सत्यमेव जयते
भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति
Eastern Regional Power Committee
14, गोल्फ क्लब रोड, टालीगंज, कोलकाता-700033
14 Golf Club Road, Tollygunj, Kolkata-700033

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सं. /NO. ERPC/Op/SCADA/2024/413 **दिनांक/DATE: 04.06.2024**

सेवा में/To,

संलग्न सूची के अनुसार/As per list enclosed.

विषय: 28.05.2024 (मंगलवार) को आयोजित ERPC की TeST उप-समिति की विशेष बैठक का कार्यवृत्त
Sub: Minutes of Special meeting of TeST sub-committee of ERPC held on 28.05.2024 (Tuesday)

Please find enclosed **Minutes of Special Meeting of Telecommunication, SCADA & Telemetry (TeST)sub-committee of ERPC** held on **28.05.2024(Tuesday) virtually** through **Microsoft Teams online meeting** platform at **16:00** hrs for your kind information and necessary action. The same is also available at ERPC website (www.erpc.gov.in).

कृपया अपनी जानकारी और आवश्यक कार्रवाई के लिए **28.05.2024 (मंगलवार)** को **16:00** बजे **माइक्रोसॉफ्ट टीम्स ऑनलाइन मीटिंग** प्लेटफॉर्म के माध्यम से आयोजित ईआरपीसी की दूरसंचार, एससीएडीए और टेलीमेट्री (टीईएसटी) उप-समिति की विशेष बैठक के संलग्न कार्यवृत्त देखें। यह ईआरपीसी वेबसाइट (www.erpc.gov.in) पर भी उपलब्ध है।

टिप्पणियाँ, यदि कोई हों, कृपया यथाशीघ्र इस कार्यालय को अग्रेषित करें।
Observations, if any, may please be forwarded to this office at the earliest.

इसे सदस्य सचिव के अनुमोदन से जारी किया जाता है।
This issues with the approval of Member Secretary.

04/06/2024

(S.Kejriwal)
SE(Operation)
एसई (ऑपरेशन)

LIST OF ADDRESSES:

1. CHIEF ENGINEER (ULDC), BSPTCL, PATNA, (FAX NO. 0612-2504557/2504937)
2. DY. GENERAL MANAGER, (ULDC), JUSNL, RANCHI (FAX N0. -0651 -2490486/2490863)
3. CHIEF GENERAL MANAGER, (TELECOM), OPTCL, BHUBANESWAR (FAX N0.0674-2748509)
4. GENERAL MANAGER, TTPS, TALCHER, (FAX NO. 06760-243212)
5. CHIEF ENGINEER, CLD, WBSETCL, HOWRAH, (FAX NO. 033-26886232)
6. CHIEF ENGINEER, COMMUNICATION, WBSETCL, SALT LAKE (FAX NO.: 033-23591955)
7. CHIEF ENGINEER, SLDC, DVC, HOWRAH (FAX NO. 033-2688-5094)
8. ADDL.CHIEF ENGINEER, SLDC, POWER DEPT., GOVT. OF SIKKIM, GANGTOK, (FAX NO. 03592-228186/201148/202284)
9. CHIEF ENGINEER, SLDC, DVC, MAITHON
10. EXECUTIVE DIRECTOR, ERLDC, GRID-INDIA, KOLKATA, (FAX NO. 033-2423·5809)
11. GENERAL MANAGER, FSTPP, NTPC, FARAKKA, (FAX NO. 03512-224214/226085/226124)
12. GENERAL MANAGER, KhSTPP, NTPC, KAHALGAON (FAX N0.06429-226082)
13. GENERAL MANAGER, TSTPP, NTPC, TALCHER, (FAX NO. 06760-249053)
14. EXECUTIVE DIRECTOR, POWERGRID, ER-ll, KOLKATA(Fax no: 033-23572827)
15. EXECUTIVE DIRECTOR, POWERGRID, ER-l, PATNA, (FAX N0.0612-2531192)
16. EXECUTIVE DIRECTOR, POWERGRID, ODISHA PROJECTS, SAHID NAGAR, BHUBANESWAR - 751 007
17. EXECUTIVE DIRECTOR (O&M), NHPC, FARIDABAD (FAX No.:0129-2272413)
18. GENERAL MANAGER, TEESTA -V POWER STATION, NHPC, SINGTAM, EAST SIKKIM (FAX 03592 · 247377)
19. CHIEF ENGINEER, RANGIT POWER STATION, NHPC, P.O. RANGIT NAGAR, SOUTH SIKKIM (FAX N0.03595-259268)
20. PLANT HEAD, ADHUNIK POWER & NATUARAL RESOURCES, JHARKHAND (FAX NO.: 0657·6628440)
21. AGM (OPERATION), MAITHON POWER LTD, DHANBAD (FAX: 08860004758)
22. GENERAL MANAGER (O&M), NHPC LTD, FARIDABAD, FAX: 0129-2272413
23. ASSOCIATE VICE PRESIDENT, GMR KEL, BHUBANESWAR-751007. (FAX NO: 0674-2572794)
24. SHRI D. P. BHAGAVA, CHIEF CONSULTANT (O&M), TEESTA URJA LIMITED, NEW DELHI -110 001(FAX:011 -46529744)
25. SHRI BRAJESH KUMAR PANDE, PLANT HEAD, JITPL. (FAX:011 ·26139256-65)
26. CEO, SNEHA KINETIC POWER PROJECTS PVT. LTD. #31 – A, NATIONAL HIGHWAY, BEHIND SNOD BUILDING, DEORALI, GANGTOK, SIKKIM-737102.
27. PLANT HEAD, CHUZACHEN HYDRO ELECTRIC PROJECT, GATI INFRASTRUCTURE PVT LTD, LOWER BERING KARABARI, PAKYONG, EAST SIKKIM, 737106
28. ED, DANS ENERGY PVT. LTD, 5TH FLOOR, BUILDING NO.8, TOWER-C, DLF CYBER CITY, PHASE-II, GURGAON-122002.
29. GENERAL MANAGER, STPP, NTPC, BARH.
30. DY. GENERAL MANAGER (OS), NTPC, ER-LL, N-17/2, 3-5 FLOORS, OLIC BUILDING, NEAR UNION BANK, NAYAPALLI, BHUBANESWAR, ODISHA 751012.
31. ADDITIONAL GENERAL MANAGER (OS), NTPC OFFICE COMPLEX, ER1 HQ, SHASTRI NAGAR, PATNA, BIHAR 800029
32. CHIEF ENGINEER (COMMUNICATION), DVC TOWER, CIT SCHEME VII M, ULTADANGA, KOLKATA, WEST BENGAL 700067.
33. AGM (EEMG), NABINAGAR POWER GENERATING COMPANY LTD, SHIVANPUR, P.O.-ANKORHA DIST.-AURANGABAD, STATE – BIHAR PIN -824 303
34. GENERAL MANAGER, DARBHANGA-MOTIHARI TRANSMISSION COMPANY LTD.,A-26/03,MOHAN COOPERATIVE INDUSTRIAL ESTATE,MATHURA ROAD,NEW DELHI 110044.
35. AGM (EEMG) BHARTIYA RAIL BIJLEE COMPANY LIMITED, NABINAGAR, H-TYPE OFFICE PO-PIROUTA, P.S.-KHAIRA, DISTT-AURANGABAD, BIHAR-824 303,
36. DIRECTOR (OPERATION), ODISHA POWER GENERATION CORPORATION LTD. IB THERMAL POWER STATION, BANHARPALLI, DISTRICT- JHASUGUDA ODHISA—768234

37. RUDRESHA MV, MANAGING DIRECTOR, PROJECT DELIVERY, OSI DIGITAL GRID SOLUTIONS, UNIT NO. 29, LOWER GROUND FLOOR, INTERNATIONAL TECH PARK BANGALORE(ITPB), WHITEFIELD, BANGALORE 560066
38. SHRI ANISH RAJGOPAL, DIRECTOR, M/S CHEMTROLS INDUSTRIES PRIVATE LIMITED, AMAR HILL, SAKI VIHAR ROAD, POWAI, MUMBAI – 400 072

पतों की सूची:

1. मुख्य अभियंता (यूएलडीसी), बीएसपीटीसीएल, पटना, (फैक्स नं. 0612-2504557/2504937)
2. डीवाई. महाप्रबंधक, (यूएलडीसी), जेयूएसएनएल, रांची (फैक्स नंबर -0651 -2490486/2490863)
3. मुख्य महाप्रबंधक, (दूरसंचार), ओपीटीसीएल, भुवनेश्वर (फैक्स N0.0674-2748509)
4. महाप्रबंधक, टीटीपीएस, तालचेर, (फैक्स नंबर 06760-243212)
5. मुख्य अभियंता, सीएलडी, डब्ल्यूबीएसईटीसीएल, हावड़ा, (फैक्स नंबर 033-26886232)
6. मुख्य अभियंता, संचार, डब्ल्यूबीएसईटीसीएल, साल्ट लेक (फैक्स नं.: 033-23591955)
7. मुख्य अभियंता, एसएलडीसी, डीवीसी, हावड़ा (फैक्स नंबर 033-2688-5094)
8. अपर मुख्य अभियंता, एसएलडीसी, विद्युत विभाग, शासन। सिक्किम, गंगटोक, (फैक्स नंबर 03592-228186/201148/202284)
9. मुख्य अभियंता, एसएलडीसी, डीवीसी, मैथन
10. कार्यकारी निदेशक, ईआरएलडीसी, पोसोको, कोलकाता, (फैक्स नंबर 033-2423·5809)
11. महाप्रबंधक, एफएसटीपीपी, एनटीपीसी, फरक्का, (फैक्स नंबर 03512-224214/226085/226124)
12. महाप्रबंधक, खएसटीपीपी, एनटीपीसी, कहलगांव (फैक्स नंबर 0.06429-226082)
13. महाप्रबंधक, टीएसटीपीपी, एनटीपीसी, तालचेर, (फैक्स नंबर 06760-249053)
14. कार्यकारी निदेशक, पावरग्रिड, ईआर-II, कोलकाता (फैक्स नंबर: 033-23572827)
15. कार्यकारी निदेशक, पावर ग्रिड, ईआर-एल, पटना, (फैक्स N0.0612-2531192)
16. कार्यकारी निदेशक, पावरग्रिड, ओडिशा प्रोजेक्ट्स, शहीद नगर, भुवनेश्वर - 751 007
17. कार्यकारी निदेशक (ओ एंड एम), एनएचपीसी, फरीदाबाद (फैक्स नंबर:0129-2272413)
18. महाप्रबंधक, तीस्ता-वी पावर स्टेशन, एनएचपीसी, सिंगतम, पूर्वी सिक्किम (फैक्स 03592 · 247377)
19. मुख्य अभियंता, रंगीत पावर स्टेशन, एनएचपीसी, पी.ओ. रंगीत नगर, दक्षिण सिक्किम (फैक्स नंबर 03595-259268)
20. प्लांट हेड, आधुनिक पावर एवं नेचुरल रिसोर्सेज, झारखंड (फैक्स नं.: 0657·6628440)।
21. एजीएम (ऑपरेशन), मैथन पावर लिमिटेड, धनबाद (फैक्स: 08860004758)
22. महाप्रबंधक (ओ एंड एम), एनएचपीसी लिमिटेड, फरीदाबाद, फैक्स: 0129-2272413
23. एसोसिएट वाइस प्रेसिडेंट, जीएमआर केईएल, भुवनेश्वर-751007। (फैक्स नंबर: 0674-2572794)
24. श्री डी. पी. भागवा, मुख्य सलाहकार (ओ एंड एम), तीस्ता ऊर्जा लिमिटेड, नई दिल्ली -110 001 (फैक्स:011 -46529744)
25. श्री ब्रजेश कुमार पांडे, प्लांट हेड, जीतपीएल। (फैक्स:011·26139256-65)
26. सीईओ, स्नेहा काइनेटिक पावर प्रोजेक्ट्स प्राइवेट लिमिटेड। लिमिटेड #31 - ए, राष्ट्रीय राजमार्ग, स्नोड बिल्डिंग के पीछे, देवराली, गंगटोक, सिक्किम-737102।
27. प्लांट हेड, चुजाचेन हाइड्रो इलेक्ट्रिक प्रोजेक्ट, गति इंफ्रास्ट्रक्चर प्राइवेट लिमिटेड, लोअर बेरिंग कराबारी, पाकयोंग, ईस्ट सिक्किम, 737106
28. ईडी, डान्स एनर्जी प्रा. लिमिटेड, 5वीं मंजिल, बिल्डिंग नंबर 8, टावर-सी, डीएलएफ साइबर सिटी, चरण-2, गुड़गांव-122002।
29. महाप्रबंधक, एसटीपीपी, एनटीपीसी, बाढ़।
30. डीवाई. महाप्रबंधक (ओएस), एनटीपीसी, ईआर-एलएल, एन-17/2, 3-5 मंजिल, ओलिक बिल्डिंग, यूनियन बैंक के पास, नयापल्ली, भुवनेश्वर, ओडिशा 751012।

अपर महाप्रबंधक (ओएस), एनटीपीसी कार्यालय परिसर, ईआर1 मुख्यालय, शास्त्री नगर, पटना, बिहार 800029

32. मुख्य अभियंता (संचार), डीवीसी टावर, सीआईटी स्कीम VII एम, उल्टाडांगा, कोलकाता, पश्चिम बंगाल 700067।

33. एजीएम (ईईएमजी), नबीनगर पावर जनरेटिंग कंपनी लिमिटेड, शिवानपुर, पो.-अंकोढ़ा जिला-औरंगाबाद, राज्य-बिहार पिन -824 303

34. महाप्रबंधक, दरभंगा-मोतिहारी ट्रांसमिशन कंपनी लिमिटेड, ए-26/03, मोहन सहकारी औद्योगिक एस्टेट, मथुरा रोड, नई दिल्ली 110044।

35. एजीएम (ईईएमजी) भारतीय रेल बिजली कंपनी लिमिटेड, नबीनगर, एच-टाइप ऑफिस पो-पिरौटा, पी.एस.-खैरा, जिला-औरंगाबाद, बिहार-824 303,

36. निदेशक (संचालन), ओडिशा पावर जेनरेशन कॉर्पोरेशन लिमिटेड। आईबी थर्मल पावर स्टेशन, बनहरपल्ली, जिला-झासुगुड़ा ओडिशा-768234

37. रुद्रेश एमवी, प्रबंध निदेशक, परियोजना वितरण, ओएसआई डिजिटल ग्रिड समाधान, यूनिट नं। 29, निचला भूतल, इंटरनेशनल टेक पार्क बैंगलोर (आईटीपीबी), व्हाइटफील्ड, बैंगलोर 560066

38. श्री अनीश राजगोपाल, निदेशक, मेसर्स केमट्रोल्स इंडस्ट्रीज प्राइवेट लिमिटेड, अमर हिल, साकी विहार रोड, पवई, मुंबई - 400 072

ERPC: Kolkata

Minutes of Special meeting of TeST sub-committee of ERPC dated 28.05.2024

The meeting was held under the chairmanship of **Member Secretary ERPC**.

List of participants enclosed at **Annexure A.**

1. **Finalizing operational modalities of Communication Audit in Eastern region.**

- *ERLDC put up a concise presentation highlighting salient features of the Communication Audit procedure. (**Annexure D)***
- *Upon detailed deliberation and consequent to feedback from the participants in the meeting, following modalities have been agreed:*
  - *Communication Audit shall be carried out in following two phases:*
    - *Scrutiny of information*
    - *Physical verification*
  - *All ER states along with Powergrid need to furnish the details of Communication Channels and Equipment by **25th June 2024** as per format enclosed. (**Annexure B)***
  - *Initially all states need to furnish details pertaining to the part of intra-state communication network being utilized for ISTS communication and respective SLDCs shall be the nodal agency in this regard. Later similar details may also be needed i.r.o. any intra-state node (not directly connected to ISTS communication) based on criticality as and when decided by the Communication Audit Sub-Group.*
  - *For purpose of scrutiny of information submitted by states as well as ISTS entity, recently operationalized ER-UNMS project shall be leveraged to the maximum possible extent by the Communication Audit Committee. This shall aid in making the first phase of audit streamlined and convenient.*
  - *On completion of scrutiny of documents, thereafter physical audit shall be carried out at critical nodes whose criticality shall be unanimously affirmed by the Communication Audit Committee.*
  - *For physical Audit, a team of 3 members shall be formed on recommendation of the Communication Audit Committee excluding member from Auditee entity and Audit plan shall be prepared by ERPC.*
- *The modalities may be reviewed from time to time by TeST sub-committee of ERPC based on recommendation of Communication Audit Committee. Till then, all other modalities shall be as per SOP on communication Audit circulated by NPC (**Annexure C**) and other Terms of Reference of the Communication Audit Committee shall remain unaltered as per letter dated 15.05.2024 from ERPC regarding constitution of the Audit Committee.*

2. Communication Outage planning in Eastern region.

- *ERLDC delivered a lucid presentation outlining key aspects of the Communication Outage planning procedure (**Annexure D)**.*
- *Subsequent to detailed deliberation and inputs from the participants in the meeting, following modalities have been agreed:*

  - *All ER entities shall submit details of availing probable outage of communication links as well as equipment within scope of the outage procedure as per format enclosed (**Annexure E)** by **25th June 2024.**These details shall correspond to the outages to be availed in for the month of July 2024.*

  - *Outage of the approved communication links and equipment shall be availed by the respective owner /entities after confirming the same with RLDC on D-3 basis. Confirmation of approval/rejection will be provided on D-2 basis by RLDCs in consultation with respective RPCs considering 24hrs processing window.*

  - *In case of any emergency outage requirement of communication links and equipment, Entities/Users/Owners may directly apply to respective RLDC with intimation to respective RPCs on D-2 basis. Confirmation of approval/rejection will be provided on D-1 basis by RLDCs in consultation with respective RPCs considering 24hrs processing window.*

  - *Communication outage planning meeting of ER shall commence from **July 2024** for planned outages to be availed in **August 2024**.*

  - *All communications regarding Communication outages shall be done to erldccomm@grid-india.in with a copy to erpcscada@gmail.comand eeop.erpc@gov.in.*

  - *The modalities may be reviewed from time to time by TeST sub-committee of ERPC based on operational feedback. Till then, all other modalities shall be as per SOP on communication Outage planning circulated by NPC (**Annexure F**).*

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Annexure A

List of Participants

Name	First Join	Last Leave	In-Meeting Duration	Role
ERPC Kolkata	5/28/24, 4:11:	5/28/24, 5:55:17	1h 43m 27s	Organizer
BSPTCL (Unverified)	5/28/24, 4:11:	5/28/24, 4:12:31	32s	Presenter
Sr.GM(Telecom) OPTCL (Unverified)	5/28/24, 4:12:	5/28/24, 5:54:57	1h 42m 38s	Presenter
BSPTCL (Unverified)	5/28/24, 4:28:	5/28/24, 5:55:00	1h 26m 36s	Presenter
PRADHAN SOREN (External)	5/28/24, 4:28:	5/28/24, 5:55:02	1h 26m 38s	Presenter
Kaushal Suman {कौशल सुमन} (External)	5/28/24, 4:30:	5/28/24, 5:54:55	1h 24m 27s	Presenter
Roshan Jaiswal (External)	5/28/24, 4:30:	5/28/24, 5:54:56	1h 24m 10s	Presenter
SHAMBHU DAS (External)	5/28/24, 4:31:	5/28/24, 5:48:51	1h 17m 41s	Presenter
RAJESH KUMAR (External)	5/28/24, 4:31:	5/28/24, 5:54:59	1h 23m 28s	Presenter
SE, ERPC (Unverified)	5/28/24, 4:31:	5/28/24, 5:54:53	1h 23m 3s	Presenter
L. Muralikrishna, , Grid-india (Guest) (Unverified)	5/28/24, 4:33:	5/28/24, 5:55:03	1h 21m 53s	Presenter
SLDC, Ranchi (Unverified)	5/28/24, 4:33:	5/28/24, 5:55:17	1h 22m 6s	Presenter
HASIBUR RAHMAN (Unverified)	5/28/24, 4:33:	5/28/24, 5:54:56	1h 21m 38s	Presenter
BIDYUT BISWAS (External)	5/28/24, 4:33:	5/28/24, 5:55:17	1h 21m 19s	Presenter
Raj Protim Kundu (External)	5/28/24, 4:33:	5/28/24, 5:55:17	1h 21m 19s	Presenter
Amit Chowdhury(ERLDC) (Unverified)	5/28/24, 4:34:	5/28/24, 5:49:50	1h 15m 50s	Presenter
Chandan kumar (External)	5/28/24, 4:35:	5/28/24, 5:55:17	1h 20m 15s	Presenter
Santanu Rudrapal {सान्तनू रूद्रपाल} (External)	5/28/24, 4:35:	5/28/24, 5:54:52	1h 19m 27s	Presenter
Kashif Bakht Muhammad Nabi {काशिफ बख्त मुहम्मद	5/28/24, 4:36:	5/28/24, 5:55:17	1h 18m 26s	Presenter
sweta (Unverified)	5/28/24, 4:36:	5/28/24, 5:55:17	1h 18m 18s	Presenter
P.Maiti (Unverified)	5/28/24, 4:38:	5/28/24, 5:55:17	1h 16m 54s	Presenter
Rahul Kumar Shakya {} (External)	5/28/24, 4:39:	5/28/24, 5:55:17	1h 15m 40s	Presenter
Tanay CTUIL (Unverified)	5/28/24, 4:39:	5/28/24, 5:55:01	1h 15m 8s	Presenter
N S MONDAL (Guest) (Unverified)	5/28/24, 4:41:	5/28/24, 5:43:53	1h 2m 15s	Presenter
Mamidi Prasad {मामिडी प्रसाद} (External)	5/28/24, 4:43:	5/28/24, 5:55:17	1h 11m 50s	Presenter
Sangita CTUIL (Unverified)	5/28/24, 4:44:	5/28/24, 5:55:17	1h 10m 57s	Presenter
ASHUTOSH KUMAR (External)	5/28/24, 4:45:	5/28/24, 5:55:17	1h 10m 9s	Presenter
PARTHA HAZRA (Unverified)	5/28/24, 4:47:	5/28/24, 5:31:40	44m 10s	Presenter
CHANDAN (External)	5/28/24, 4:49:	5/28/24, 5:38:36	49m 17s	Presenter
SLDC Ranchi (Unverified)	5/28/24, 4:53:	5/28/24, 5:41:37	48m 37s	Presenter
Nutan Mishra {नूतन मिश्रा} (External)	5/28/24, 5:08:	5/28/24, 5:55:17	46m 19s	Presenter

Annexure B

Communication Channels and Equipments Audit Format

(A) List of channels in usage for data (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / others:

Sl	Description (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / Others)	Source	Destination	Channel Routing	Ownership details of terminal equipment / Links
1					
2					
3					
4					
5					
6					
7					
8					

(B) List of terminal communication equipments:

Sl	Name of Station	Equipment Type (SDH / PDH / Radio / VSAT / EPABX)	Make / Model	Ownership
1				
2				
3				
4				
5				
6				
7				
8				

(C) Communication System Details:

I. SDH Equipment

(1) Card Details:

Slot No	IP Address & Path / Direction Name	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		(i) (ii) (iii)	(i) (ii) (iii)
Power Supply		(i) (ii) (iii)	(i) (ii) (iii)

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

II. PDH Equipment

(1) Card Details :

Slot No	IP Address	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		(i) (ii)	(i) (ii)

		(iii)	**(iii)**
Power Supply		**(i)** **(ii)** **(iii)**	**(i)** **(ii)** **(iii)**

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

III. OPGW / Optical Fibre Details

Number of Directions	**Name of Direction**	**No. of Pairs**	**No. of Fibers used**	**No. of spare & healthy Fibers**	**Unarmoured cable laid within PVC/Hume duct pipe?**	**Fibre Count in OPGW? Whether matching with Approach cable to FODP?**	**Overall Optical Fibre Path Attenuation (dB/km)**	**Power Received**	**Conformation to Compliance of CEA Standards**

IV. Healthiness of Auxiliary System:

(1) Details of 2 independent Power Sources :

Source	Commissioning Date	Battery Back up (Hour)	Battery capacity (AH)	Supply Voltage (V)	Healthiness of Battery (Yes / No)	Make of Charger	Charger Capacity (A)	Periodicity of Maintenance Schedule	Date of Last 2 Actual Maintenance carried out	Remarks
1										
2										

(2) Conformation to Compliance of CEA Standards :

V. Healthiness of Earthing of each equipment:

Sl	Equipment	Status on Healthiness of Earthing

VI. Details of Voice communication available between Sub-station and Control Centre:

Sl	Voice communication (Sub-station - Control Centre)	Status on Healthiness of Voice communication	Healthiness of air-conditioning of communication room as per OEM recommendation

VII. PLCC Details:

Number of Panels	Make and Model	Direction	Frequency (Tx & Rx) KHz	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
					Schedule	Actual			

VIII. Radio Communication Details:

Number of Equipments	Make and Model	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
			Schedule	Actual			

IX. Data Retention :

(i) Earliest Date of availability of data: _____

(ii) Historical data availability : ____ days.

X. Control Command Delay :

(i) Time delay in seconds from Control Centre for SCADA : ____ Seconds

(ii) Time delay in seconds from Control Centre for WAMS : ____ Seconds

XI. Wide Band Network :

(i) Absolute channel delay in protection applications : _____ ms

(ii) Channel delay asymmetry in protection applications : _____ ms

(iii) Switching Time delay to alternate path/route during failure of one path : _____ ms

XII. Any other information :

Annexure C

Final Standard Operating Procedure (SOP) for Communication audit of Substations

1. This procedure has been prepared in compliance to Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017. As per clause 10 of the Regulation, RPC shall conduct annual audit of the communication system annually as per the procedure finalized in the forum of the concerned RPC. However, this SOP for communication audit of substations is finalized to maintain uniformity at the national level. It also mandates that RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by respective RPC is to be submitted to the Commission within one month of closing of the financial year.
2. The Audit would be conducted in two phases. In first phase scrutiny of the reports, documents etc. In the second phase physical verification shall be carried out.
3. Each User/entity, using inter-state transmission or the intra-state transmission incidental to inter-state, shall submit the detailed report to RPC Secretariat and RLDC, as per prescribed format on yearly basis. The detailed report shall be submitted by the April end of the respective year. This report shall be considered as self-certificate regarding availability and healthiness of the Communication system of respective user/entity.
4. In respect of intra-state users/entities, SLDC shall submit detailed reports yearly by the April end of the respective year, to RPC Secretariat and RLDC.
5. Outage report of all the channels (including Network Management System, PLCC etc) report for a month shall be submitted by the Users/entities to RLDC and respective SLDCs, on monthly basis, by 7th day of the next month. RLDC and SLDCs after verifying the NMS data shall submit report to RPC Secretariat by 15th day.
6. All users/entities and Control Centers shall get the third-party cyber security audits done from a Cert-in certified vendor in compliance of CEA (Cyber Security in Power Sector) Guidelines,2021. The detailed report of the Cyber Security Audit shall be submitted by 15th April for the previous financial Year.
7. RPC Secretariat may ask any other information required for Audit of the communication system in addition to these periodic reports.

Phase-I Audit: Scrutiny of the Information

8. A Communication System Audit Sub-Group comprising one member each from RPC, RLDC, PowerGrid and One of the respective Region SLDCs shall be constituted by RPC Secretariat with the approval of Member Secretary, RPC. The sub-group may co-opt any other member from any organization for facilitating the activities of the sub-group. Further, consultation from CEA may be taken, if required. The Audit team shall be formed excluding the member for the Organization/Utility whose system is to be audited.
9. The Communication System Audit Sub-group shall scrutinize the information received in RPC Secretariat. The Sub-group may also ask any additional information necessary for its activities. All the users/entities, RLDC, SLDCs shall provide the information to the subgroup on priority within the stipulated time period.
10. The sub-group shall also identify the nodes for physical inspection based on the criticality of the node in view of performance of the communication network or based on the deficiencies observed in the communication system.
11. The Audit would include but not limited to following aspects:
    a. Availability of communication channels. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of communication channels would be finalized by Communication System Sub Group in consultation with other stakeholders.
    b. Availability of terminal equipment. The outage reason needs to be clearly specified whether it is on account of the concerned entity or on account of any other entity, force majeure etc. The list of terminal equipment would be finalized by Communication System Sub Group. Part outage like failure of specific cards etc. would also be furnished along-with reasons.
    c. Availability of Auxiliary System e.g. Battery Charger, Battery bank, sufficient cooling equipment etc.
    d. Compliance of CERC and CEA Regulations and the procedures under these Regulations.
    e. Completion of periodic testing of the communication system in accordance with procedure for maintenance and testing prepared by CTU.
    f. Audit of all newly commissioned communication equipment within six months of its commissioning.
    g. Completion of 3rd party Cyber Security Audits.
    h. Network traffic w.r.t capacity.
    i. Spare availability, replenishment etc.
    j. Any other parameters as agreed by the Communication Sub Group.

Phase-II Audit: Physical Verification

12. Based on the Recommendations of the Communication System Audit Sub-group, Audit team shall be constituted and the physical inspection Audit plan shall be prepared by RPC Secretariat.
13. Audit team shall be formed on regional basis.
14. Audit shall be carried out in a planned manner as included in this document by a team of three members. The audit team shall comprise of one representative from the RPC Secretariat, one representative from RLDC and one representative from any of the Utilities or SLDCs of respective Region. The Audit team shall be formed excluding the member for the Organization/Utility whose system is to be Audited. The Audit team may co-opt any other member from any organization for facilitating the activities of the committee.
15. Once the plan is finalized, minimum 3 days advance notice shall be served to the concerned Auditee entity intimating the detailed plan so that availability of required testing equipment and the required documents is ensured by Auditee entity and is made available to the Audit team during the site visit.
16. Member Secretary, RPC in consultation with the Communication System Audit SubGroup may decide on any additional nodes/locations for physical inspection if a location is very critical in view of performance of the communication network at any time of the year.
17. The Scope of the physical verification shall include but not limited to the following:
    a. Available communication Network for its redundancy
    b. Availability of channel redundancy for all the functions for which it is configured.
    c. Communication equipment (hardware and software configuration) of all the nodes including repeater stations for its recommended performance.
    d. Documentation of the configuration of the respective site and its updation.
    e. Fibre layout / usage of fibre / Availability of dark fibre and its healthiness.
    f. Cable Schedule and identification / tagging.
    g. Healthiness of Auxiliary supply including the healthiness of Battery backup.
    h. Healthiness of Earthing / Earth protection for communication system.
    i. Availability of sufficient cooling equipment at the User's premises to maintain the stipulated temperature for the communication equipment.
    j. Optical power level
    k. Alternate modes of communication for speech

18. The format for collecting the details of Communication channels/links and Equipment is at **Annexure-I** and the same shall be furnished by the Auditee entity.

19. Communication Audit Checklist points are given in **Annexure-II** and the same are to be thoroughly verified by the Audit team.
20. Expenses towards Lodging, Boarding & Transportation (Excluding Air/Train Fair) between various places within the jurisdiction of Auditee entity shall be borne by respective Auditee entity. The Coordinating Officer(s) from the Auditee Utilities identified for each Team is (are) responsible for facilitating them to all the Members of respective Team.
21. Audit team shall submit report including recommendations for action on deficiencies, if any, found during the inspection, within 15 days from the date of inspection to Member Secretary, RPC. After approval of MS, RPC, the report would be communicated to the Auditee entity for compliance.

Audit Compliance Monitoring

22. Communication System Audit Sub-group would monitor the compliance of audit observations as applicable. Non-compliance of Audit Recommendations, if any, shall be put up to TCC and RPC.
23. The Annual Audit Report would be reviewed by a Communication System Sub Group at RPCs level. After considering the observations of Sub Group, RPC Secretariat shall issue necessary instructions to all stakeholders to comply with the audit requirements within the time stipulated by the RPC Secretariat based on the audit report. An Annual Report on the audit carried out by RPC would be submitted to the Commission within one month of closing of the financial year.

***

Audit Format (Annexure-I)

REGIONAL COMMUNICATION AUDIT REPORT			
General Information:			
1	**Substation Name**		
2	**SS Voltage level**		
3	**Date of commissioning of the substation**	**XX.XX.XXXX**	
4	**Region & State / Auditee**	**/**	
5	**Audit Date**		
6	**Name of the Utility which owns the SS**		
Details of Audit Team Members :			
SL	**Name**	**Designation**	**Organization**
1			
2			
3			
4			
Attached Documents, if any			
SL	**Name of the document**		**Original / Signed / Copy**
1			
2			
3			

4		
5		
6		
7		

8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

Communication Channels and Equipments Audit Format

(A) List of channels in usage for data (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / others:

Sl	Description (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / Others)	Source	Destination	Channel Routing	Ownership details of terminal equipment / Links
1					
2					
3					
4					
5					
6					
7					
8					

(B) List of terminal communication equipments:

Sl	Name of Station	Equipment Type (SDH / PDH / Radio / VSAT / EPABX)	Make / Model	Ownership
1				
2				
3				
4				
5				
6				

(C) Communication System Details:

I. SDH Equipment

(1) Card Details:

Slot No	IP Address & Path / Direction Name	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available Yes / No	Power Supply Card / Optical Card Yes / No	MSP configured? Yes / No	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		**(i) (ii) (iii)**	**(i) (ii) (iii)**
Power Supply		**(i) (ii) (iii)**	**(i) (ii) (iii)**

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

II. PDH Equipment

(1) Card Details :

Slot No	**IP Address**	**Card Details**	**Place a ✓mark if on usage, else Write as "Spare"**	**Whether Card is healthy / Faulty ? (H / F)**	**Cards Redundancy available Yes / No**	**Power Supply Card / Optical Card Yes / No**	**MSP configured? Yes / No**	**Action Plan for faulty cards**	**Other Information, if any**
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		**(i)** **(ii)**	**(i)** **(ii)**
		(iii)	**(iii)**
Power Supply		**(i)** **(ii)** **(iii)**	**(i)** **(ii)** **(iii)**

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

(5) Preventive maintenance schedule and its compliance:

Date of Last Preventive maintenance	Maintenance carried out as per schedule? (Yes / No)	Whether all the defects have been attended? (Yes / No) Give details

III. OPGW / Optical Fibre Details

Number of Directions	Name of Direction	No. of Pairs	No. of Fibers used	No. of spare & healthy Fibers	Unarmoured cable laid within PVC/Hume duct pipe?	Fibre Count in OPGW? Whether matching with Approach cable to FODP?	Overall Optical Fibre Path Attenuation (dB/km)	Power Received	Conformation to Compliance of CEA Standards

IV. Healthiness of Auxiliary System:

(1) Details of 2 independent Power Sources :

Source	Commissioning Date	Battery Back up (Hour)	Battery capacity (AH)	Supply Voltage (V)	Healthiness of Battery (Yes / No)	Make of Charger	Charger Capacity (A)	Periodicity of Maintenance Schedule	Date of Last 2 Actual Maintenance carried out	Remarks
1										
2										

(2) Conformation to Compliance of CEA Standards :

V. Healthiness of Earthing of each equipment:

Sl	Equipment	Status on Healthiness of Earthing

VI. Details of Voice communication available between Sub-station and Control Centre:

Sl	Voice communication (Sub-station - Control Centre)	Status on Healthiness of Voice communication	Healthiness of air-conditioning of communication room as per OEM recommendation

VII. PLCC Details:

Number of Panels	Make and Model	Direction	Frequency (Tx & Rx)	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
					Schedule	Actual			

			KHz						

VIII. Radio Communication Details:

Number of Equipments	Make and Model	Status on Healthiness	Last preventive maintenance		Details of defects, if any, attended	Status of Availability of Spares	Conformation to Compliance of CEA Standards
			Schedule	Actual			

IX. Data Retention : (i) Earliest Date of availability of data : _____
(ii) Historical data availability : ____ days.

X. Control Command Delay : (i) Time delay in seconds from Control Centre for SCADA : ____ Seconds

(ii) Time delay in seconds from Control Centre for WAMS : ____ Seconds

XI. Wide Band Network : (i) Absolute channel delay in protection applications : _____ ms
(ii) Channel delay asymmetry in protection applications : _____ ms
(iii) Switching Time delay to alternate path/route during failure of one path : _____ ms

XII. Status of integration with U-NMS or state NMS:

XIII. Any other information :

Audit Format (Annexure-I)

Audit Team Member SRPC	Audit Team Member Co-Ordinator	Audit Team Member PGCIL (Internal / External)	Audit Team Member State (Internal / External)

Communication Audit Checklist (Annexure-II)

S.No	Check list points	Expected	Actual	Reference
1	Whether OPGW is terminated properly. Down lead shall be fixed property in sufficient locations. Metallic part shall be connected to earth mat riser.	Yes		
2	Distinct approach cable shall be laid 1 Protection & Communication 2 Fibers for commercial applications Item no 1 cable shall be terminated in communication room FODP One number FODP panel shall be available in communication room			
3	Fiber Identification shall be done in FODP properly			
4	Whether End to end tests were carried out during installation and records are available (both Optical Power Source/receiver test and OTDR Test results			
5	Whether patch chords 1 Cross labelled (source/ receive) 2 Tx – Rx Marking 3 Mechanical protection is provided for pach chords laid between panels			
6	Whether separate room for communication is available with following:- 1 Air conditioning with standby A/C Unit 2 AC Distribution board with ELCB 3 Single point earthing bar which shall be connected to substation Earth mat			
7	Two sets of 48 V (Positive Earthed) DC System shall be available with 1 Common DC Distribution board/ Panels with incoming MCB, coupler MCB , out doing MCBs etc 2. Minimum 200 Ah (2 sets of battery) VRLA batteries are preferred to keep chargers and battery in communication room. 3. Battery Charger shall be Thryristorised/ SMPS			

8	Battery Charger alarms /measurements shall be made available to SAS (if available) It can be achieved through MOD bus or connecting analogue/ digital signals to Common BCU of SAS. If such system is not available major			

Communication Audit Checklist (Annexure-II)

	alarms shall b alarmed in common substation annunciator			
9	2 nos of substation Data (From RTU or SAS Gateway)shall route in different roots to Main and Standby Load Dispatch centres			
10	Kindly assure proper protection is available for AC Distribution (ELCB, MCB, Backup fuse),			
11	Aux Transformer neutral Earthing shall be connected to Stations earth mat (Aux Transformers shall be installed in yard earth mat area only)			
12	Whether DG sets with AMF panels are provided for Aux AC Supply			
13	Whether 2 nos 11 kV (or 33kV) supplies are available for Each station aux Transformer			

Annexure D

Final
Standard Operating Procedure (SOP)
for Communication System Outage Planning
&
for Communication audit of Substations in ER

Shri L. Murlikrishna, Sr. DGM (Communication – ERLDC)
Shri ROSHAN JAISWAL, Engineer (Communication – ERLDC)

Background

- Communication systems are essential to facilitate secure, reliable and economic operation of the grid.
- It is an important pre-requisite for the efficient monitoring, operation and control of power system.
- For integrated operation of all India Grid, uninterrupted availability of the real time data of various Power System elements assumes utmost importance.

Important Regulations/ Guidelines related to Communication in POWER System

1. Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017

2. Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020

3. CEA (Cyber security in POWER sector), Guidelines, 2021

Guidelines and Procedure – 2024 - (Prepared in Compliance To Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017

- Guidelines on Availability of Communication Systems by NPC,
- Guidelines on “Interfacing Requirements” by NLDC,
- Procedure on “Centralized supervision for quick fault detection and restoration” by CTU

- IV) Procedure on “Maintenance and testing of Communication System” by CTU

Timeline - Relevant Regulation for Communication

2017

Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020

2020

CEA (Cyber Security in Power Sector) Guidelines, 2021

2021

Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017

NODAL AGENCY	Planning & Coordination: CTU & STU	Integration of Application: RLDC & SLDC
ROLES & RESPONSIBILITY	CEA, CTU, NPC/RPC, NLDC/RLDC/SLDC, STU	

TESTING

AUDITING

FAULT REPORTING

AVAILABILITY

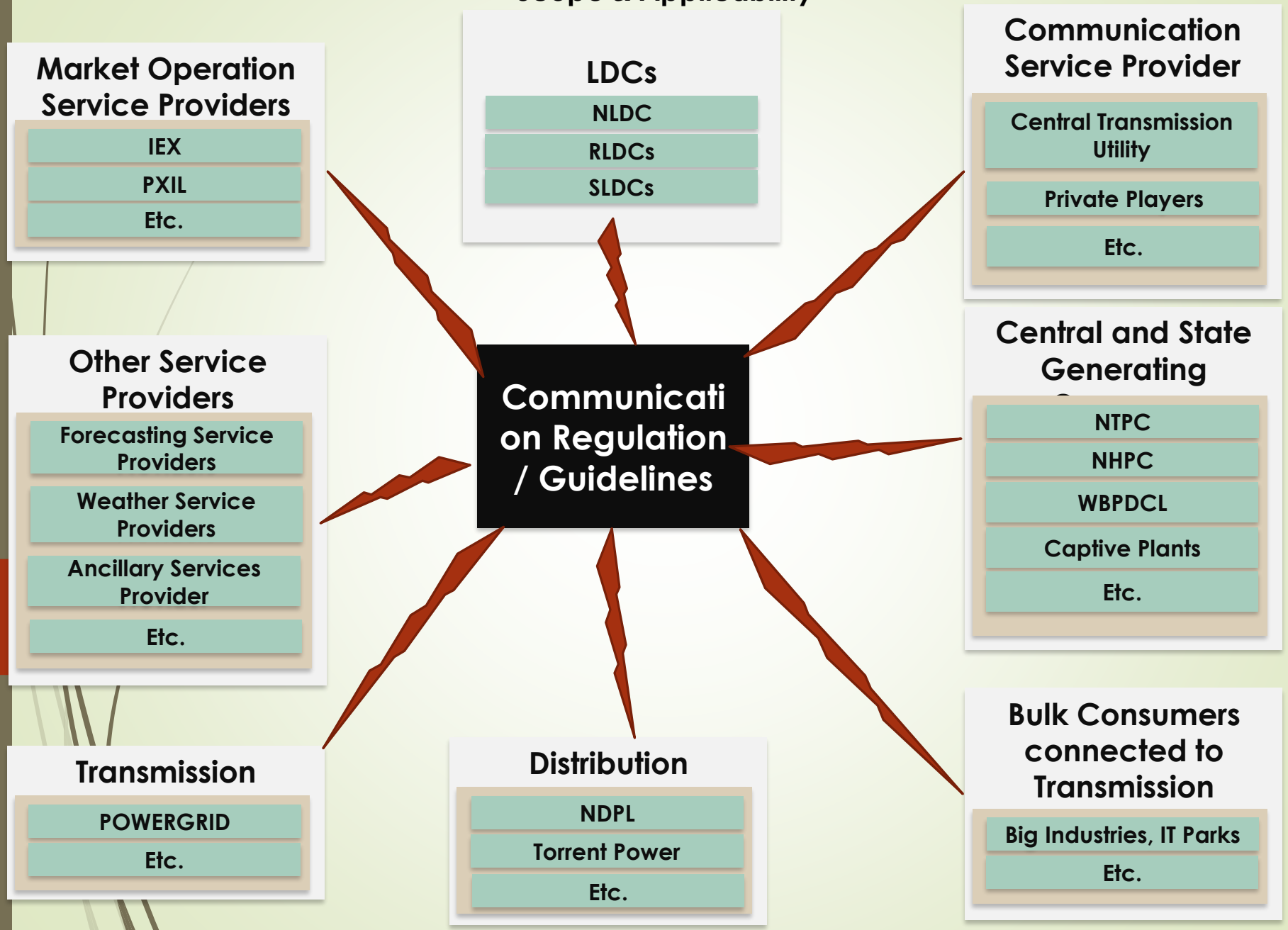
Cyber Security, Standards & Guidelines

Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017

Scope & Applicability -

- These regulations shall apply to the **communication infrastructure** to be used for Data, Voice communication and tele -protection for the power system at National, Regional and inter-State level and shall also include the power system at the State level till appropriate regulation on Communication is framed by the respective State Electricity Regulatory Commissions.
- All Users, SLDCs, RLDCs, NLDC, CEA, CTU, STUs, RPCs, REMC, FSP and Power Exchanges shall abide by the principles and procedure as applicable to them in accordance with these regulations.

Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017
Scope & Applicability



Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017
Nodal Agencies

Inter state Transmission System

- Planning
- Coordination
- Development

Central Transmission Utility(CTU)

Intra state Transmission System

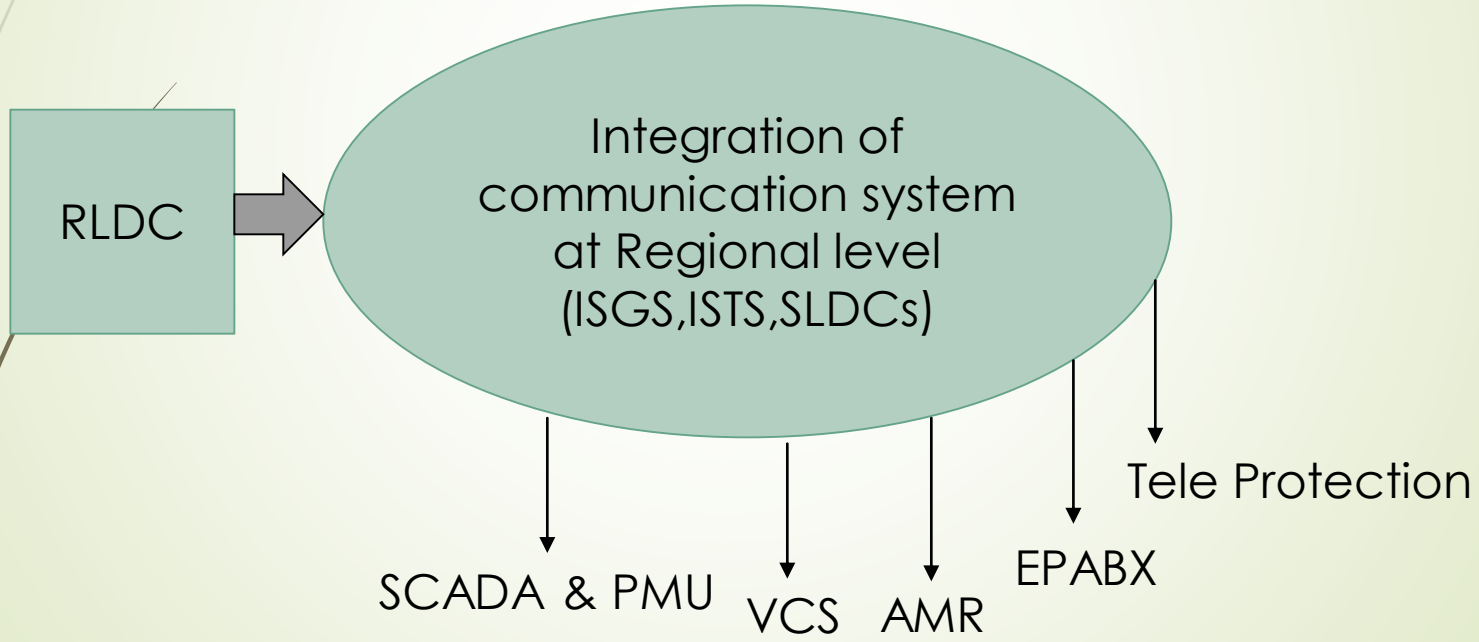
- Planning
- Coordination
- Development

State Transmission Utility(STU)

Communication Regulation
(Clause 6,Nodal Agency)

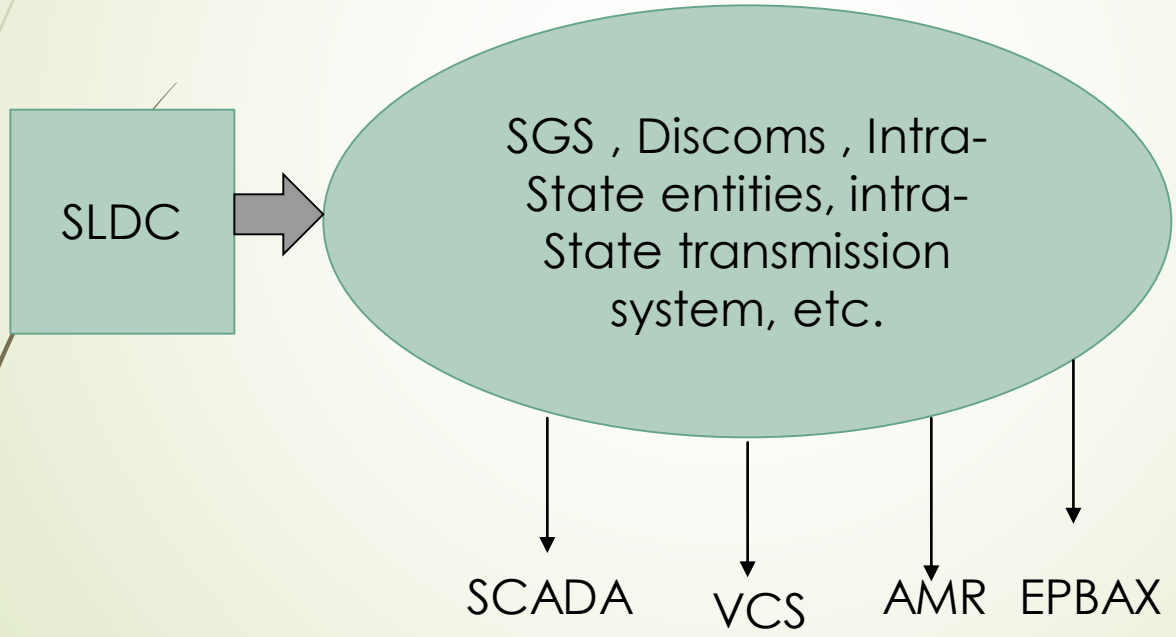
Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017

Nodal Agencies(Contd.)



Central Electricity Regulatory Commission (Communication System for inter-State Central Transmission of Electricity) Regulations, 2017

Nodal Agencies(Contd.)



Responsibilities of various Organizations

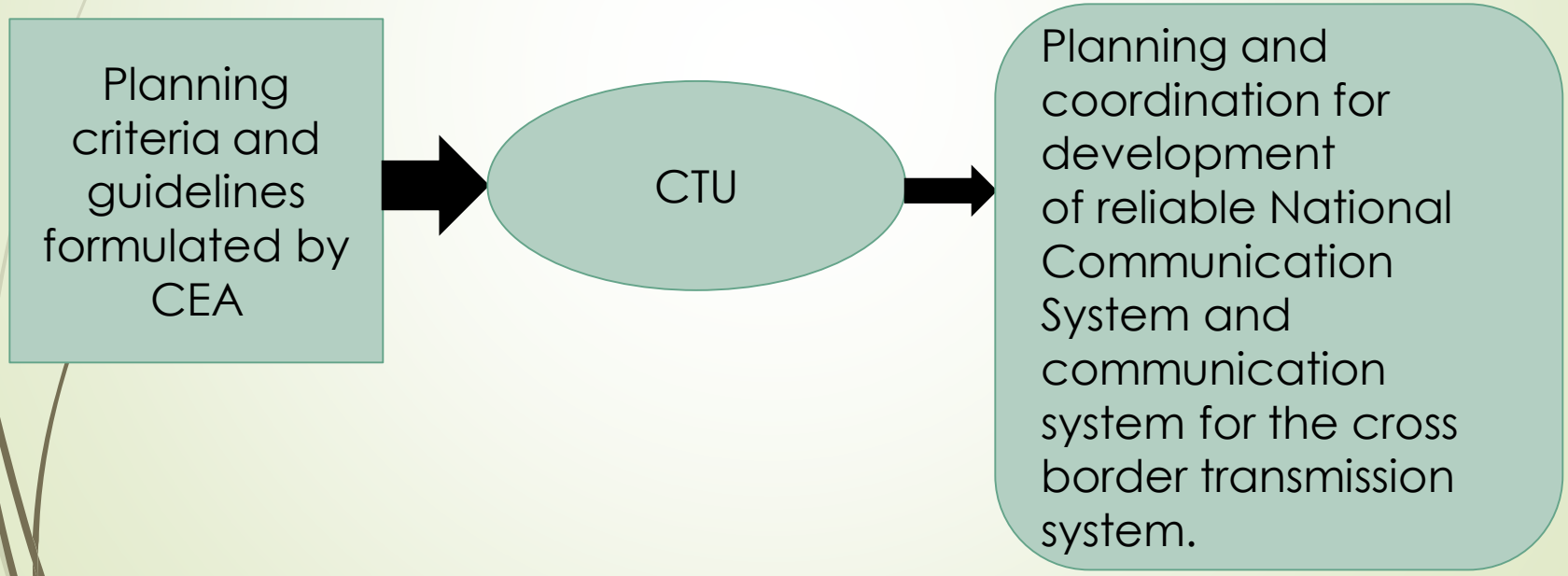
Central Electricity Authority

- To formulate communication planning criterion and guidelines.
- To formulate and notify technical standards, cyber security requirements in accordance with the Cyber security Policy of the Govt. of India from time to time.

Communication Regulation
(Clause 7)

Responsibilities of various Organizations

Central Transmission Utility



Responsibilities of various Organizations

National power Committee (NPC)

NPC shall be responsible for issuance of the guidelines with the approval of the Commission on "Availability of Communication System" in consultation with RPCs, RLDCs, CTU, CEA and other stakeholders.

Responsibilities of various Organizations

Regional power Committee (RPC)

- The RPC Secretariat shall certify the availability of communication equipment for CTU, ISGS, RLDCs, NLDC, SLDCs based on the data furnished by RLDC.
- The RPC Secretariat shall monitor instances of non-compliance of regulations and make endeavour to sort out the issues
- Outage planning for communication system in its region.

Responsibilities of various Organizations

National Load Dispatch Center

- Responsible for preparation and issuance guidelines with the approval of the Commission on the "Interfacing Requirements" in respect of RTUs, SCADA, PMUs, (AGC), (AMR) etc.

Responsibilities of various Organizations

Regional Load Dispatch Center

- The Regional Load Dispatch Centre (RLDC) is responsible to collect and furnish data related to Communication System of various users, CTU, RLDC, STU and SLDC to RPCs.

Role of Users

- "User" means a person such as a Generating Company including Captive Generating Plant, RE Generator, Transmission Licensee [other than the (CTU) (STU)] , Distribution Licensee, a Bulk Consumer, whose electrical system is connected to the ISTS or the intra-State transmission system.

Role of Users

- Responsible for provision of compatible equipment along with appropriate interface for uninterrupted communication with the concerned control centres.
- Responsible for successful integration with the communication system provided by CTU or STU for data communication as per guidelines issued by NLDC.

Outage planning for communication system in its region.

- 7.3 Role of National Power Committee (NPC) and Regional Power Committee (RPC):
- (i) NPC shall be responsible for issuance of the guidelines with the approval of the Commission on "Availability of Communication System" in consultation with RPCs, RLDCs, CTU, CEA and other stakeholders within a period of two months from the date of notification of these regulations.
- (ii) The RPC Secretariat shall certify the availability of communication equipment for CTU, ISGS, RLDCs, NLDC, SLDCs based on the data furnished by RLDC.
- (iii) The RPC Secretariat shall monitor instances of non-compliance of these regulations as amended from time to time and make endeavor to sort out the issues in the respective region in such a way that cases of non-compliance are prevented in future. Unresolved issues and non-compliance of any of the provisions of these regulations shall be reported by the Member Secretary of respective RPC to the Commission.
- (iv) The RPC Secretariat shall be responsible for outage planning for communication system in its region. RPC Secretariat shall process outage planning such that uninterrupted communication system is ensured.

Communication Regulation, 2017
(Clause 7.3)

Periodic Auditing of Communication System

- The RPC Secretariat shall conduct performance audit of communication system annually as per the procedure finalised in the forum of the concerned RPC.
- An Annual Report on the audit carried out by respective RPCs shall be submitted to CERC within one month of closing of the financial year.

Communication Regulation
(Clause 10)

Fault Reporting

- RLDC and SLDC in case of outage of telemeter data, or communication failure shall inform the respective user so that the user shall ensure healthiness of its communication system.
- The communication provider shall explore the possibility for route diversion on the existing facility in close co-ordination with concerned provider in case the fault restoration is prolonged.

Communication Regulation
(Clause 11)

Availability of Communication System

The Regulation Directs:

All users of CTU, NLDC, RLDCs, SLDCs, STUs shall maintain the communication channel availability at 99.9% annually ; Provided that with back up communication system, the availability of communication system should be 100%.

Communication Regulation
(Clause 12)

Cyber Security Compliance

- Communication infrastructure to be planned to address the network security needs as per standard specified by CEA and shall be in conformity with the Cyber Security Policy of the Govt. of India.
- NLDC, shall monitor case of cyber security incidences and discuss them at RPC level and take necessary action as deemed fit.
- RPC shall ensure that third party cyber security audits shall be conducted periodically.

Communication Regulation
(Clause 13)

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

1. Regulation Provisions

- Prepared by NPC as per Regulation 7.3 of the Communication Regulations
- b) Regulation 10 Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 notified on 27.02.2020 envisages as below:

" 10. **Outage Planning:** Monthly outage shall be planned and got approved by the owner of communication equipment in the concerned regional power committee, as per detailed procedure finalized by the respective regional power committee. Regulation 5(1) of the CEA (Technical Standards for Communication System in Power System Operations) Regulations, 2020 stipulates that user shall be capable of transmitting all operational data as required by appropriate control Centre."

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

2. Formation of Sub-Group/ TeST Sub Committee.

- Members from all the entities connected to ISTS including all CGS, ISGS, REGs/SPPDs/SPDs, STUs, SLDCs etc., of the respective Region, RLDC/Grid-India, PGCIL, CTUIL, Private Transmission licensees in respective region & RPC secretariat.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

3. Applicable to following:

- (i) ISTS Communication System including ISGS
- (ii) Intra-state Communication System being utilized for ISTS Communication
- (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main &Backup NLDCs.
- (iv) Inter-regional AGC links.
- (v) Any other system agreed by the sub-group.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

4. Communication Equipment/link within the scope of the Procedure would include

- (i) Optic Fibre links
- (ii) Any other link being used for ISTS communication
- (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDC
- (iv) VC links between LDCs
- (v) Inter-regional AGC links
- (vi) SPS Links
- (vii) Tele-Protection
- (viii) AMR
- (ix) PMU
- (x) SDH & PDH
- (xi) DCPC
- (xii) RTU & its CMU cards
- (xiii) DTPCs
- (xiv) Battery Banks and Charging Equipment
- (xv) EPABX
- (xvi) Any other equipment/link agreed by the sub-group

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- **Development of Web Portal** named as "Communication System Outage Planning Portal".
- **Database addition** by Entities/Users/Owners which will be approved by RPC Secretariat /RLDCs
- Entities/Users/Owners of the communication equipment shall upload the outage proposals of communication links and the equipment (in the prescribed format only) to be availed during subsequent month by **7th/8th of every month** in the Web Portal.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- RPC Secretariat shall consolidate the list of outage proposals received from various Entities/Users/Owners of the communication links and equipment by downloading from the Web portal and circulate the same among all the respective region entities by **15th of every month**.
- Communication outages affecting other regions would be coordinated by respective **RLDC through NLDC**.
- Communication System Outage Planning (CSOP) meeting shall be conducted during the **third week of every month** normally (preferably through VC) to discuss and approve the proposed outages of communication links and equipment.
- The approved outages of Communication links and equipment in the CSOP meeting shall be published in the RPC website and respective RPCs Communication Outage Portal within **3 days from the date of CSOP meeting**.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- Outage of the approved communication links and equipment shall be availed by the respective owner /entities after confirming the same with RLDC on **D-3 basis**.
- In case of any emergency outage requirement of communication links and equipment, Entities/Users/Owners may directly apply to respective RLDC with intimation to respective RPCs on **D-2 basis**. Confirmation of approval/rejection will be provided on **D-1 basis** by RLDCs in consultation with respective RPCs considering 24hrs processing window.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- Entities/Users/Owners shall take **the code from the respective RLDC** before availing the planned outage of the communication links & equipment and before restoration of the same.

- Entities/Users/Owners of the communication links and equipment shall submit the **deviation report for the approved outages** (approved dates & approved period) availed during the previous month and the report on planned / forced / other outage of communication links / equipment by **10th of the month to RPC Secretariat**.

- In the monthly CSOP meetings, communication links and equipment whose outage duration (Planned / Forced / Others) more than **48 hours for the last 12 months of rolling period** shall be deliberated for the measures to be taken in future for the better outage management.

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- Outage Deviation Report

Annexure: DCOA-I

Outage Deviation Report : List of outages of Communication Links, availed / deviated during the month of June, 2021

Dated :

A Details of Communication Links (Point to Point) availed :

SL	Name of Requesting Agency	Description of Link	Source	Destination	Channel Routing	Ownership	Reason for availing outage with the details of equipment attended	Approved Start Date : Time [dd-mm-yy○○hh:mm]	Approved End Date : Time [dd-mm-yy○○hh:mm]	Approved Outage Hours	Outage availed Start Date : Time [dd-mm-yy○○hh:mm]	Outage availed End Date : Time [dd-mm-yy○○hh:mm]	Total hours of outage availed now	Deviation ? (Y/N)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Example	Back up Control Center (BCC) : Data	KAYATHAR 230 kV SS	MADURAI LDC	Data will be availble throu	TANTRANSCO	Shifting of FODB panel at Kayathar 230 kV SS	10-Mar-2021 09:00	10-Mar-2021 18:00	09:00	10-Mar-2021 14:07	10-Mar-2021 17:30	03:23	N

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

- Outage Deviation Report

Annexure: DCOA-II

Outage Deviation Report : List of outages of Communication Equipment availed / deviated during the month of June, 2021

Dated : 00:00

B Details of Communication Equipment availed :

SL	Name of Requesting Agency	Name of the communication equipment	Location of the Equipment / Name of Station	Name of the Link/Channel/Path / directions affected	Alternate Channel/Path available ? (Furnish details)	Ownership	Reason for availing outage with the details of faults	Approved Start Date : Time [dd-mm-yy<>hh:mm]	Approved End Date : Time [dd-mm-yy<>hh:mm]	Approved Outage Hours	Outage availed Start Date : Time [dd-mm-yy<>hh:mm]	Outage availed End Date : Time[dd-mm-yy<>hh:mm]	Total hours of outage availed now	Deviation ? (Y/N)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Example	DC Charger -2, Amararaja, 48v	Edamon	Nil	Nil	KSEBL	Monthly maintenance. No interruption as alternate chargers available	16-Mar-21, 11:00	16-Mar-21, 16:00	05:00	16-Mar-21, 10:30	16-Mar-21, 16:00	05:30	Y

Final Standard Operating Procedure (SOP) for Communication audit of Substations.

1. Regulation Provisions

- As per **clause 10** of the Regulation of the Communication Regulations – 2017.
- The Audit would be conducted in **two phases**.

1ST phase **scrutiny of the reports, documents** etc.

2nd phase **physical verification**.

- By April, Self Certified report should be submitted by each User/entity, using inter-state transmission or the intra-state transmission to **RPC Secretariat and RLDC**. This report shall be considered as self-certificate regarding **availability and healthiness** of the Communication system of respective user/entity.
- In respect of intra-state users/entities, **SLDC** shall submit detailed reports yearly by the April end of the respective year, to RPC Secretariat and RLDC.

Final Standard Operating Procedure (SOP) for Communication audit of Substations.

- Submission of **Monthly Outage report** of all the channels (including Network Management System, PLCC etc.) by the Users/entities to RLDC and respective SLDCs, by **7th day of the next month**. RLDC and SLDCs after verifying the NMS data shall submit report to **RPC Secretariat by 15th day**.

- All users/entities and Control Centers shall get the **third-party cyber security audits** done from a Cert-in certified vendor in compliance of CEA **(Cyber Security in Power Sector) Guidelines,2021**. The detailed report of the Cyber Security Audit shall be submitted by **15th April** for the previous financial Year.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **A Communication System Audit Sub-Group**

01 member each from RPC, RLDC, PowerGrid and One of the respective Region SLDCs excluding the member for the Organization/Utility whose system is to be audited.

COMMUNICATION AUDIT COMMITTEE OF EASTERN REGION		
UTILITY	**NAME**	**DESIGNATION**
PGCIL(Odisha)	Sh. Mamidi Prasad	DGM (AM)
PGCIL ER-I	Sh. Shantanu Rudrapal	Chief Manager(ULDC)
PGCIL ER-II	Sh. Kashif Bakht Muhammad Nabi	Manager ULDC
ERLDC	Sh. L.Muralikrishna	Sr. DGM, Communication -logistics
	Sh. Roshan Jaiswal	Engineer, Communication -logistics
BSPTCL	Mrs. Kumari Sumedha	EEE, ULDC
	Mrs. Sweety Kumari	EEE, Telecom
OPTCL	Sh. P.K. Nayak,	GM , Telecom Circle, Meramundali.
	Sh. S. K . Mishra	GM. Telecom Division , Bhubaneswar
DVC	Sh. Ashutosh Kumar	Sr. Manager (Communication)
	Sh. Rajesh Kumar	Manager (Communication)
JUSNL	Sh. Rimil Topno	Sr. Manager (SLDC)
	Sh. Awanish Kumar	Sr. Manager (ULDC)
WBSETCL	Sh. Hasibur Rahman	S.E(Electrical)
	Sh. Prasenjit Maiti	S.E (E&T)
SIKKIM	Sh. Sonam Wongchuk	Executive Engineer
	Sh. Ravi Pradhan	Junior Engineer
ERPC	Sh. Agniva Chatterjee	Assistant Director

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **1st Phase - Scrutiny of information** received by Communication System Audit Sub-group.

All the users/entities, RLDC, SLDCs shall provide the information to the subgroup **on priority within the stipulated time**.

- **2nd Phase - Selection of nodes for physical inspection** based on the criticality of the node.

a) **performance** of the communication network.

b) based on the **deficiencies** observed in the communication system.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **The Audit would include but not limited to following aspects:**

a. Availability of communication channels.

b. Availability of terminal equipment.

c. Availability of Auxiliary System e.g. Battery Charger, Battery bank, sufficient cooling equipment etc.

d. Compliance of CERC and CEA Regulations and the procedures under these Regulations.

e. Completion of periodic testing of the communication system in accordance with procedure for maintenance and testing prepared by CTU.

f. **Audit of all newly commissioned communication equipment within six months of its commissioning**.

g. **Completion of 3rd party Cyber Security Audits**.

h. Network traffic w.r.t capacity.

i. Spare availability, replenishment etc.

j. Any other parameters as agreed by the Communication Subgroup.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Audit team with **03 Members** shall be constituted on recommendations of the Communication System Audit Sub-group on regional basis and the physical inspection Audit plan shall be prepared by RPC Secretariat.
- The audit team shall comprise of **one representative from the RPC Secretariat**, **one representative from RLDC** and one representative from any of the Utilities or SLDCs of respective Region, excluding the member for the Organization/Utility whose system is to be Audited.
- **Minimum 3 days** advance notice.
- Member Secretary, RPC in consultation with the Communication System Audit Subgroup may decide on any **additional nodes/locations for physical inspection** if a location is very critical in view of performance of the communication network at any time of the year.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Audit team with **03 Members** shall be constituted on recommendations of the Communication System Audit Sub-group on regional basis and the physical inspection Audit plan shall be prepared by RPC Secretariat.
- The audit team shall comprise of **one representative from the RPC Secretariat**, **one representative from RLDC** and one representative from any of the Utilities or SLDCs of respective Region, excluding the member for the Organization/Utility whose system is to be Audited.
- **Minimum 3 days** advance notice.
- Member Secretary, RPC in consultation with the Communication System Audit Subgroup may decide on any **additional nodes/locations for physical inspection** if a location is very critical in view of performance of the communication network at any time of the year.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **The Scope of the physical verification shall include but not limited to the following:**

a. Available communication Network for its redundancy

b. Availability of channel redundancy for all the functions for which it is configured.

c. Communication equipment (hardware and software configuration) of all the nodes including repeater stations for its recommended performance.

d. Documentation of the configuration of the respective site and its updation.

e. Fiber layout / usage of fibre / Availability of dark fibre and its healthiness.

f. Cable Schedule and identification / tagging.

g. Healthiness of Auxiliary supply including the healthiness of Battery backup.

h. Healthiness of Earthing / Earth protection for communication system.

i. Availability of sufficient cooling equipment at the User's premises to maintain the stipulated temperature for the communication equipment.

j. Optical power level

k. Alternate modes of communication for speech

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **Details of Communication channels/links and Equipment** furnished by Auditee and **Communication Audit Checklist** points are to be thoroughly verified by the Audit team.
- Audit team shall submit report including recommendations for action on deficiencies, if any, found during the inspection, within **15 days** from the date of inspection to Member Secretary, RPC. After **approval of MS, RPC** the report would be communicated to the Auditee entity for compliance.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- **Audit Compliance Monitoring**
- **Monitoring of compliance** by Communication System Audit Sub-group.
- **Review of annual audit report** by Communication System Subgroup at RPCs level. An Annual Report on the audit carried out by RPC would be submitted to the Commission within one month of closing of the financial year.

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Communication Audit format

REGIONAL COMMUNICATION AUDIT REPORT			
General Information:			
1	Substation Name		
2	SS Voltage level		
3	Date of commissioning of the substation	XX.XX.XXXX	
4	Region & State / Auditee	/	
5	Audit Date		
6	Name of the Utility which owns the SS		
Details of Audit Team Members :			
SL	Name	Designation	Organization
1			
2			
3			
4			
Attached Documents, if any			
SL	Name of the document		Original / Signed / Copy
1			
2			
3			
4			
5			
6			
7			

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Communication Audit format

Communication Channels and Equipments Audit Format

(A) List of channels in usage for data (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / others:

Sl	Description (64 kbps, 104, PMU, VC, 101) / Voice / Protection circuits / Others)	Source	Destination	Channel Routing	Ownership details of terminal equipment / Links
1					
2					
3					
4					
5					
6					
7					
8					

(B) List of terminal communication equipments:

Sl	Name of Station	Equipment Type (SDH / PDH / Radio / VSAT / EPABX)	Make / Model	Ownership
1				
2				
3				
4				
5				
6				
7				
8				

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Communication Audit format

(C) Communication System Details:

I. SDH Equipment

(1) Card Details:

Slot No	IP Address & Path / Direction Name	Card Details	Place a ✓mark if on usage, else Write as "Spare"	Whether Card is healthy / Faulty ? (H / F)	Cards Redundancy available (Yes / No)	Power Supply Card / Optical Card (Yes / No)	MSP configured? (Yes / No)	Action Plan for faulty cards	Other Information, if any
1									
2									
3									
And so on									

(2) Whether equipment is time synchronized : Yes / No

If Yes, how is it being done?

(3) Failures during last Fin. year / since last Audit :

Particulars	Number of failures of Card / Power Supply	Reason for failures	Measures taken for rectification
Card		(i) (ii) (iii)	(i) (ii) (iii)
Power Supply		(i) (ii) (iii)	(i) (ii) (iii)

(4) Configuration of the Node:

Name of Equipment	Number of Nodes	Number of directions	Name of Directions	Number of links down, with details	Details of corrective action, if any, taken

Final Standard Operating Procedure (SOP) for Communication audit of Substations

- Communication Audit Checklist

Communication Audit Checklist (Annexure-II)

S.No	Check list points	Expected	Actual	Reference
1	Whether OPGW is terminated properly. Down lead shall be fixed property in sufficient locations. Metallic part shall be connected to earth mat riser.	Yes		
2	Distinct approach cable shall be laid 1 Protection & Communication 2 Fibers for commercial applications Item no 1 cable shall be terminated in communication room FODP One number FODP panel shall be available in communication room			
3	Fiber Identification shall be done in FODP properly			
4	Whether End to end tests were carried out during installation and records are available (both Optical Power Source/receiver testand OTDR Test results			
5	Whether patch chords 1 Cross labelled (source/ receive) 2 Tx – Rx Marking 3 Mechanical protection is provided for pach chords laid between panels			
6	Whether separate room for communication is available with following:- 1 Air conditioning with standby A/C Unit 2 AC Distribution board with ELCB 3 Single point earthing bar which shall be connected to substation Earth mat			

THANK YOU

Annexure_E

Annexure -1								
List of Communication Links (OPGW/PLCC) with Details.								
A	**Details of Communication Links (Point to Point):**					**Dated :**		
SL	**Name of Agency**	**Description of Link**	**Source**	**Destination**	**Channel Routing/Alternate channel status**	**Ownership/Coordinating agencies**	**Link Type**	**Path Type**
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Annexure -2

List of Communication Equipment with Details.

B	Details of Communication Equipment :										
SL	Name of Agency	Name of the communication equipment (RTU /	Location of the Equipment / Name of Station	Name of the Linked Channel / Path / directions	Alternate Channel / Path available (Furnish details)	Ownership/Coordinating agencies	Communication Equipment Type	Main / Spare	Make and Model	Serial No. of Equipment	Brief Specification
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

As per Communication System for Inter-State Transmission of Electricity, Regulations - 2017, Following Communication Equipment/link within the scope of the Procedure would include :	
(i)	Optic Fibre links
(ii)	Any other link being used for ISTS communication
(iii)	ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDC
(iv)	VC links between LDCs
(v)	Inter regional AGC links
(vi)	SPS Links
(vii)	Tele-Protection
(viii)	AMR
(ix)	SDH & PDH
(x)	DCPC
(xi)	RTU
(xii)	DTPCs
(xiii)	Battery Banks and Charging Equipment
(xiv)	EPABX
(xv)	Any other equipment/link agreed by the forum
Note : PLCC would not be included, if the link is not used for SCADA Data.	

Annexure F

Final Standard Operating Procedure (SoP) for Communication System Outage Planning

1. As per the following CEA and CERC Regulations, the Communication Outage for the Region shall be carried out by RPC Secretariat:
   a) Regulation 7.3 of Central Electricity Regulatory Commission (Communication System for inter-State transmission of electricity) Regulations, 2017 stipulates as below:

   Quote:

   7.3 Role of National Power Committee (NPC) and Regional Power Committee (RPC):

   ……

   (iv) The RPC Secretariat shall be responsible for outage planning for communication system in its region. RPC Secretariat shall process outage planning such that uninterrupted communication system is ensured.

   ……

   Unquote

   b) Regulation 10 Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations, 2020 notified on 27.02.2020 envisages as below:

   Quote:

   10. Outage Planning: Monthly outage shall be planned and got approved by the owner of communication equipment in the concerned regional power committee, as per detailed procedure finalized by the respective regional power committee.

   Unquote

2. A Communication System Outage Planning Sub-Group/ TeST Sub Committee shall be formed in each region constituting the members from all the entities connected to ISTS including all CGS, ISGS, REGs/SPPDs/SPDs, STUs, SLDCs etc., of the respective Region, RLDC/Grid-India, PGCIL, CTUIL, Private Transmission licensees in respective region & RPC secretariat. The sub-group/ Sub Committee may co-opt any other member from any organization for facilitating the activities of the sub-group/ Sub Committee.

3. Communication System Outage Planning will be limited to the following systems:
   (i) ISTS Communication System including ISGS
   (ii) Intra-state Communication System being utilized for ISTS Communication
   (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDCs.
   (iv) Inter-regional AGC links.

(v) Any other system agreed by the sub-group.

4. Communication Equipment/link within the scope of the Procedure would include :

   (i) Optic Fibre links
   (ii) Any other link being used for ISTS communication
   (iii) ICCP links between Main & Backup RLDCs, Main & Backup SLDCs & Main & Backup NLDC
   (iv) VC links between LDCs
   (v) Inter-regional AGC links
   (vi) SPS Links
   (vii) Tele-Protection
   (viii) AMR
   (ix) PMU
   (x) SDH & PDH
   (xi) DCPC
   (xii) RTU & its CMU cards
   (xiii) DTPCs
   (xiv) Battery Banks and Charging Equipment
   (xv) EPABX
   (xvi) Any other equipment/link agreed by the sub-group

5. A Web Portal named as "Communication System Outage Planning Portal" shall be developed by respective RLDCs or a module shall be provided in the U-NMS. Log-in credentials shall be provided to all the ISTS connected entities/concerned entities.

6. Entities/Users/Owners shall add their communication links and the equipment to the Web Portal as soon as they are commissioned. The same has to be furnished to RPC Secretariat /RLDCs.

7. Entities/Users/Owners of the communication equipment shall upload the outage proposals of communication links and the equipment (in the prescribed format only) to be availed during subsequent month by 7th/8th of every month in the Web Portal.

8. RPC Secretariat consolidates the list of outage proposals received from various Entities/Users/Owners of the communication links and equipment by downloading from the Web portal and circulate the same among all the respective region entities by 15th of every month. Communication outages affecting other regions would be coordinated by respective RLDC through NLDC.

9. Communication System Outage Planning (CSOP) meeting shall be conducted during the third week of every month normally (preferably through VC) to discuss and approve the proposed outages of communication links and equipment.

10. The approved outages of Communication links and equipment in the CSOP meeting shall be published in the RPC website and respective RPCs Communication Outage Portal within 3 days from the date of CSOP meeting.

11. Outage of the approved communication links and equipment shall be availed by the respective owner /entities after confirming the same with RLDC on D-3 basis.
12. In case of any emergency outage requirement of communication links and equipment, Entities/Users/Owners may directly apply to respective RLDC with intimation to respective RPCs on D-2 basis. Confirmation of approval/rejection will be provided on D-1 basis by RLDCs in consultation with respective RPCs considering 24hrs processing window.
13. Entities/Users/Owners shall take the code from the respective RLDC before availing the planned outage of the communication links & equipment and before restoration of the same.
14. Entities/Users/Owners of the communication links and equipment shall submit the deviation report for the approved outages (approved dates & approved period) availed during the previous month and the report on planned / forced / other outage of communication links / equipment by 10^{th} of the month to RPC Secretariat as per the format.
15. In the monthly CSOP meetings, communication links and equipment whose outage duration (Planned / Forced / Others) more than 48 hours for the last 12 months of rolling period shall be deliberated for the measures to be taken in future for the better outage management. The date deviations and non-availing the outages that were approved in the previous CSOP meetings shall also be deliberated in the CSOP meetings.

***