	(NEEPCO)	NERTS informed that if TSECL can complete the line within three (03) months of period, then only M/s TCIL will be able to work on the link else NERTS may have to short-close the project (as the project is getting completed).
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NERTS informed the forum that they have already deployed AMC team for central sector links in NER under a dedicated rate-contract; but state-sector links are not covered under it.

In case the state utilities want to cover its respective links under any AMC contract, then the same can be done by themselves by tendering as per their requirements.

The state utilities informed the forum that they will carry out internal discussion with senior management and inform the forum.

TSECL and MSPCL suggested that a joint AMC may be taken up for the state-sector links. The forum requested all state utilities to come up with their plan for maintaining the assets in next NETeST meeting.

The Sub-committee noted as above.

Action: State Utilities, NERTS.

A.2. Status and details of Fiber Optic projects approved in 17th TCC/RPC meeting:

Status as per 19th NETeST meeting

- a) **Additional Communication Scheme:** Approximate target completion/Closing date is Dec2021 as projected keeping in view various insurmountable constraints. Stringing has started in Balipara-Kameng line.
- b) **Reliable Communication Scheme:** NERTS informed the forum that first tender got cancelled due to no participation in bidding process by any vendor; hence, the Corporate Centre of POWERGRID will do re-tendering for the project.

Deliberation in the meeting

- a) **Additional Communication Scheme:** NERTS informed the forum that stringing works of 400kV Balipara-Kameng link has been completed. There is delay of supply of material by M/s SDGI (China-based Company) due to COVID-19 and other reasons. **Target: December, 2021 (All links).**
- b) **Reliable Communication Scheme:** NERTS informed the forum that due to no bids received in initial tendering, the re-tendering was done. The technical evaluation is under progress. LOA will be placed by June-2021.

The Sub-Committee noted as above.

Action: NERTS.

A.3. Status of RTUs reporting in NER:

The latest status is as follows:

Central Sector	No. of RTUs	RTUs Reporting		RTUs not Reporting	Comments/ reporting RTUs	Non
		No.	%			
NEEPCO	8	8	100%	0		
NHPC	1	1	10%	0		
NTPC	1	1	100%	0		
OTPC	1	1	100%	0		
PGCIL	23	21	91.3%	2	Tezu, Namsai	
KMTL	1	1	100%	0		
Sterlite	2	2	100%	0		
State Sector						
Arunachal Pradesh	9	3	33.3%	6	Along, Daporijo, Deomali, Khupi, Lekhi, Pasighat	
Assam	70	46	65.7%	24		
Manipur	12	12	100%	0		
Mizoram	5	1	20%	4	Lungmual, Sihhmui, Zuangtui, Kolasib	
Meghalaya	26	20	76.9%	6	Ampati, Cherapunjee, Lumshnong, Nongston, Umiam 3 & 4	
Nagaland	17	7	41.2%	10	Ganesh Nagar, Lhep, Meluri, Mon, Nagnimora Power house, Singrijan Tizit, Tuensang, Zuheneboto	
Tripura	25	14	56%	11	Belonia, Boxanagar, Dhalabill, Gamaitila, Gournagar, Gumti, Kamalpur, Ompi, Rabindranagar, Sabroom, Satchand.	

Deliberation in the meeting

The forum appreciated the efforts of MSPCL for maintaining the 100% RTU availability. Agenda item A.3 is discussed along with Agenda item B.10. Please refer to agenda item B.10.

The Sub-Committee noted as above.

Action: All constituents.

A.4. Status of implementation of U-NMS in NER:

U-NMS was approved in NER. U-NMS being a regulatory requirement. Its implementation needs to be expedited and utilities needs to co-ordinate for its smooth implementation.

Deliberation in the meeting

NERTS informed the forum that technical evaluation of the bid is in progress which will be completed by June-2021 due to complexity of the contract involving integration of different systems. The award of works can be expected by end of July-2021.

The Sub-Committee noted as above.

Action: NERTS.

A.5. Status of URTDSM:

The status on various issues related to URTDSM and other PMU related matters needs to be updated to the forum as listed below:

NERTS :

Installation of pending analytical application: NERTS informed the forum that IIT Bombay is working on the application and will deploy a prototype of it either in WRLDC or NLDC within two (02) months for monitoring and observations on its functionality; after which its further deployment in rest of associated LDCs will be done.

Deliberation in the meeting

NERTS informed the forum that the development of the pending analytical application software has been completed by IIT-Bombay recently but due to prevailing COVID-19 pandemic conditions, the same has not been deployed at WRLDC, Mumbai.

The prototype of application will be deployed at WRLDC, Mumbai as and when pandemic conditions get normalized. Completion by **June-2021**.

The Sub-Committee noted as above.

Action: NERTS.

A.6. Automatic Generation Control (AGC) in Indian Grid:

NERLDC informed the forum that as per the CERC order on AGC, all the ISTS stations need to get connected with NLDC for receiving AGC signals. The status is as follows:

Sl. No.	Station Name	Status as in 19th NETeST
1.	BgTPP	For Unit #2 C&I works along with wiring to be done. By Nov'20. NTPC representative absent
2.	AGBPP	The forum requested NEEPCO to explore possibility of AGC implementation for BHEL/GE units and submit detailed plan to the forum.
3.	Loktak	Material has been received on site and associated Installation and commissioning activities will begin by February, 2021.

Deliberation in the meeting

The status is as follows:

Sl. No.	Station Name	Status as in 20th NETeST
1.	BgTPP (Unit #2)	Letter of Award has been issued to M/s Siemens but material is yet to be delivered at site.
2.	AGBPP	NEEPCO informed the forum that OEM (Joint-Venture of GE and BHEL) has quoted very huge amount for necessary modifications in the plant's controllers. Thus, NEEPCO is planning for negotiation with OEM and will be able to update in next NETeST meeting regarding it.
3.	Loktak	NHPC has informed that AGC integration in all three (03) units is completed and commissioned on 26th February 2021.

The Sub-Committee noted as above.

Action: NTPC & NEEPCO.

B.7. Status of RGMO to the Load Dispatch Centers:

The status is as follows:

	Station Name	RGMO Status	FGMO Status
1.	Khandong (2 units)	Target date: March, 2021	Target date: March, 2021
2.	Kopili Extension (1 unit)	Target date: March, 2021	Target date: March, 2021

3.	Ranganadi (3 units)	Target date: NEEPCO will submit the target dates to NERPC with a copy to NERLDC for information purposes.	Target date: NEEPCO will submit the target dates to NERPC with a copy to NERLDC for information purposes.
4.	AGBPP (9 units)		
5.	AGTCCPP (6 units)		
6.	OTPC (4 units)	Target date: May, 2021.	Target date: May, 2021.
7.	BgTPP (3 units)	NTPC may update the status.	NTPC may update the status.

The NERLDC will share Input-Output (I/O) list related to RGMO and FGMO points to all power as and when the utilities are ready to provide the status.

Deliberation in the meeting

The status is as follows:

	Station Name	RGMO /FGMO Status
1.	Khandong (2 units)	Letter of Award has been placed but OEM is not able to visit site due to COVID-19 pandemic situations.
2.	Kopili Extension (1 unit)	
3.	Ranganadi (3 units)	NEEPCO is requesting GE for site survey for implementation but GE is not able to visit due to COVID-19 pandemic situations. The Forum suggested exploring the possibility to expedite the work remotely as done in Kameng station.
4.	AGBPP (9 units)	NEEPCO conveyed that plant does not qualify for it as per IEGC clause 5.2.f. Agenda item may be dropped.
5.	AGTCCPP (6 units)	
6.	DHEP	Letter of Award has been placed but OEM is not able to visit site due to COVID-19 pandemic situations.
7.	OTPC (4 units)	Target date: October, 2021. (Delay due to COVID-19)
8.	BgTPP (3 units)	For unit 1 & 3 status is going to NLDC. NTPC informed that FGMO/RGMO status will be provided in next

		SCADA system upgradation project. Will update in Next NETeST meeting.
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The Sub-Committee noted as above.

Action: NERTS, NTPC, NEEPCO & OTPC

A.8. Status of FSC in stations of NER:

NERLDC mentioned that the real-time ON-OFF status of FSCs in Balipara station is required for grid operation purposes.

In the 19th NETeST meeting, NERTS informed that the matter is still under discussion with M/s Siemens and M/s GE T&D India Limited for tendering process which may take another two (02) months. The target dates will be shared once the vendor is finalized.

Deliberation in the meeting

NERTS informed the forum that the matter is being handled by Asset Management department of NERTS. Hence, the agenda may be shifted to OCC forum for early resolution. The forum agreed. The agenda item may be shifted to OCC.

The Sub-Committee noted as above.

Action: Shifted to OCC forum.

B. NEW ITEMS

B.1 Upgradation Activities of SCADA-EMS systems at Regional/State level in North Eastern Region:

The management of POSOCO has decided to provide consultancy at no-cost for the SLDCs to plan and execute the upgradation of SCADA/EMS systems which needs to be done in 2024 as per the expiry of seven (07) years life-cycle (as per CERC guidelines) of existing Software/Hardware systems at respective Control Centres.

The Corporate Engineering department has prepared a Memorandum of Understanding with detailed responsibility matrix and the same is attached as **Annexure-B.1** (along with relevant communications) for kind information and consideration by the SLDCs.

The draft MoU and agreement were shared and explained to 19th NERPC forum.

Deliberation in the meeting

All the state utilities agreed upon the Draft MOU in principle. All the states utilities requested the forum to place the proposal in TCC/NERPC forum for approval. They also requested NERPC to explore the possibility of PSDF funding for the same.

The Sub-Committee noted as above.

Action: Referred to next TCC/NERPC meeting.

B.2 Strengthening of PLCC System by NER States:

In 19th NETeST meeting Director, NERPC requested states to update the progress on strengthening of PLCC systems. The summary of discussion is mentioned below:

S N	States	Current Status
1.	Meghalaya	Digital PLCC project under PSDF completed. Necessary data and voice are also integrated with PLCC. Voice integration of generating stations is pending, which will be taken by Meghalaya in coming days.
2.	Tripura	Tripura will submit the proposed scheme of PLCC by 29th January 2021 to NERPC via email or letter which will be discussed further in coming NETeST forum.
3.	Manipur	Approval for PLCC strengthening proposal is pending with higher authorities of MSPCL. Manipur will submit latest status of PLCC by 29th January 2021 to NERPC.
4.	Nagaland	Nagaland informed the forum that PLCC at proposed station is already installed. But ABB is not visiting the state even after continuous persuasion of DoP, Nagaland. NERPC and NERTS decided to extend help to bring ABB to the state for early completion of the PLCC links.

All new Utilities as are being connecting in NER grid like KMTL, STERLITE etc., are also requested to keep a redundant path of data through PLCC wherever feasible.

Deliberation in the meeting

S N	States	Current Status
1.	Meghalaya	Commissioning activities are in progress except for Umiam Stage 2, Leshka and Khleriat. Meghalaya informed that FSX card are not part of project,

		thus voice integration between stations and SLDC is not possible. However, MePTCL will discuss with higher management for the amendment of project to procure FSX card.
2.	Tripura	NERPC conveyed that TSECL has not submitted any DPR for PSDF funding yet as requested in earlier NETeST meetings also. TSECL was requested again for submitting the DPR at the earliest. TSECL agreed to submit the DPR before next NETeST meeting.
3.	Manipur	MSPCL stated that it will discuss with higher authorities of MSPCL in their upcoming meeting scheduled on 26th April 2021 and will update the forum.
4.	Nagaland	Nagaland informed the forum that PLCC projects of all 132 kV sub-stations in Nagaland are completed on 12th April 2021. Nagaland further informed that it is proposing for fiber optics in 66kV sub-stations also for which details may be shared in next NETeST meeting.

The Sub-Committee noted as above.

Action: All State Utilities & NERPC.

B.3 Availability of Redundant Path for important nodes and Central Sector

RTUs of NER:

This agenda was differed due to delay in implementation of various FO projects in NER. The FO projects in NER are near completion. Thus the availability of redundant path for important nodes and Central sector RTUs can be explored.

Deliberation in the meeting

NERTS informed the forum that as soon as a new link comes they explore the possibility of redundancy and accordingly network is reconfigured. Thus, redundancy has been provided in all central sector stations where OPGW is there except Ranganadi and Pare. Ranganadi and Pare will be completed when NERFO part of Pare Chimpu line is completed. The same is already there in Agenda item B.7. Thus the agenda item may be dropped.

The Sub-Committee noted as above.

Action: Agenda item may be dropped.

B.4 Allocation of ULDC Fiber for State Utilities Protection Scheme:

The existing fiber of ULDC scheme may be used by State utilities for implementation of protection scheme.

Deliberation in the meeting

State-utilities requested that apart from six (06) fibers under ULDC scheme, around four (04) fibers i.e. two (02) pairs may be given to implement protection related schemes of states. NERPC conveyed that feasibility of the same may be explored jointly by NERTS and respective state-utilities and updated in the next NETeST meeting.

The Sub-Committee noted as above.

Action: NERTS. & All state utilities.

B.5 Cyber Security aspects in SCADA/IT systems at Load Despatch Centres in North-Eastern region:

In reference to the 18th and 19th NETeST meetings, MoM chaired by Hon'ble MoP dated 4th March 2021, Minutes of Meeting held on 1st April 2021 on WebEx and letters by NERLDC, POSOCO (attached as **Annexure-B.5**), utilities are requested to take immediate actions for maintaining proper cyber security in the IT and SCADA infrastructure of SLDCs.

Deliberation in the meeting

NERLDC emphasized on importance and criticality of cyber security aspects in IT and OT systems of Load Despatch Centres in the present scenario when a number of state sponsored attacks have been observed in various sectors of the country.

It was also requested to comply with guidelines issued in Minutes-of-Meeting of meeting held in presence of Hon'ble Minister of Power on 04th March 2021 (attached as **Annexure-B.5a**) and Minutes-of-Meeting of forum of Load Despatchers held on 01st April 2021 (attached as **Annexure-B.5b**).

NERLDC also conveyed that it will be better in case the CISO of the SLDCs can be appointed from internal staff of respective SLDC itself in order to coordinate and monitor the systems in an effective and timely manner. It was requested that all the Virus and Vulnerabilities alerts being received from CERT-Trans, CERT-GO and Cyber Swachhta Kendra (CSK) needs to be implemented in the IT/OT systems for cyber security purposes.

Meghalaya SLDC informed that there is no dedicated IT team for handling all the IT related works and for monitoring the cyber activities at Meghalaya SLDC. NERPC will request MoP to send instructions to Heads of Organizations to ensure deployment of requisite IT manpower at Load Despatch Centers who are especially capable of handling all cyber related attacks.

Moreover, considering that NERLDC already has (i) a CCMP, had already (ii) identified CII and is (iii) ISO 27001 certified. A request was made for guidance in respect of establishment of a Cyber Crisis Management Plan (CCMP), identification of Critical Information Infrastructure (CII) at all LDCs and related information pertaining to process of ISO 27001 certification (Integrated Security Management System) and the financial implications thereof. NERLDC agreed to share related ISMS information with the States. NERLDC agreed to share the procedures for ISO 27001 compliance to the forum. The State utilities requested for a single package for upgrading the cyber security of the SCADA/EMS systems in NER. They requested NERPC to take up the matter with CISO, MoP and also clarification in respect of cyber related issues pertaining to ADMS and SAMAST.

Nagaland-SLDC mentioned that several constraints related to getting VAPT tests twice a year (as compared to present contractual agreement with GE for once a year) and upgrading obsolete Operating Systems which are no longer supported by Microsoft itself needs to be addressed. It was also stated that the cyber-security related upgradation works in SLDCs and NERLDC may be carried out as a single package with M/s GE (vendor of Comprehensive AMC) for reliable and cost-effective implementation. It was also requested that the ISMS policy related documents may be shared by NERLDC with SLDCs for necessary implementation at state-level also.

NERLDC mentioned that its Corporate Office has signed a MoU with M/s CDAC (a govt. entity) for various cyber security activities incl. VAPT for NLDC/RLDCs which can be shared with SLDCs for taking it up at state-level also.

NERPC conveyed that it will discuss the matter with CISO-MoP and requested NERLDC also to arrange a meeting with CISO-POSOCO along with designated CISO of NER state-utilities.

The Sub-Committee noted as above.

Action: All State utilities and NERLDC.

B.6 GPRS connectivity for Substations and Leased line for SLDC:

NERLDC request all the SLDCs using GPRS or other cellular communication technologies to submit the compliance report of GPRS technology as per the Communication Standards before 20th NETeST meeting.

Deliberation in the meeting

TSECL submitted to the forum that NERTS was implementing agency of the GPRS projects through M/s PMAS and hence the compliance report may be provided by NERTS itself.

NERTS informed that it will investigate and update the status to the forum in next NETeST meeting.

The Sub-Committee noted as above.

Action: P&ED Mizoram, DoP Nagaland, DoP AP, TSECL and NERTS.

B.7 Selected cases of sub-stations for rectification of corresponding data/communication related issues:

Utility	Station	Latest Status/ Issues
NEEPCO	Ranganadi-2nd channel	Target: 15th February, 2021.
NEEPCO	Doyang	After changing/upgradation work of Current Transformer (CT) of all feeders, the real-time SCADA data is reporting wrong.

Deliberation in the meeting

Utility	Station	Latest Status/ Issues
NEEPCO	Ranganadi-2nd channel	It was decided that second channel for Ranganadi will be provided once 132kV Pare-Chimpu Fiber-Optic link is completed.
NEEPCO	Doyang	NERLDC submitted to forum that CT upgradation and corresponding changes in RTU should have been carried out simultaneously.

		NEEPCO informed that LOA for correction of RTU and MFTs database has been placed but OEM is not able to visit due to COVID-19 pandemic situations.
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The Sub-Committee noted as above.

Action: NEEPCO & NERTS.

B.8 Issues faced by SLDCs with M/s GE T&D India Limited regarding the AMC works of SCADA/EMS projects:

Sl No.	SLDC	Issues
1.	Assam	<ol style="list-style-type: none"> 1. Low backup from Battery Bank of one UPS. 2. RICOH Afico SPC 730DN is not working.
2.	Meghalaya	<ol style="list-style-type: none"> 1. Poor back up of both the battery banks of the 2X40KVA UPS units. the cells replaced in on of the battery bank are not original cells and these too in conjunction with other cells are not satisfactory in performance. 2. Unavailability of eDNA license for reporting tool in operator Console-3 3. Rbotic failure of Tape library of the system.
3.	Manipur	<p>Since MSPCL is government own enterprise there are sometimes delay in the payment of AMC amount. Due to this delay GE sometimes stop the services i.e. the GE AMC engineers stop coming to office. We faced lot of hardship in day to day activities like report extraction, error rectification and other issues like SCADA integration of new substations, database updation etc.</p> <p>For Manipur GE has stopped the service from Manipur from 26/10/2020 till date. Earlier in the last financial year they stopped service from 20th Dec 2019 till April 2020.</p>
4.	Nagaland	<ol style="list-style-type: none"> 1. RICOH Aficio SP C730dn is not functioning properly. 2. KVM adaptor faulty.

		<p>3. Site Engineers are not well versed with the applications software of SCADA/EMS. Any issued faced is dealt by DJ System Site Engineer from Manipur Mr. Ngamba and Mr. Jackson and Mr. Tamal from Shillong, NERLDC.</p> <p>4. Site Engineers keep changing often.</p>
5.	Tripura	<p>1. There is often hesitation/delay to attend RTU site oriented maintenance work. Frequent request by site support for arrangement of vehicle from TSECL which is not possible/applicable each time causing further delay in many cases.</p> <p>2. GPS clock/ LDMS inverter is out of order at many RTU stations which are not being attended since long.</p> <p>3. There is non-reporting/ incorrect reporting of Breaker/Isolator status at many sub-stations which are not being corrected.</p>

Deliberation in the meeting

S1 No.	SLDC	Deliberation
1.	Assam	<p>1. Schedule for Load Testing for the battery to be done by GE within a week and subsequent replacement of Faulty cells.</p> <p>2. For the faulty printer, parts are not available with OEM. GE is pursuing the matter with OEM, if not resolved by 30.06.2021; GE proposes to replace the printer with new model (HP).</p>
2.	Meghalaya	<p>1. The material for replacement of battery bank was received on 17.04.2021. By next week new battery bank will be installed by GE.</p> <p>2. GE proposed for external LAN architecture and will provide the required licence.</p> <p>3. For the faulty printer, parts are not available with OEM. GE is pursuing the matter with OEM, if not resolved by 30.06.2021; GE proposes to replace the printer with new model (HP).</p>

3.	Manipur	<p>GE informed the forum that they are not able to dispatch manpower due to financial constrain as the payment for AMC is long overdue.</p> <p>The forum viewed the stopping of service by GE very seriously and requested GE to immediately restore the service. In government organisation there are delays in payment but the service should not be stopping. The forum will request the state authorities to expedite the payment.</p>
4.	Nagaland	<p>1. For the faulty printer, parts are not available with OEM. GE is pursuing the matter with OEM, if not resolved by 30.06.2021; GE proposes to replace the printer with new model (HP).</p> <p>2. GE has already couriered the replacement for faulty adaptor and it should reach site by 28.04.2021.</p> <p>3. GE informed the forum that they have imparted one month training to the site engineers, so it may be reviewed after one month by Nagaland SLDC. If the site engineers are found not adequate in handling issues they will be replaced.</p>
5.	Tripura	<p>1. GE informed the forum that the site engineer will hire their own convenience while visiting sites.</p> <p>2. For the GPS clock issue GE requested TSECL to provide consolidate data for non-reporting of GPS clocks at RTU's location. For the LDMS inverter issue GE requested TSECL to provide their representative for joint visit for resolving the issue at earliest.</p> <p>3. GE site engineer will be rectifying the incorrect status of Breaker/ Isolator in the SCADA.</p>

GE official informed the forum that for any AMC related issue if unresolved, the constituents may directly escalate to Mr. Surender Mehra for early resolution. His contact number and email ID is 9958095163 and surender.mehra@ge.com.

The Sub-Committee noted as above.

Action: GE.

B.9 VSAT For Roing Tezu Namsai:

Voice and data integration for Roing and Tezu is completed using VSAT. Data integration of Namsai Station is pending.

Deliberation in the meeting

The forum appreciated the effort of NERTS for completion of project well before scheduled timeline. NERTS mentioned that the issue of non-reporting of data of Namsai substation due to software issue in SCADA gateway is expected to be resolved by 25th April 2021.

The Sub-Committee noted as above.

Action: NERTS.

B.10 Pending issues of State Utilities of NER:

The presentation on telemetry status for the month of March-2021 is attached as **Annexure-B.10.**

The utility-wise discussion is tabulated below:

SN	Utility	Stations Not Reporting	Latest Status/ Issues
1	Assam		AEGCL informed that the project is hampered as OEMs are not showing up at site for commissioning related activities. It was decided that NERPC will request Assam-SLDC to participate in the NETeST meetings.
2	Tripura	Dhalabil,	FO link completed. The RTU data is not reporting.
		Ambassa	PLCC link completed. The RTU data is not reporting.
		Sabroom, Satchand	Island FO link. Needs PLCC to bring data to WB location Udaipur.
		13 station not covered by NERFO expansion project	TSECL to submit action plan for remaining 13 stations, as NERPSIP project will take a longer duration to complete.

3	Meghalaya	Procurement of DI card from PSDF.	Amendment made to proposal. The amended proposal is still with higher authorities, after approval of the same the proposal will be submitted for PSDF again. Meghalaya to submit the target dates.
5	Manipur	Churachandpur, Kongba and Kakching	After integration of 400kV Thoubal S/s, the SCADA database of the mentioned stations is not yet updated.
		Elangkokpki, Thoubal	The mentioned stations are not yet integrated in SCADA database.
		400kV Thoubal	Due to unavailability of UPS supply to SCADA gateway at the site, the real-time data of 400kV Thoubal is not reporting consistently and interrupts in case of failure of main power supply.
6	Nagaland	Sanis	Reporting over PLCC.
		Melrui	Proposal for RTU pending with higher management. DoP, Nagaland to provide status of the Meluri RTU through e-mail/letter by January'21 to NERPC.
7	Mizoram	Zuangtui	FO link has been completed, however RTU data is reporting partially.
		Saitual, Khawzawl, Champai, Serchhip, Lunglei	Entire station not modelled at SLDC.
8	Ar. Pradesh	VSAT installation	Installation pending: Khupi, Tippi, Pasighat and Deomali. Commissioning pending: Chimpu, Daporizo, Along and Lekhi

Deliberation in the meeting

The utility-wise discussion is tabulated below:

SN	Utility	Stations Not Reporting	Latest Status/ Issues
1	Assam		Assam-SLDC was not able to readily provide the status. The forum requested Assam-SLDC to come with proper preparation and update the same in next NETeST meeting. The forum also requested SLDC to have representation of senior officials in the meeting for fruitful discussion.
2	Tripura	Dhalabil,	Dhalabil is reporting intermittently over GPRS, however forum requested to shift it over Fiber-Optic. TSECL informed that there is fiber cut issue in the link.
		Ambassa	A joint checking will be carried out by TSECL and Indigrd for rectification of the issue.(LLO portion at Indigrd Station)
		Sabroom, Satchand	Satchand is reporting over GPRS. Sabroom will report on GPRS by May'21.
		13 station not covered by NERFO expansion project	For stations not covered in NER Fiber-Optic expansion, the same will be covered under NERPSIP.
3	Meghalaya	Procurement of DI card from PSDF.	MePTCL informed the forum that it is waiting for reply form PSDF committee for approval. The forum requested MePTCL to submit a copy of DPR to NERPC for taking up with TEC Sub Group of CEA.
5	Manipur	Churachandpur, Kongba and Kakching	Database correction will be carried out as soon as GE resumes its services in SLDC Manipur.
		Elangkokpki, Thoubal	MSPCL informed the forum that for procurement of RTUs, NIT drafting is in progress.

		400kV Thoubal	MSPCL informed the forum that UPS supply to SCADA gateways will be extended before charging of the 400 kV System.
6	Nagaland	Sanis	Commissioned. Reporting over PLCC. OPGW will come up once Doyang- Saini is commissioned under NERFO.
		LHEP	Possibility of connecting LHEP over Fiber will be explored by DoP Nagaland.
		Power House and Mon	SIM issue will be checked and will be replaced, if required.
		Singrijan	The substation is dismantled and no longer is in service.
		Melrui, Tizit and Naginmora	DoP-Nagaland will propose procurement of RTU under PSDF fund.
7	Mizoram	Zuangtui, Kolasib, Luangmual,	Maintenance of FO link to be taken care by Mizoram Static IP issue for GPRS connected stations to be resolved by changing the IP from NIC to BSNL by 26th April 2021.
		Saitual, Khawzawl, Champai, Serchhip, Lunglei	All stations modeled at SLDC but there is no plan to procure RTU for these stations.
8	Ar. Pradesh	VSAT installation	In all eight (08) stations installation is completed, however commissioning is pending. NERLDC submitted to the forum that necessary RTU works should be taken care by DoP-Arunachal with the help of GE for reporting of the data.

The Sub-Committee noted as above.

Action: All utilities.

B.11 Feasibility to connect Lekhi substation over Fiber-Optic network:

In the 19th NETeST meeting, NERTS informed the forum that LoA for purchase of equipment is already placed but supply is hampered due to import restrictions imposed on China and as an interim arrangement, the spare equipment can be diverted to Lekhi which are expected to be delivered in a few weeks. Once spares arrive at site then necessary work will be carried out. The tentative target date for completion of works by NERTS is March 21.

Deliberation in the meeting

NERTS informed that there is delay in supply of material from M/s SDGI and suggested to shift material of Tripura sector links to Lekhi as lines of 132kV SM Nagar–Monarchak and 132kV Rokhia–SM Nagar are still under construction.

The forum agreed to the suggestion of NERTS.

The Sub-Committee noted as above.

Action: NERTS

B.12. Wrong status of Isolators and CB status at 132 kV SM Nagar S/s:

The status of numerous isolators and CBs at 132 kV SM Nagar S/s is wrong. This leads to confusion in grid operation for operators. The station has experienced four numbers of disturbances in last three months. Moreover, station is connected to an international node.

NERLDC has requested TSECL to take necessary actions for rectification of the status of isolators and CBs via email dated 16/02/2021, 23/03/2021 and 30/03/2021 (attached as **Annexure-B.12**), yet there is no significant improvement.

Deliberation in the meeting

TSECL requested NERTS to rectify the issue of CMR for the 132 kV SM Nagar – Comilla Line 1 and 2; 132 kV Palatana – SM Nagar line in SM Nagar station as the above lines are maintained by NERTS itself. TSECL will rectify the issue of all other bays in coordination with GE.

The Sub-Committee noted as above.

Action: TSECL & NERTS.

B.13 Feasibility to connect Sterlite owned OPGW with ULDC network:

Under NER Strengthening scheme, Sterlite has constructed following lines along with OPGW:

1. 132 kV R C Nagar – PK Bari (TSECL) D/c: Will provide additional path between Agaratala and PK Bari
2. 400 kV Silchar – Misa D/c: Will provide additional link between south NER and North NER.

Feasibility to connect the above links with existing ULDC network may be explored.

Deliberation in the meeting

The forum agreed and requested NERTS and Indigrid to explore the possibility of utilization of the link as alternate path.

The Sub-Committee noted as above.

Action: NERTS & Indigrid.

B.14 Integration of Dikshi HEP real time data and pending Voice communication:

Non-compliance of undertakings, discussions and various requests made from NERPC forum. NERPC is requested to intervene in the matter for early establishment of voice and PLCC for Tenga and Dikshi.

Further, it was deliberated that M/s Devi Energies should take proper maintenance of VSAT as irregularities in the link is being observed in last two (02) months. SIP phones are also not installed yet at Dikshi and Tenga even after continuous request made through NERPC forum.

As informed in the forum, NERPC will take up the matter with Devi Energies

Deliberation in the meeting

MD, M/s Devi Energies informed the forum via mail that the present data communication is through satellite link (VSAT) provided by TATA Nalco, there is no scope for human interference at Devi Energies side. Any interruptions in communication are mainly due to technical issues at VSAT side and weather related issues. Speech channel has to be provided through the same VSAT link in addition to the data channel. In view of the recommendation from service providers from a bandwidth and technical limitations point of view, it was confined to data only as provision for speech would have a bearing on transmission of data.

The PLCC system is ready to dispatch from their manufacturing facilities as the inspection is completed by video inspection. The provision has been for speech (voice) + data + protection in PLCC. Hopefully the installation and its commissioning will be completed by the end of the month. Reasons for such delays are mainly pandemic driven.

The Sub-Committee noted as above.

Action: DoP AP & M/s Devi Energies.

Date & Venue of next NETeST meeting

It is proposed to hold the 21th NETeST meeting of NERPC in second week of July, 2021. However, the exact date and venue will be intimated in due course.

The meeting ended with thanks to the Chair.

List of Participants in the 20th NETeST Meeting held on 20.04.2021

SN	Name & Designation	Organization	Contact No.
1.	Sh. Purik Buchi, AE (E)	Ar. Pradesh(VC/MST)	-
2.	Sh. Geyi Yinyo, JE	Ar. Pradesh(VC/MST)	-
3.	Sh. Raj Sarmah, AGM, IT	Assam(VC/MST)	-
4.	Sh. N. Bhattacharya, AM, IT	Assam(VC/MST)	-
5.	Sh. Pranab Saha, AGM, AEGCL	Assam(VC/MST)	-
6.	Sh. N. Romeo Singh, DM, SLDC	Manipur(VC/MST)	-
7.	Ms. J. Wahengbam, AM, SLDC, MSPCL	Manipur(VC/MST)	-
8.	Sh. M. Dkhar, EE (SP), MePTCL	Meghalaya(VC/MST)	-
9.	Sh. D.J. Lyngdoh, EE (SM), SLDC	Meghalaya(VC/MST)	-
10.	Sh. Y. Iakai, AEE, SLDC	Meghalaya(VC/MST)	-
11.	Sh. C.W. Chen, AEE (C&CSD), MePTCL	Meghalaya(VC/MST)	-
12.	Sh. J.H. Laithangliana, SE, SLDC	Mizoram(VC/MST)	-
13.	Sh. H. Lalruatkima, EE, SLDC	Mizoram(VC/MST)	-
14.	Sh. P.L. Liandika, AE, SLDC	Mizoram(VC/MST)	-
15.	Sh. Tia Kava, JE	Nagaland(VC/MST)	-
16.	Sh. David Tungoe, SO	Nagaland(VC/MST)	-
17.	Sh. Anil Debarma, DGM (SLDC)	Tripura(VC/MST)	-
18.	Smti. Sampa Sen, Sr. Manager	Tripura(VC/MST)	-
19.	Sh. Paominal DOUNGEL	NERLDC(VC/MST)	-
20.	Sh. Sakal Deep, Engineer	NERLDC(VC/MST)	-
21.	Sh. Akhil Singhal, Chief Manager	NERLDC(VC/MST)	-
22.	Sh. Milton Das, DM	NEEPCO(VC/MST)	-
23.	Sh. Tanya Taji, DM	NEEPCO(VC/MST)	-
24.	Sh. Joypal Roy, DGM(E/M)	NEEPCO(VC/MST)	-
25.	Sh. Marang Randa, Sr. Manager (E)	NHPC(VC/MST)	-
26.	Sh. Sanjay Sarmah,	NHPC(VC/MST)	-
27.	Sh. Alokesh Hazarika, Mgr	OTPC(VC/MST)	-
28.	Sh. Prem Kishan Singh, Sr. Manager	NTPC(VC/MST)	-
29.	Sh. Surender Mehra,	GE(VC/MST)	-
30.	Sh. Abhishek Varshney, PM	GE(VC/MST)	-
31.	Sh. Vivek Karthikeyen, CM-AM	INDIGRID(VC/MST)	-
33.	Sh. A.K. Thakur, Member secretary	NERPC	-
34.	Sh. B. Lyngkhoi, Director (O&P)	NERPC	-
35.	Sh. S. Mukherjee, Dy. Director	NERPC	-

36.	Sh. S. Imam, Dy. Director	NERPC	-
37.	Sh. S. Chaturvedi, AE	NERPC	-

Minutes of Meeting held on 1st April, 2021 on WebEx

A meeting was convened by CERT-GO on 1st April, 2021 with all Heads and nominated CISOs of RLDCs /SLDCs to discuss the issues related to implementation of cyber security across load despatch centres and the immediate actions to be taken-up to ensure a cyber safe network.

Agenda of meeting:

- Nomination of Chief Information Security Officer (CISO)
- On boarding of Cyber Swachhta Kendra (CSK) by State Load Despatch Centres.
- To discuss the details related to functioning of CERT- Grid Operation
- Measures to be taken to ensure Cyber Security at all the load despatch centres.

List of participants is enclosed at Annexure-I.

CISO, POSOCO welcomed all participants in the meeting.

Gist of the discussion is as under:

1. In opening remarks CMD, POSOCO informed all the participants about the importance of Cyber preparedness of all System Operators. The forum was informed about formation of Empowered committee for monitoring the Cyber preparedness in the country and formation of new sectoral CERT i.e., CERT-GO (Grid Operation). All were briefed that CERT-GO has been created for ensuring cyber security of load despatch centres, as it is the most critical part of the Power system. He mentioned that vulnerabilities at different load centres have been observed recently and attempt has been made by certain threat actors to establish communication with the IT/OT infrastructure which has been viewed very seriously by Ministry of Power and directed to ensure cyber security at the all the Load Despatch Centres and remain vigilant to prevent any such intrusion in the system. He stressed on the fact that Cyber security has become an area of major concern due to increased connectivity and exposure of the system to public network. He urged that

necessary actions as per guidelines of CERT-In and NCIIPC must be taken by all at the earliest in order to have focussed attention on cyber security needs for load despatch centres and to ensure the same at the earliest.

2. Director (System Operation), POSOCO stressed the importance of Cyber Security at various load despatch centres. Functions like Switching Operation of Circuit Breaker from control centres, Automatic Generation Control (AGC) etc. needs a very hardened and robust cyber security at load despatch centres. He mentioned that Indian grid must be secured and all the actions must be taken to ensure safe and secure Indian grid.
3. CISO POSOCO stated that in view of specific function of load despatch centres, dedicated CISO to be designated at all SLDCs. It was informed that CERT-GO (Grid Operation) has been established by Ministry of Power vide its order dated 18th March 2021 and is housed at POSOCO. ED NLDC has been designated as the nodal officer for CERT-GO. Cyber security related issues for all Load Despatch centers would come under CERT-GO. A presentation was given by DGM (Engineering), NLDC, POSOCO, outlining the details of CERT- GO. Salient points of the same are:

(A). CERT - GO Governance Structure:

- ✓ Nodal officer has been designated to coordinate with CERT-In and all CISOs of LDCs are required to coordinate with nodal officer of CERT-GO.
- ✓ Nodal officer shall share all the alerts/advisories/information received from CERT-In, NCIIPC or any other statutory agency to CISO, POSOCO & CISOs of all SLDCs
- ✓ Compliance to all the advisories/alerts/incidents shall be sent by CISOs at SLDCs to Nodal Officer, CERT-GO

(B) Actions to be taken up on immediate basis

- ✓ Designation of Chief Information Security Officer (CISO)
- ✓ Preparation and approval of Cyber Crisis Management Plan (CCMP) for each SLDCs

- ✓ Implementation of Integrated Security Management System (ISMS) ISO 27001
- ✓ Identification of Critical Information Infrastructure (CII) at all LDCs
- ✓ Cyber security Audit / VAPT of IT & OT systems in each 6 months
- ✓ Cyber Security mock drills are to be carried out at regular interval
- ✓ Regular Cyber Security awareness sessions to be arranged for the operators of LDCs
- ✓ Establishment of Security Operation Center (SOC) to improve the alertness pertaining to Cyber security of control centres.

It was also informed that the CISOs are responsible for all cyber related activities in the respective control centre which includes Management of incident, planning and implementation of required infrastructure and its upgradation from time to time. All were requested to refer the following link https://www.nciipc.gov.in/documents/Roles_Responsibilities-CISO.pdf for the detailed responsibilities of CISOs.

(C) Monitoring & Reporting

While elaborating various actions to be taken on regular basis the following were mentioned as most important:

- ✓ On-boarding of Cyber Swachhta Kendra (CSK)
- ✓ Regular monitoring of advisories from CSK and CERT-GO
- ✓ Immediate compliance reporting of advisories to CERT-In
- ✓ Separation of IT and OT systems
- ✓ Use of official mails
- ✓ Regular reporting of compliance (Monthly)

On-boarding of Cyber Swachhta Kendra (CSK)

- ✓ In order to improve the alertness regarding cyber security, a decision has been taken by MoP for on-boarding of "Cyber Swachhta Kendra (CSK)" (Botnet Cleaning and Malware Analysis Centre), which is a part of the Indian Computer Emergency Response Team (CERT-In).
- ✓ All LDCs were requested to on board the Cyber Swachhta Kendra at the earliest and requested to take up with them on immediate basis.
- ✓ CSK/CERT-In will be providing the following reports/feeds on daily basis:
 - Botnet/Malware infected hosts.
 - Hosts running with Vulnerable services.
- ✓ CISOs of all SLDCs are to provide information regarding their public IP being used at their respective LDCs in order to be on board of Cyber Swachhta Kendra immediately.

(D) Information flow for CERT-GO:

- ✓ Regular Advisories are received on day-to-day basis from CERT-In and NCIIPC or any other statutory organisation which are being forwarded to CISOs of all SLDCs and RLDCs/NLDC.
- ✓ Advisories received from CERT-In and NCIIPC or any other statutory organisation shall be immediately forwarded to all concerned.
- ✓ All LDCs shall take immediate action for compliance on the advisories received as per the recommendations and compliance shall be sent to CSK with a copy to CERT-GO on immediate basis.
- ✓ All LDCs shall also send a monthly compliance report by 8th day of next month on the advisories received from CERT-In and NCIIPC.

After the detailed presentation, ED, NLDC requested all the CISOs to take the following activities on immediate basis:

- ✓ The whitelisting of mail-id of CSK i.e. csk@aadn.in, in the firewall so these mails are not sent to junk box or spam.

- ✓ To start the preparation of Cyber Crisis Management Plan (CCMP) for their respective LDCs taking reference to the CCMPs developed by CERT-Trans.
- ✓ Take up directly with NCIIPC for notification of respective LDCs under CII as per direction of MoP.
- ✓ It was also mentioned that the present contract for OT includes VAPT on annual basis. Hence contract amendment may be initiated to ensure VAPT on every six months' interval as per the decision taken by MoP.
- ✓ All LDCs were requested to share compliance report of the last VAPT carried out for OT and IT systems in the respective control centre.

The following issues were discussed which were raised by the constituents:

5. Tamil Nadu SLDC mentioned that one CISO has been nominated which is coordinating with CERT-Trans and enquired whether there is a requirement of nomination of CISOs for SLDCs at the control centres for various domains of SLDCS such as SCADA, IT, Metering etc. separately. It was clarified by POSOCO that it is better to have CISOs of SLDC designated who shall be responsible for the cyber security at the respective control centre and reporting to CERT-GO.

6. UPSLDC CISO informed that CISO at UPSLDC has been nominated exclusive for load despatch functions. Further it was enquired by UPSLDC that will there be any technical support from CERT for resolving cyber security issue. POSOCO informed regarding this CERT provided advisory and general guidelines.

Further UPSLDC informed that IT-OT separation may not be possible in view of data exchange between SCADA and IT system. It was explained by POSOCO that separation means limited and controlled connectivity in both systems with firewall at both ends and the firewalls to be hardened to ensure controlled flow of data.

7. Bihar SLDC enquired about availability of fund from Ministry of Power for Cyber Security needs of control centre. POSOCO replied that there is no such fund for cyber security and each control centre need to arrange own resource in order to cater the requirement for deployment of cyber security infrastructure.

Further Bihar SLDC enquired about Cyber Insurance. POSOCO informed that due to specific and peculiar functions of load despatch centre there is no Cyber Insurance available for control centre.

Bihar SLDC enquired whether CISO should be for SLDC specific. POSOCO informed that CISO of SLDC should be specific to load despatch functions.

8. Delhi SLDC informed that at Delhi SLDC IT and OT systems are in different LANs. Whether CISO of SLDC need to ensure cyber security healthiness of both systems. POSOCO clarified that for CISO of SLDC shall ensure cyber security healthiness of all the systems however in case necessary action has already been taken by CERT-Trans, then they need to install duplicate devices for the same.

9. Chhattisgarh SLDC stated that are there any guidelines from MoP for additional man power to take care of cyber security requirements at control centres as with less man power at most of the control centre it becomes difficult to carry out all functions related to cyber security.

Further, it was informed by Chhattisgarh SLDC that despite continuous effort, Chhattisgarh SLDC is yet to get notified as CII by NCIIPC. POSOCO informed that it may be taken up again with NCIIPC and share the relevant communication with CERT-GO so that the same could be taken up by CERT-GO also. It has been already decided by MoP that all control centres shall be notified as CII by NCIIPC.

10. Tripura SLDC informed that whether any guidelines will be issued to prepare CCMP. POSOCO informed that already generic guidelines have been issued by CERT-Trans to prepare CCMP.

Further Tripura SLDC enquired about cyber security for interface points in data communication. POSOCO clarified that from data reporting side (Sub Station side) cyber security responsibility is with CISO of the concerned utility at the station end.

Further Tripura SLDC enquired about the VAPT and ISMS 27001 audit. POSOCO provided the required input.

11. BBMB informed that hydro generators in BBMB are already covered in CERT-Hydro. They enquired whether a separate CISO is required to be nominated for their SLDC. POSOCO informed that for SLDC of BBMB separate CISO needs to be designated to take care the cyber security requirement of SLDCs.

12. Haryana SLDC stated that the subject has been widely discussed at various fora and enquired about consultancy services from POSOCO to ensure Cyber security healthiness at SLDCs. POSOCO informed that responsibility to take various measures to ensure cyber security rests with SLDC only, however POSOCO will provide all possible guidance to do the same.

Concluding the meeting, CMD POSOCO advised all to remain alert and practice cyber hygiene in order to avoid any cyber security issues at control centres. Any cyber attack on load despatch centre may have catastrophic effect on Power system of country which may eventually result in huge loss for the country. Further, all were requested to coordinate and cooperate to avoid any cyber security incident at load despatch centre and to ensure safe and reliable grid operations.

Meeting ended with vote of thanks from CISO, POSOCO.

Annexure I

List of Participants:

POSOCO:

- Sh. K.V.S. Baba (CMD)
- Sh. S.R. Narasimhan, Director (System Operation)
- Sh. Sudhanshu Sekhar Barpanda, Director(Market Operation)
- Sh. Debasis De, ED, NLDC
- Smt. Minaxi Garg,ED, (C&M,CP)
- Sh. D. K. Jain, ED, ERLDC
- Sh. V Suresh ED, SRLDC
- Sh. N. Nallarasan, CGM, NRLDC
- Sh. V. Balaji, CGM WRLDC
- Sh. Nabarun Roy, CGM NERLDC
- Sh. Devender Kumar, CISO, POSOCO
- Sh. Gopal Mitra, ERLDC
- Sh. S. C. Saxena, NLDC
- Sh. R. K. Porwal, NLDC
- Sh. T R Ganesh, CISO, SRLDC
- Sh. Sheikh Shadrudin, CISO, NERLDC
- Sh. S. K. Saha, CISO, WRLDC
- Sh. Harish Kumar Rathour, CISO, NLDC
- Sh. Gurmit Singh, CISO, NRLDC
- Sh. A.B. Sengupta, CISO, ERLDC
- Sh. Pramod Singh, NLDC
- Sh. Abhishek Kumar Gupta, NLDC
- Sh. Amit Prasad Gupta, WRLDC
- Sh. Kamlesh Kumar, SRLDC
- Sh. Tapobrata Paul, NERLDC
- Sh. Shailesh Gaurav, NRLDC
- Smt. Sireesha Segireddy, NLDC
- Sh. Shekhar Gupta, WRLDC
- Sh. Nitin Sharma, WRLDC
- Sh. Abrar Ahmad, NERLDC

Northern Region SLDCs:

- Sh. Amrendra Singh Kushwaha(Director, UP SLDC)
- Sh. Rajiv Mohan,CISO ,UP SLDC
- Sh. Mithilesh Gupta xen, UP SLDC
- Sh. R. K. Kaushik ,CISO , Haryana SLDC
- Sh. M. A. Khan GM, Delhi SLDC
- Sh. Deepak Sonu,CISO, Delhi SLDC

- Sh. Sunil Gautam,CISO, UTT SLDC
- Sh. Mohammad Yusuf Baba CE, J&K SLDC
- Sh. Ajit singh Banshiwal,CISO,Rajasthan SLDC
- Sh. Kamal Kumar ,CISO,Punjab SLDC
- Sh. Sanjay Kumar Ranot,CISO, HP SLDC

Northern Eastern Region SLDCs:

- Sh. B. Saibon , SLDC, Shillong, Meghalaya Energy Corporation Ltd
- Sh. David J. Lyngdoh (ISO) , SLDC, Shillong, Meghalaya Energy Corporation Ltd
- Sh. K. W. Sohlang (ISO),SLDC, Shillong, Meghalaya Energy Corporation Ltd
- Sh. Carlos W. Chen (ISO) , SLDC, Shillong, Meghalaya Energy Corporation Ltd
- Sh. Alakesh Koch (ISO) , SLDC, Shillong, Meghalaya Energy Corporation Ltd
- SLDC, Shillong
- Sh. Nangkong Perme, EE, SLDC, Arunachal Pradesh
- Sh. Gem Tada, JE(E), SLDC, Arunachal Pradesh
- Sh. Purik Buchi, AE, SLDC, Arunachal Pradesh
- Sh. S.I Asangba Tikhir, Executive Engineer, SLDC, Nagaland
- Sh. Pongmei Phom, SDO (IT & Comm), SLDC, Nagaland
- Sh. Belong Sunday, JE (IT), SLDC, Nagaland
- Sh. Kewielie Mepfuo, JE(IT), SLDC, Nagaland
- Sh. P Tiakaba Yimchunger, JE(IT), SLDC, Nagaland
- Sh. Laishram Ritu, DGM (S.O), SLDC, MSPCL
- Sh. Khoisnam Steela, DGM (Commercial), SLDC, MSPCL
- Sh. Ningombam Romeo Singh, CISO-GO, Deputy Manager (IT), SLDC, MSPCL
- Sh. Shampa Sen, Sr. Manager (In-charge SLDC SCADA Communication, O&M), SLDC Tripura
- Sh. Syed Md. Maswood Naser, DGM(Logistic), SLDC, Assam
- Sh. Bimal Ch. Borah, DGM(Operation), SLDC, Assam
- Sh. Raj Sharma, AGM(IT/SCADA), SLDC, Assam
- Smt. Rupjyoti Das, DM(IT/SCADA), SLDC, Assam
- Sh. Nilotpal Bhattacharjee, AM(IT/SCADA), SLDC, Assam
- Smt. Neeha Hazarika, JM(IT/SCADA), SLDC, Assam
- Sh. Jacob Lalrinfela, AE, SLDC, Mizoram
- Sh. P. L. Liandika, AE, SLDC, Mizoram
- Sh. V. Lalhmingliana, JE, SLDC, Mizoram

Western Region SLDCs:

- Sh. K S Manothiya, Executive Director & CISO , SLDC Chhattisgarh
- Sh. Y Krishna Rao, SE , SLDC Chhattisgarh
- Sh. G P Singh, EE , SLDC Chhattisgarh
- Sh. A B Rathod, Addl. CE, SLDC Gujarat

- Sh. M G Gadhvi, SE (SCADA & IT) , SLDC Gujarat
- Sh. D N Shah, EE (SCADA & IT), SLDC Gujarat
- Sh. N A Makwana, Dy. Engineer (SCADA & IT) & CISO, SLDC Gujarat
- Sh. K K Prabhakar, CE, SLDC, MP
- Sh. Rajesh Gupta, SE (SCADA) and CISO, SLDC, MP
- Smt. Anima Upadhyay, Assistant Engineer, SLDC, MP
- Sh. Rajiv Kumar, Assistant Engineer, SLDC, MP
- Sh. Srikanth Jaltare, ED, SLDC Maharashtra
- Sh. Peeyush Sharma, CE (I/C) , SLDC Maharashtra
- Sh. Ram Kolhe, SE (SCADA/Admin) , SLDC Maharashtra
- Sh. Nitin Paunikar, DGM IT, SLDC Maharashtra
- Sh. Stephen Fernandes, SE (North Goa), SLDC, Goa
- Smt. Amina Ghode, Assistant Engineer, SLDC, Goa
- Sh. Dhaval Bharti Goswami, Junior Engineer, SLDC, Goa
- Sh. C A Parmar, CE , SLDC, DNH
- Sh. H M Patel, EE , SLDC, DNH
- Sh. K K Bhaskaran, Assistant Engineer, SLDC Daman
- Sh. Jayesh Patel, Junior Engineer, SLDC Daman

Southern Region SLDCs:

- Sh. B Gurumurthy, CEE, SLDC – CISO , SLDC Karnataka
- Sh. S B Chandrashekharaiiah, SEE, SCADA - Alternate member , SLDC Karnataka
- Sh. Sayeeda Tasmiya Tarrannum, EE, SCADA , SLDC Karnataka
- Smt. G Neelima, AEE, SCADA , SLDC Karnataka
- Sh. C Anand, AEE, SCADA , SLDC Karnataka
- Sh. A K V Bhaskar – CISO , SLDC AP
- Sh. B. Hanumanthrao DEE, TELECOM, SLDC AP
- Sh. Kodala Rao, SLDC AP
- Sh. Pradeep K P, CE (TSO), SLDC Kerela
- Sh. Anand, SLDC Kerela
- Sh. Ajith S, AEE, SLDC Kerela
- Sh. N. Vijayee, SE Comm Opert., SLDC Tamil Nadu
- Sh. V. Mahalakshmi, SE REMC, SLDC Tamil Nadu
- Sh. T. Subbarayan, SE LD&GO , SLDC Tamil Nadu
- Sh. Shanmugam, SE SLDC, SLDC Puducherry
- Sh. Shyamjeet, AE SLDC Puducherry
- Sh. P. Suresh Babu, SE , SLDC Telangana
- Sh. R Jagga Reddy, DE SCADA, SLDC Telangana
- Sh. Sameer, ADE SCADA, SLDC Telangana

Eastern Region SLDCs:

- Sh. Manohar Ismail, CISO & CE-IT, SLDC DVC
- Sh. Mr. Sandip Pal, CE-SLDC, Howrah, SLDC DVC
- Sh. Mr. Dinesh Kumar Singh, DCE(E), SLDC DVC

- Sh. Nishant K Singh, DBA cum CISO,SLDC Bihar
- Sh. Rahul Kumar, IT Manager cum Addl. CISO, SLDC Bihar
- Sh. Rahul Kumar, IT Manager cum Addl. CISO, SLDC Bihar
- Sh. Biswajit Mohanta, DE(IT&C), CISO,SLDC West Bengal
- Sh. C. Haldar, Chief Engineer, SLDC West Bengal
- Sh. Rimil Topno, CISO, SLDC Jharkhand

F.No.1/9/2021/IT-1(257009)
IT & Cyber Security Division
Ministry of Power
Government of India

Shram Shakti Bhavan,
Rafi Marg, New Delhi.
Dated: 23rd March, 2021

Subject : Minutes of Meeting (MoM) to Review the Cyber Security in Power Sector taken by Hon'ble Minister of Power.

The undersigned is directed to refer to the review meeting taken by Hon'ble Minister for Power on Cyber Security in Power Sector held on 4th March, 2021 and to enclose the Minutes of Meeting (MoM) for information and further necessary action.

Dilip Kumar

(Dilip Kumar)
Under Secretary to Govt. of India
Tel.No. 23715507 Exn. 245
Email : it-mop@nic.in

Encl. : as above

To

- | | |
|------------------------------|-----------------------------------|
| 1. Shri Prakash Mhaske, | Chairperson, CEA |
| 2. Shri Dinesh Chandra, | Member, CEA |
| 3. Shri A K Singh, | CMD NHPC |
| 4. Shri KVS Baba, | CMD POSOCO |
| 5. Shri K Sreekant, | CMD PGCIL |
| 6. Shri Ramesh Babu, | Director, NTPC |
| 7. Ms. Seema Gupta, | Director, PGCIL |
| 8. Shri Narasimhan, | Director, POSOCO |
| 9. Dr Ajeet Bajpai, | DG, NCTIPC |
| 10. Dr Sanjay Bahl, | DG, CERT-In |
| 11. Shri M A K P Singh | CE, CEA and (CTSO-MoP) |
| 12. Shri Vivek Goel | CE, CEA & CERT-Distribution |
| 13. Shri M K Srivastava, | ED, NTPC |
| 14. Smt. Savitri Srivastava, | ED, NHPC & CERT-Hydro |
| 15. Shri R K Arora | ED, PGCIL & CERT-Trans |
| 16. Shri Devender Kumar, | CGM, POSOCO & CERT-Grid Operation |
| 17. Smt. Meena Agarwal | GM, NTPC & CERT-Thermal |

Copy to

1. PS to Hon'ble Minister of State (IC) for Power, NRE, Skill Development & Entrepreneurship.
2. Sr.PPS to Secretary/PPS to AS &FA/ Sr.PPS to AS (SKGR)/PPS to AS(VKD)/Sr.PPS to Sr.Advisor/PPS to JS(TK)/PPS to JS(MKN)/Sr.PPS to JS (GP)/PS to CE (SKK)
3. PS to Dir.(IT)

Minutes of Meeting (MoM) chaired by Hon'ble MoS(IC) for Power and NRE on 4th March 2021 to Review Cyber Security preparedness in power sector.

List of participants is enclosed at Annexure - I

2. Secretary, Ministry of Power (MoP) welcomed Hon'ble Minister and all the participants. He requested the participants from various organisations to present their preparedness toward cyber security and actions taken in view of the present cyber threats particularly from "prior reference countries".

3. The major points discussed were as follows:

3.1 POWERGRID:

3.1.1 Director (Operations), POWERGRID mentioned that POWERGRID had developed dedicated communication network PAN-India on fibre optic which are being used for data exchange between sub-stations and Regional Transmission Asset Management Centres (RTAMC) / National Transmission Asset Management Centre (NTAMC). Six (6) nos. of optical fibres are used to cater to communication requirement of Regional Load Despatch Centre (RLDC) which are dedicated fibres.

3.1.2 On a query regarding any possible intrusion at the wire level, it was informed that optical fibre level intrusion was not possible. CMD, POWERGRID informed that actions were being taken to physically isolate the RLDC communication and the other communication network to ensure foolproof arrangement. On a query by Hon'ble Minister, it was confirmed that these are isolated from internet.

3.1.3 Hon'ble Minister advised to examine all the communication devices and ensure removal of malware, if any, and to isolate all the equipment which are used for data communication to RLDCs and Asset Management Centres from the internet.

3.1.4 It was informed that the control centre systems were protected through firewalls and were also isolated from internet. Continuous monitoring is being done at NTAMC

level on the traffic and reports are being generated. Detailed architecture of the RTAMC/NTAMC was presented.

3.1.5 It was also mentioned that as Computer Emergency Response Team-Transmission (CERT-Trans) coordination is being done by Powergrid with all the State Transmission Utilities (STUs) and accordingly Chief Information Security Officers (CISOs) have been nominated by all 32 entities. It was also informed that meeting with all CISOs of CERT-Trans are being organised regularly and the last meeting was held in Feb'2021. The next meeting is being proposed shortly.

3.1.6 Hon'ble Minister advised POWERGRID to engage competent cyber experts and create cyber security awareness among all the keys functionaries. It was also decided to report to Ministry all important cyber security related incidents without any delay.

3.2 POSOCO:

3.2.1 CMD, POSOCO informed that no functionalities/operations had been affected across POSOCO due to recent cyber security incidents related to Red Echo threat actor. He also mentioned that no direct breaker operation is being controlled from the RLDCs/NLDC and hence no threats is envisaged in the physical system. Voice instructions are given to the sub-stations and power stations on dedicated communication network for any switching of breakers or generation changes.

3.2.2 Chief Information Security Officer (CISO), POSOCO gave a brief presentation regarding cyber security preparedness in POSOCO. Inherent security features provided in Operation Technology (OT) Systems and Corporate Information Technology (IT) systems were explained. The following major points were highlighted:

(i) At every interface in OT and IT systems, firewall is being used. All functions have been segregated into critical and non-critical functions. Critical functions are kept in different zones for enhanced security.

(ii) In Supervisory Control and Data Acquisition (SCADA) systems, networks are divided into various segments / Local Area Networks (LANs) based on the criticality of the applications & functions. These LANs are further secured through firewalls.

(iii) There is no direct connectivity of internet with SCADA. However, SCADA system is connected through firewall for limited data exchange with IT system so that the information could be shared with all stakeholders.

(iv) Daily schedule is published over websites of POSOCO and utilities get information about despatch and drawl from websites hosted by RLDCs and Utilities take necessary action locally and no direct signal is being sent to them.

(v) Upon a query regarding sudden increase / decrease of demand, it was also clarified that the changes in load are being taken care of by the governors of the generators locally. In case of extreme frequency excursions, disconnection of loads are taken care by Under Frequency Relays (UFR) fitted on the individual feeders. These relays too act independently and do not seek any signal from the control centre.

(vi) Regarding the Automatic Generation Control from National Load Despatch Centre (NLDC), it was informed that though the signals are being sent to the generators from NLDC for carrying out changes in the generation, there are limiters at generator ends and abrupt changes cannot take place.

(vii) All the communication used for data acquisition both for SCADA and Wide Area Measurement (WAMs) system is through dedicated communication network which is exclusively used for Power system operation, maintained by Central Transmission Utility (CTU)/POWERGRID.

(viii) No China make hardware or software is present in the OT and IT system of POSOCO.

(ix) Yearly audit is being done for all the IT and OT systems across all control centres under operation of POSOCO, through Indian Computer Emergency Response Team

(CERT-In) empanelled agency. It was further clarified that Audit of OT system at SLDCs is part of annual maintenance contract.

(x) Cyber Crisis Management Plan (CCMP) has been implemented and CISOs have been designated at each control centre of POSOCO to take care of all the issues related to cyber security. Cyber Crisis Teams also have been formed at RLDCs.

(xi) Regular training programs and awareness sessions are being organised.

(xii) Only official E- mail (mail server hosted by POSOCO) is being used by employees to avert any intrusion from public mail services like Gmail, Yahoo etc. Further usage of social media is blocked. All Universal serial Bus (USB) devices are blocked and secure shared drives are used for file transfer.

(xiii) All the advisories from CERT-Trans/CERT-in, National Critical Information Infrastructure Protection Centre (NCIIPC) and other statutory agencies are complied promptly. Being ISO 27001 certified since 2008, all the controls and processes are in place for cyber security.

3.2.3 Hon'ble Minister enquired about the details of cyber security incidence which took place in the month of Nov,2020. CISO, POSOCO informed that after receiving alert from CERT-In regarding the incidence on 11th November, 2020 all necessary action were taken promptly at POSOCO. Action taken reports was also shared with CERT-Trans/CERT-in on 20th November,2020. CISO, POSOCO also informed that actions were being taken for cyber forensic analysis of affected system with the help of Centre for Development of Advanced Computing (C-DAC).

3.2.4 POSOCO was asked to share the latest audit reports for all systems with MOP in a week.

3.2.5 DG, CERT-in stated that they had received the action taken reports from POSOCO. However, other details like machine image back-up, firewall logs etc may also be provided for forensic analysis at their end. POSOCO should provide this within a week.

3.2.6 DG, CERT-in highlighted the need of regular audits preferably every 6 months through CERT-in empanelled agencies.

3.3 NTPC Limited (NTPC) i.e. CERT-Thermal:

3.3.1 NTPC informed that their station network was protected through dedicated firewall and all devices were being monitored continuously. They also mentioned that the devices are being tested at the time of Factory Acceptance Tests (FAT) for the cyber security also and an undertaking is being obtained from the Original Equipment Manufacturer (OEM) to ensure cyber compliance.

3.3.2 Cyber Crisis Management Plans (CCMPs) have been developed for all the locations by NTPC and are under implementation.

3.3.3 It was informed that OT & IT systems are separated in NTPC, and no internet connectivity is there with OT system.

3.3.4 As CERT-Thermal, NTPC is also coordinating with 24 Utilities and CISO have been appointed for 23 organisations.

3.3.5 On a query by Hon'ble Minister, it was confirmed that the Independent Power Producers (IPPs) were not included under CERT-Thermal. It was advised to take necessary action to include all the thermal plants under CERT-Thermal.

3.3.6 Hon'ble Minister enquired about the cyber incident at Kudgi Thermal Power Station. It was informed that the details are under investigation. Enquiry should be completed within a week and report sent to the Ministry.

3.4 NHPC (CERT-Hydro):

3.4.1 NHPC informed that their station network was protected through dedicated firewall and all devices were being monitored continuously.

3.4.2 CCMPs have been developed for all the locations of NHPC and have been implemented.

3.4.3 As CERT-Hydro they are also coordinating with 33 Utilities and CISO have been appointed by most of the organisations.

3.5 Central Electricity Authority (CEA):

3.5.1 Chief Engineer (IT), CEA who is also the designated CISO of MoP informed that a Regulation needs to be prepared for cyber security for which actions are being taken at CEA. It was advised to complete the preparation of the proposed Regulation within a month.

3.5.2 It was also mentioned that a cyber security performance guarantee should be taken from the supplier of the security devices to ensure the cyber security protection of the devices and its regular updation.

3.5.3 It was also informed that a committee was formed by MoP to prepare the actions to be taken for cyber security and the report was submitted to MoP in the month of January, 2020. Hon'ble Minister directed to submit the relevant file.

3.5.4 CE(IT), CEA also mentioned that a test bed for cyber security was under preparation under supervision of Standardisation Testing and Quality Certification (STQC), CPRI and it is proposed that cyber security devices shall be tested in this test bed. It was advised to complete the test bed within next 2 weeks.

3.5.5 it was mentioned that protocol for testing should be prepared which should be used as a qualification criterion for the selection of devices. A standard for testing is also under development in CEA which need to be completed at the earliest.

3.6 Indian Computer Emergency Response Team (CERT-In):

3.6.1 DG (CERT-In) informed that some of the recent attacks were purported to originate from South Korea and Hong Kong. Hon'ble Minister of Power pointed out that it was possible that in cyber warfare there were ways to mark the origin of the cyber attack. The IP addresses were associated with Chinese entities "Shadow Pad" and "Red Echo". DG CERT-In emphasised the need for forensic tests to be carried out on an urgent basis for which they had asked for machine images, firewall logs.

3.6.2 CERT-In has a Cyber Swachata Kendra (CSK), through which different organisations are being monitored and being helped in sweeping off cyber infections.

3.6.3 DG(CERT-In) highlighted the following:

(i) Remote access to consultants and advisors are being given by the Utilities which are major threats to cyber security.

(ii) Cyber security audits done in Power sector is very less compared to Finance sector.

(iii) CERT-In has empanelled auditors who can do audit for IT system, but for OT system audits, few auditors are available and there is a need to ramp up their capability for OT system audit capability.

(iv) In order to find out the root cause of any security incidence, cyber forensic analysis needs to be done which require firewall logs and image backup of affected system.

(v) Frequent audit, preferably once in six months need to be done to protect the system.

(vi) CERT -In informed that, on daily basis they are sharing cyber security report to 11 power sector organisations. DG,CERT-In explained that to counter cyber security issues following should be done:

- Trusted supply chain should be ensured to avoid any inherent malware etc. In this regard CERT-In opined that at the time of procurement, it should be ensured.
- Testing facilities needs to be developed in India so that security devices could be tested.

- Model contract document should be developed which could be a part of the contract agreement.
- Trusted architecture should be ensured at design stage so that cyber security intrusion can be avoided.
- System should be designed in robust & resilient manner so that data flow to be remain unidirectional. Usage of data diodes etc. can be explored for this purpose.
- Life of OT system is generally 15 to 20 year whereas in case of IT system it is 6 – 7 years due to rapid changes in technology, changes keep on happening. Due to less updates in OT system, it becomes vulnerable to cyber security threat.
- Weak password policy is a very common issue which many times results in cyber security issues.
- Capacity building within organisation is of utmost requirement to minimise the cyber threat.

3.6.4 Hon'ble Minister advised that all the control centre of RLDCs/NLDC, SLDCs, DISCOMs may be taken under purview of daily sweep by CERT-In on urgent basis.

3.7 National Critical Information Infrastructure Protection Centre (NCIIPC):

3.7.1 NCIIPC stated that most of the points have already been covered by CERT-In. NCIIPC stated that so far, they have issued the alert for 82 distinct vulnerability, out of that only 26 could be plugged.

3.7.2 Identification of Critical Information Infrastructure (CII) by every power sector utility should be done on top priority in order to give focussed and regular attention to such identified elements.

4. After detailed deliberations, Hon'ble Minister gave the following instructions:

4.1 Forensic analysis needs to be carried out for all the incidents on urgent basis and reported to CERT-In / NCIIPC.

4.2 Ministry must be kept informed without any delay on cyber attacks and action taken.

4.3 A detailed report may be submitted to Ministry by all power Sector CERT organisations within one week as to when was the last audit conducted, what are the

shortfalls, what are the recommendations, which recommendations were complied / not complied.

4.4 A Cyber Security Excellence Centre (CSEC) should be set up in power sector and possibilities may be explored for utilising the expertise into a business opportunity. While ensuring cyber security in own institution, possibility may be explored for providing consultancy also in the area of cyber security.

4.5 Every organization under MoP should have Cadre of Cyber Security experts.

4.6 It was desired to identify and design a system so that all other interfaces are separated/insulated from the operational system. While interfacing with customers, consumers etc., ensure that they are not able to send a malware to power systems. Any computer connected with internet should be isolated from the OT system.

4.7 A Senior Officer shall be designated as CISO in each power utility.

4.8 Power sector utilities to engage with CERT-In on a daily basis for support related to cyber security matters.

4.9 Cyber Security audit by CERT-In empaneled auditors at an interval of 6 month need to be carried by all organisations under MoP.

4.10 CEA shall submit a report on their recommendations for regulations covering the cyber security framework within 3 weeks.

4.11 Ensure that Cyber Crisis Management Plan (CCMP) vetted by CERT-In is implemented urgently in every power utility.

4.12 Implementation of data diode may be done which allows data flow from OT System to IT system only.

4.13 Capacity building, training, awareness programme shall be carried out for IT department and OT Department on cyber security and also for Audit of OT system.

4.14 Every organization under MoP must identify Critical Information Infrastructure (CII) and critical business processes urgently in coordination with NCIIPC.

4.15 All SLDCs, RLDCs, NLDC be onboard the Cyber Swachchtha Kendra set up by CERT-In immediately.

4.16 Any cyber security incident is to be brought to the notice of the Hon'ble Minister and Secretary, Power immediately.

4.17 Each SCADA systems needs to be scanned regularly for suspicious activity/malware. Instructions may also be issued for prior GoI approval for procuring any SCADA system from manufacturers of border countries.

4.18 It was advised to conduct regular cyber security mock drills in coordination with CERT-In.

4.19 It was emphasised to identify and adopt standards to verify the user, device and limiting access and privileges for using external devices like USB, DVDs etc.

4.20 All the utilities were advised to adopt strong password policy in the organisation.

4.21 All utilities were advised to use only official email facility for communication.

4.22 Point of action with time line are given below:

Sl. No.	Point of Action	Organisations Responsible	Time Line
1.	Nomination of Senior Officer as CISO at utility level	All power utilities (To be ensured by CISO-MoP, Sectoral CERTs)	Immediately
2.	Regulation to be prepared for cyber security in power sector	CEA (To be coordinated by CISO-MoP)	One month

3.	Setting up of test bed for cyber security	<ul style="list-style-type: none"> • CEA • CPRI (To be coordinated by CISO-MoP in consultation with STQC)	Within next 2 months.
4.	Preparation of protocol for testing.	<ul style="list-style-type: none"> • CEA 	Within a week
5.	Regulations covering the cyber security framework.	<ul style="list-style-type: none"> • CEA 	within 3 weeks
6.	Onboard Cyber Swachchtha Kendra set up by CERT-In.	<ul style="list-style-type: none"> • SLDCs, RLDCs, NLDC • All power utilities • CERT-In (To be coordinated by CISO-MoP, Sectoral CERTs)	Immediately
7.	Conduct cyber security mock drills for IT and OT Systems	<ul style="list-style-type: none"> • All power utilities • CERT-In (To be coordinated by CISO-MoP, Sectoral CERTs)	Quarterly
8.	Identify Critical Information Infrastructure (CII) and critical business processes	<ul style="list-style-type: none"> • All power utilities • NCIIPC (To be coordinated by CISO-MoP, Sectoral CERTs)	Within 3 months
9.	Implementation of CERT-In vetted Cyber Crisis Management Plan (CCMP)	<ul style="list-style-type: none"> • All power utilities • CERT-In (To be coordinated by CISO-MoP, Sectoral CERTs)	Within 2 months
10.	Implementation of ISMS, ISO-27001	All power utilities	Within 2 months

11.	Cyber Security audit of IT and OT systems	All power utilities (to be conducted by CERT-In. empanelled agencies)	Every 6 month
12.	Share the latest audit reports for all systems with MOP	POSOCO	Within a week.
13.	Share machine image back-up, firewall logs etc. of the recent incident with CERT-In for forensic analysis.	POSOCO	Immediately
14.	A detailed report to be submitted to Ministry as to when was the last audit conducted, what are the shortfalls, what are the recommendations, which recommendations were complied / not complied.	All power Sector CERT organisations	Within one week
15.	Report of incident at Kudgi Thermal Power Station to be submitted to MoP.	NTPC	Within a week
16.	Cyber Security Check of all IT/OT systems for malware/Virus etc.	All organisations	Regularly
17.	Cyber Security Awareness Programme at all levels	All organisations	Regularly
18.	Updation of Operating System / Application Software and Anti Virus.	All organisations	Regularly

5. The meeting ended with a vote of thanks to the chair.

Annexure-I**List of Participants**

1.	Shri Alok Kumar	Secretary, MoP
2.	Shri Prakash Mhaske	Chairperson, CEA
3.	Shri Ashish Upadhyaya	AS&FA, MoP
4.	Shri S.K.G Rahate	Addl.Secretary, MoP
5.	Shri Vivek Kumar Dewangan	Addl.Secretary, MoP
6.	Shri Rajpal	Sr.Advisor, MoP
7.	Shri Tanmay Kumar	Joint Secretary, MoP
8.	Shri Mritunjay Kumar Narayan	Joint Secretary, MoP
9.	Shri Ghanshyam Prasad	Joint Secretary, MoP
10.	Shri Sanjeev Kumar Kassi	Chief Engineer, MoP
11.	Shri Dinesh Chandra	Member, CEA
12.	Shri A K Singh	CMD NHPC
13.	Shri KVS Baba	CMD POSOCO
14.	Shri K Sreekant	CMD PGCIL
15.	Shri Ramesh Babu	Director, NTPC
15.	Ms.Seema Gupta	Director, PGCIL
16.	Shri Narasimhan	Director, POSOCO
17.	Dr Ajeet Bajpai	DG NCIIPC
18.	Dr Sanjay Bahl	DG, CERT-In
19.	Shri Vivek Goel	CE, CEA
20.	Shri M A K P SINGH	CE, CEA (CISO-MoP)
21.	Shri M K Srivastava	ED, NTPC
22.	Smt.Savitri Srivastava	ED, NHPC
23.	Shri R K Arora	ED, PGCIL
24.	Shri Devender Kumar	CGM, POSOCO
25.	Smt.Meena Agarwal	GM, NTPC