

भारतसरकार
केंद्रीय विद्युत प्राधिकरण
दक्षिण क्षेत्रीय विद्युत समिति
29, रेस कोर्स क्रॉस रोड
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सं/No.SRPC/SE (PC&SS)/145PCSC/2026/3935-81

दिनांक /Date 27th August 2026

To,

संलग्न सूची के अनुसार
As per attached List

विषय: 07 अगस्त, 2026 को आयोजित प्रोटेक्शन कोऑर्डिनेशन सब-कमेटी (PCSC-145) की 145वीं बैठक का विवरण।

Sub: Minutes of the 145th Meeting of Protection Coordination Sub-Committee (PCSC-145) held on 07th August, 2026.

महोदय/महोदया/ Sir/ Madam,

सूचित किया जाता है कि 07 अगस्त, 2026 को आयोजित PCSC की 145वीं बैठक का विवरण SRPC की वेबसाइट (srpc.gov.in) पर अपलोड कर दिया गया है। सभी संबंधित पक्षों से अनुरोध है कि वे PCSC-145 की सिफारिशों के संबंध में, जो उन पर लागू होती हैं, उचित कार्रवाई करें।

It is informed that **Minutes of the 145th Meeting of PCSC** held on **07th August, 2026** have been uploaded on the SRPC Website (srpc.gov.in). All Constituents are requested to kindly take suitable action w.r.t. **PCSC-145** recommendations as applicable to them.

धन्यवाद / Thanking You,

भवदीय/Yours faithfully,

for

अधीक्षक अभियंता (पी & सी)/ Superintending Engineer (P&C)

डाक-सूची/ Mailing List

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21. केंद्रनिदेशक, केकेएनपीपी, तिरुनल्वेली जिला, तमिलनाडु - 627106/ Station Director, KKNPP, Tirunelveli Dist, TamilNadu-627106
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25. जीएम (प्रचावअनु) दक्षे-II, पावरग्रिड, बेंगलूर GM (O&M), SR-II, PGCIL, Bengaluru
26. Sh.Sourov Chakraborty, Sr. GM, CTU, Plot No. 2, Sector-29, Gurugram, Haryana-122 001.
27. श्री चंद्रशेखर रेड्डी, डीजीएम, इलेक्ट्रिकल मेंटेनेंस, मेसर्स जेएसडब्ल्यू एनर्जी लिमिटेड, तोरणगल्लु, बल्लारी- 583275/ Sh. Chandrashekar Reddy, DGM, Electrical Maintenance, M/s JSW Energy Ltd, Toranagallu, Bellary-583275
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29. प्रधानविद्युतएवंसीआईअनुरक्षण, एसईआईएल, प्यानपुरम / नेलतूरग्राम, मुतुकूरमंडल, एसपीएस आरनेल्लूर- 524344/ Head Electrical and C&I Maintenance, SEIL, Pyanampuram / Nelaturu Village Muthukur Mandal, SPSR Nellore 524344
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45. श्री रविन्द्र नारायण टी., मुख्य महाप्रबंधक, ग्रीनको ग्रुप, हाईटेक सिटी लेआउट, माधापुर, हैदराबाद – 500081, तेलंगाना / Ravindra Narayana T., Chief General Manager, Greenko Group, Hitech City Layout, Madhapur, Hyderabad – 500081, Telangana.
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1. Introduction

The 145th Meeting of the Protection Coordination Sub-Committee of SRPC was held on 07th August 2026 at 10:00 AM through VC.

Shri Asit Singh, Member Secretary (MS), SRPC welcomed all the participants to the 145th Protection Coordination Sub-Committee (PCSC) Meeting.

He informed the forum on few important developments taken place since the previous meeting.

- 55th TCC meeting was held on 24.07.2026, and the 58th SRPC meeting was held online on 28.07.2026.
- CEA has issued an advisory regarding minimization of Right of Way (RoW) requirements through adoption of new technologies. MoEF&CC has advised that, the new RoW guidelines issued by CEA may be followed, while laying transmission lines through forest areas. CEA has also been advised to communicate these guidelines to all concerned entities so that the area required in forest regions can be minimized.
- With regard to the formulation of definitions under the CEA and CERC Regulations, the members were requested to submit their comments, if any, for further consideration.
- MoP order dated 08.07.2026 regarding Make in India public procurement, provisions relating to SCMs (Standing Committee on Public Procurement) have been specified and minimum local content has been prescribed for the period up to June 2028. The corresponding order was issued on 13.07.2026.
- Regarding pre-islanding load reduction, minutes of the deliberations were issued on 06.07.2026, along with clarifications received from the OEM. The matter was also discussed in the SRPC meeting and may now be taken forward for implementation.
- CERT-In transmission cybersecurity meeting was held on 23.07.2026.
- The Communication Audit for 2026–27 has also commenced from 24.07.2026, starting with Yelhanka Substation.
- Minutes of the 42nd NCT meeting were issued on 20.07.2026.
- The islanding schemes at various locations across the country are being reviewed. The matter was directly reviewed by the Secretary, Ministry of Power, on 09.07.2026, and the minutes were issued on 21.07.2026.

Noting on the important outcomes from the deliberations, he mentioned that all SLDCs/utilities should adopt the SOP guidelines issued by NPC for the design and implementation of islanding schemes.

CEA and Grid-India are to explore the possibility of conducting a pilot study on the feasibility of integrating four-hour Battery Energy Storage Systems (BESS) in islanding schemes along with grid-forming inverters.

- Next NPC meeting is to be held on 18.09.2026 and requested that any agenda items requiring common or uniform implementation across the country may be referred to the NPC for consideration.
- Regarding PSAG-2026, the first PSAG of 2026 visited Simhadri Station, Gajuwaka Station and Kalpakkam Station. Meetings were held at Simhadri on 30th and 31st July 2026. The recommendations of the PSAG would be discussed during the meeting, and the concerned entities would be requested to implement the recommendations of the PSAG group.
- A comprehensive system study of Telangana system, covering both intra-state and inter-state aspects, has been taken up by CEA. CEA has brought out the Resource Adequacy Assessment for Transmission, which needs to be studied by TGTRANSCO.
- A joint study meeting through video conference was held regarding the request of Puducherry for additional GNA, as the demand of Puducherry is already exceeding the allocated GNA quantum. The minutes of the meeting have been issued by the CEA Power System Planning Division.

Coming to matters under public consultation, he highlighted a few important developments.

- The NLDC Draft Operating Procedure was issued on 03.08.2026, with 16.08.2026 as the last date for submission of comments. All entities to submit their comments at the earliest, as it may subsequently be difficult to incorporate further suggestions and the entities would be required to comply with the operating guidelines issued by NLDC.
- CEA has proposed a draft amendment to the Connectivity Regulations, which provides detailed provisions not only for conventional generating stations but also for renewable energy resources, inverter-based resources (IBRs) and loads. The draft includes requirements relating to Low Voltage Ride Through (LVRT), High Voltage Ride Through (HVRT), data requirements, ramp-rate requirements and other related aspects. All concerned entities to carefully examine the draft and submit their comments to CEA so that suitable changes, wherever required, may be incorporated in the regulations.
- CERC has issued the 5th Amendment to the Sharing Regulations, which primarily covers provisions relating to dual connectivity and certain other matters concerning the sharing of transmission charges.

He further highlighted the issue relating to the Protection System Study Group (PSSG), stating that adequate responses are not being received from some of the concerned entities. He emphasized that participation in PSSG is a joint responsibility of the forum and the PSSG constituted by the forum, and that all members are equally responsible for participating in the deliberations of the PSSG.

He suggested that alternate members may also be nominated so that both primary and alternate members can participate as required, ensuring that at least one representative from each entity is available during the PSSG deliberations.

He concluded by stating that it is the collective responsibility of the forum to provide appropriate recommendations on the matters referred to the PSSG and ensure that the deliberations lead to meaningful and implementable outcomes

Shri T Srinivas, Executive Director, SRLDC extended a warm welcome to all the participants to the 145th Protection Coordination Sub-Committee (PCSC) Meeting.

As highlighted by MS, SRPC, several important issues are proposed for deliberation during the meeting. The PSAG team had also recently visited the Visakhapatnam area and made several recommendations. All PCSC members were requested to examine the recommendations and ensure their implementation by the concerned entities.

During July 2026, the Southern Region witnessed 10 Grid Disturbances (GDs) and 12 Grid Incidents (GIs),

In view of the increasing addition of Pumped Storage Projects (PSPs) and renewable energy generation, the need for thorough verification of protection settings in such installations was highlighted. The adequacy of the existing protection settings and the remedial measures required for ensuring reliable operation were also brought out for consideration by the forum.

In this regard, SRLDC proposed that the forum may deliberate on whether PSPs above a specified MW capacity may be subjected to a third-party protection audit either before First Time Charging (FTC) or within six months after FTC, including verification of protection settings. Such an arrangement would provide greater confidence to system operators regarding the adequacy of protection settings and the availability of necessary protection arrangements.

The need for strict compliance with the applicable CEA Technical Standards and Regulations was emphasized. He further highlighted that, in several instances, protection settings were found to be not in accordance with the prescribed standards when the concerned sites were inspected following an incident.

It was also observed that remedial measures are often proposed only after occurrence of an incident and are specific to the particular event. The need for appropriate design, coordination and implementation of protection settings in accordance with the applicable standards, rather than addressing deficiencies only after an incident, was emphasized.

The forum was requested to deliberate on suitable mechanisms for ensuring compliance with CEA standards and regulations, with a view to minimizing unnecessary trippings and avoiding generation and load loss.

The issue of time delays associated with overcurrent protection was also highlighted. The necessity of such protection from an operational perspective, as well as the circumstances under which it is required, may be examined. Wherever overcurrent protection is considered necessary, the extent of intentional time delay may also be clearly defined, particularly for emergency conditions where immediate operation may be required.

The increasing importance of DC systems in view of their wider deployment in the power sector was also highlighted. The issues observed in DC systems may be examined and appropriate preventive and corrective measures may be implemented to contain such occurrences.

The forum was requested to deliberate on the above issues in detail, identify suitable remedial measures, and ensure their diligent implementation by the concerned entities so as

to enhance the reliability of protection systems and provide greater confidence to system operators in secure grid operation.

Smt. Malini N S, Superintending Engineer (P & C), SRPC extended a warm welcome to all the participants to the 145th Protection Coordination Sub-Committee (PCSC) Meeting.

Before commencing the meeting, she extended advance wishes to all the participants and their families on the occasion of India's Independence Day. It was stated that, just as the Armed Forces safeguard the sovereignty of the nation, protection engineers have an equally important responsibility in safeguarding the power system by ensuring its security, reliability and resilience.

The importance of correct protection relay operation in preventing a local fault from escalating into a major grid event was highlighted. Conversely, protection maloperation, delayed fault clearance and communication failures have the potential to adversely affect grid security and reliability. In this context, the important role of the PCSC forum in analysing grid disturbances, identifying systemic issues, sharing best practices, strengthening coordination among utilities and promoting continuous improvement in protection systems was emphasized.

The forum was informed that the present meeting includes seven Grid Disturbances, nine Grid Incidents and 21 cases of single- and multiple-element trippings, in addition to issues relating to protection violations, non-operation of Auto Reclosure and other protection-related matters.

Certain issues beyond the regular agenda were also identified for focused attention. One such issue is the repeated occurrence of through-fault currents from downstream networks, resulting in excessive thermal and electromechanical stress and subsequent failure of ICTs at PGCIL substations. Incidents observed at Madurai, Vijayawada and Somanahalli have already been analysed, and similar occurrences have been observed on multiple occasions. The need for detailed examination of the issue was emphasized, and PGCIL was requested to place the matter before the forum for comprehensive deliberation and identification of suitable remedial measures.

The issue relating to the under-frequency and over-frequency protection settings of Greenko pumped-storage units was also highlighted. The need for proper coordination of protection settings for both generator mode and pumping mode of operation was emphasized to ensure compliance with the applicable grid requirements and avoid unintended operation or non-operation of protection during system disturbances.

The agenda items were taken up for deliberations.

2. Confirmation of Minutes of last PCSC meeting

Minutes of 144th Protection Coordination Sub-Committee meeting held on 08th July 2026 was issued vide letter No: SRPC/SE (P, C & SS)/144 PCSC/2026/ 3427-73 dated 29th July 2026.

Minutes of the 144th Meeting of Protection Coordination Sub-Committee were confirmed

3. Grid Occurrences

Grid Occurrences which took place during the period **June 2026 – July 2026**, given at **Annexure-3a**, would be discussed in the meeting.

I. The Grid Disturbances (GDs) [Draft Analysis Reports furnished by SRLDC are at Annexure-3b]:

Name of the Utility who would present the GD in all its details	SN of the GD as per Annexure-3a
SEPC	I.1
INDIGRID / RENEW POWER PVT LTD	I.2
TANTRANSCO	I.3, I.4
TANTRANSCO / TNPGL	I.5
OSTRO_KANNADA	I.6
RENEW POWER PVT LTD	I.7

II. The Grid Incidences (GIs) [Draft Analysis Reports furnished by SRLDC are at Annexure-3b]:

Name of the Utility who would present the GI in all its details	SN of the GI as per Annexure-3a
APTRANSCO	II.1, II.5, II.9
APGENCO	II.2, II.3
TANTRANSCO	II.4
KPTCL	II.6
KSEB	II.7
NLC	II.8

III. Single/ Multiple Element tripping:

Name of the Utility who would present the GI in all its details	SN of the Single /Multiple tripping as per Annexure-3a
GREENKO	III.1
LKPPL	III.2
NTECL	III.3, III.4
TGTRANSCO	III.5, III.9, III.19
TANTRANSCO	III.6, III.7, III.13, III.16, III.18
TGGENCO	III.8
PVG_IRCON_S	III.10
APTRANSCO	III.11, III.12
KPTCL	III.14, III.15, III.20
KSEB	III.17
SEPL	III.21

- a) All the Utilities, as listed above, to give a presentation (for not more than 10 minutes per GD; for not more than 5 minutes per GI and Single/ Multiple Trippings) for the Events mentioned against them.
- b) The presentation shall cover all pertinent aspects such as Antecedent conditions, Bus-configuration, Reasons of GD/ GI occurrence, Relevant Diagrams showing location of the fault, Bus bar arrangement/configuration of feeders and other connected equipment with proper CB positions (OPEN/ CLOSE) at the time of occurrence of the fault, Type of protections operated, Substantiation of the protections operated by relevant DRs & ELs, Reasons for protection systems mal-operation/non-operation, Remedial measures taken/ proposed, etc.
- c) Constituents shall furnish the following details to SRPC by **02.08.2026** (in WORD format) in respect of all the above grid occurrences (GD, GI) to have fruitful discussions:
 - (i) Detailed analysis of the events
 - (ii) SLD or equivalent pictorial representation clearly showing:
 - a. Location of fault with distance
 - b. Fault details with type & relay indications
 - c. CT/PT/CVT rating details with location
 - d. Bus-bar arrangement/ Configuration of feeders
 - e. CB positions (OPEN/ CLOSE) at the time of fault
 - f. Isolator & Earth-switch positions (OPEN/CLOSE)
 - g. Voltage, frequency & power flows with direction at the time of fault
 - (iii) Output of Event logger & Disturbance recorder
 - (iv) Remedial Action(s) taken
 - (v) Relay setting details

IV. W.r.t. Failure or Non-operation of A/R events included at Item No. IV of Annexure-3a, PLCC mal-operation events included at Item No. V of Annexure-3a and DR Time Synchronization Issues related Events included at Item No. VI of Annexure-3a, the concerned Utilities, as listed below, shall furnish the reasons for the same, along with remedial action taken, to SRPC latest by **02.08.2026 so that the same may be closed. Else, the same shall be presented by respective Utilities in the meeting:**

A/R related Events:

Name of the Utility who would present the A/R Event in all its details, if not furnished beforehand	SN as per Annexure-3a
APTRANSCO	IV.1
TANTRANSCO	IV.2
APGENCO	IV.3
TGTRANSCO	IV.4, IV.5
PGCIL SR-1 / SEIL	IV.6
PGCIL SR-2 / TANTRANSCO	IV.7

PLCC related Events:

Name of the Utility who would present the PLCC Event in all its details, if not furnished beforehand	SN as per Annexure-3a
APTRANSCO	V.1, V.3
TANTRANSCO	V.2

DR Time Synchronization Issues related Events:

Name of the Utility who would present the DR Time synchronization Event in all its details, if not furnished beforehand	SN as per Annexure-3a
APTRANSCO	VI.1, VI.9, VI.27
KPTCL	VI.2, VI.15, VI.19, VI.25, VI.29
WKTCL	VI.3, VI.6
TGTRANSCO	VI.4
PGCIL SR-2	VI.5, VI.10, VI.23
TANTRANSCO	VI.7, VI.8, VI.12, VI.13, VI.14, VI.21
NPCIL-Kaiga	VI.11
KSEBL	VI.16
APGENCO	VI.17, VI.30
KPCL	VI.18, VI.20, VI.22, VI.28
SEIL-P2	VI.24
LKPPL	VI.26

- V. ***SRLDC to furnish the PMU plots for all the above Grid Occurrences (GDs, GIs, Single/Multiple Element Trippings, A/R, PLCC Events) with delayed fault clearance to SRPC Secretariat by 02.08.2026.***

Deliberations:

1. Grid Disturbances (GDs) and Grid Incidents (GIs) occurred during May 2026 – June 2026 were discussed and analysed in detail by the PCSC forum. Respective utilities presented the tripping details and analysis of the events. The final detailed report and recommendations of the above GDs & GIs is at **Annexure-3c**.
2. Single/ Multiple element trippings, Auto Recloser events, PLCC events and DR time synchronization issues were also deliberated/ analysed in the meeting. Respective utilities presented the tripping details and analysis of the events. The detailed analysis/report and recommendations of the above events is at **Annexure- 3d**.
3. All concerned were requested to take note of the analysis of the grid occurrences and recommendations of the PCSC forum and ensure needful action.
4. The forum resolved that the recommendations finalized by the PCSC (P-Rec) in the meetings shall be complied by the respective entities in time bound manner. The compliance/action plan with timelines shall be updated in the P-Rec module of PMS

portal. The status of these recommendations would be reviewed in the ensuing PCSC meetings.

5. SRPC requested the entities concerned to furnish the draft report of the tripping/ event without fail. SRLDC to take up with the entities through e-mail, if the draft report is not received. Copy of the same to be marked to SRPC.
6. It was noted that SRLDC shall make changes, if any, or modify draft analysis report of the respective event based on the detailed report furnished by the user(s) and furnish the same to SRPC for incorporating in the final analysis report of Grid Occurrences, to issue along with the Minutes of the PCSC meetings

4. Status of Implementation of Pending Recommendations of PCSC

- a) The status of implementation of PCSC recommendations (up to 144th PCSC meeting), have been updated in P-REC Module in PMS suite. List of pending recommendations is at **Annexure-4a**.
- b) The latest status on the same may please be sent by **02.08.2026**, to place the same before the sub-committee.
- c) PCSC had earlier decided to review the status of implementation of the recommendations on the Grid occurrences that were finalized in the previous three PCSC meeting. Hence the recommendations finalized in the **142nd to 144th** PCSC meeting would be deliberated in the meeting. Details are at **Annexure -4b**.

Deliberations:

Forum noted that many entities were not furnishing the updates through P-REC Module. All entities were requested to furnish the status of PCSC recommendations through P-REC module in PMS suite. SRPC stressed the need to update the status of all recommendations in the Module. It was also informed that if any entity faces difficulties/issues in uploading the status in the module, the same should be intimated in order to take up the matter with M/s PRDC for appropriate resolution.

Recommendation:

 **All the entities to implement the pending PCSC Recommendations at the earliest and furnish the compliance/ status of implementation & action plan/ timelines for implementation of the recommendations through “P-REC Module” in PMS.**

5. Outage Planning of Protection systems/relays

1. In the 114th PCSC Meeting held on 05.01.2024, the following were noted: The Regulation 32(2)(d) of CERC (Indian Electricity Grid Code) Regulations 2023, regarding protection systems related outages, stipulates as below:

Quote

“Protection relay related outages, auto reclosure outages and SPS testing outages shall be planned on a monthly basis with the prior permission of the concerned RPC, which shall consult the concerned RLDC & NLDC”

Unquote

2. To comply with the above, it was decided that all entities shall furnish the planned/ annual relay & protection system outage proposals in advance to the forum for approval of the same.
3. The entities are requested to furnish the details in the following format for the scheduled/planned protection systems related outages during the period from 10.08.2026 to 09.09.2026 for approval of PCSC:

S. No	Name of Requesting Agency	Element Name	Voltage level	Relay details	Owner	Reason for the Outage	Outage proposed from	Outage proposed to	Remarks

Recommendation:

 **All entities to furnish the planned/ annual relay & protection system outage proposals, in the above format, in advance to the forum for approval of the same.**

6. Proposals of Protection Relay Settings

- a) As per the Protection Protocol of Southern Region prepared in compliance with the IEGC Regulations 2023, for voltage levels 400kV & above and interstate lines, entities shall submit the protection settings in advance to SRPC/SRLDC for every new element to be commissioned. The Protection Co-ordination Sub-Committee (PCSC) of SRPC shall review the settings to ensure that they are properly coordinated with adjacent system and comply with the existing guidelines. Also any change in the existing protection settings of the elements, for voltage levels 400kV and above & interstate lines, shall be carried out only after prior approval from the SRPC.
- b) As decided in the 112th PCSC Meeting held on 06.11.2023, a Protection Setting Sub-Group (PSSG) was constituted with the members from APTRANSCO, KPTCL, KSEBL, TANTRANSCO, TGTRANSCO, PGCIL SR-I & SR-II, NTPC, SRLDC & SRPC Secretariat. PSSG shall analyse/review the proposed protection settings for new power system elements & revision of settings for existing elements proposed by the entities and shall suggest/recommend the finalized settings to the respective entity. The recommended settings shall be put up to PCSC, in monthly PCSC meetings, for ratification.
- c) Following proposals have been received by the PSSG. Proposed relay settings have been circulated among PSSG members through e-mail. The same were reviewed/assessed by PSSG and recommended the protection settings with following observations/suggestions:

PSSG Meeting / Group deliberations			
S No.	Proposal	Proposed Entity	Meeting Date
1	PSSG Request for approval of relay settings of revised settings for Hebbanahally end for LILO of 400,kV UPCL Hebbanahally line at new Kadandale substation	KPTCL	14.07.2026
Observations/Views Received:			

PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by KPTCL and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations

Observations on 400kV HEBBANAHALLY – KADANDALE Line

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

➤ 400kV HEBBANAHALLY END

PSSG had recommended the following:

1. Broken conductor protection shall be enabled for alarm only, with a time delay of 20 seconds
2. STUB protection to be enabled with 50ms time delay.
3. Adopt OVR protection settings in accordance with SRPC Approved OVR grading.
4. The primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths.

2	Consent for relay settings of Kurnool-III-Hero PSS lines at Kurnool-III Pooling station	PGCIL SR-I	14.07.2026
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Observations/Views Received:

PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by PGCIL SR-I and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations

Observations on 220kV KURNOOL III -HERO PSS Line

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

➤ 220kV KURNOOL III END

PSSG had recommended the following:

1. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2 sec.

3	Consent for Protection Settings of New 765kV Substation at Koppal, Karnataka	PGCIL SR-II	14.07.2026
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Observations/Views Received:

PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by PGCIL SR-II and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations

Observations on NEW 765kV KOPPAL

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

1. 765kV BUSBAR KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

2. 330MVAR 765kV BUSREACTOR-1 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

3. 330MVAR 765kV BUSREACTOR-2 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

4. 330MVAR 765kV RAICHUR LINE REACTOR-1 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

5. 330MVAR 765kV RAICHUR LINE REACTOR-2 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

6. 240MVAR 765kV NARENDRA LINE REACTOR-1 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

7. 240MVAR 765kV NARENDRA LINE REACTOR-2 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

8. 1500MVA ICT-1 765kV/400kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

9. 1500MVA ICT-2 765kV/400kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

10. 1500MVA ICT-3 765kV/400kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

11. 1500MVA ICT-4 765kV/400kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

12. 400kV BUSBAR KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

13. 125MVAR 400kV BUSREACTOR-1 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

14. 125MVAR 400kV BUSREACTOR-2 KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

15. 500MVA ICT-1 400kV/220kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

16. 500MVA ICT-2 400kV/220kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

17. 500MVA ICT-3 400kV/220kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

18. 500MVA ICT-4 400kV/220kV KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

19. 220kV BUSBAR KOPPAL END

PSSG had concluded that it may implement in compliance with the SR Protection Protocol

Observations on 765kV KOPPAL – RAICHUR Line

*PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following **recommendations and suggestions**.*

➤ 765kV KOPPAL END

PSSG had recommended the following:

1. Adopt OVR protection settings in accordance with SRPC approved OVR grading.
2. SOTF protection shall be enabled using breaker close command input and impedance function, with the reach limited up to Zone-2 reach.

Observations on 765kV KOPPAL – RAICHUR Line

*PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following **recommendations and suggestions**.*

➤ 765kV RAICHUR END

*PSSG had **recommended** the following:*

1. Adopt OVR protection settings in accordance with SRPC approved OVR grading.
2. SOTF protection shall be enabled using breaker close command input and impedance function, with the reach limited up to Zone-2 reach
3. The primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined physically diversified Optical Ground Wire paths.

*PSSG had **suggested**:*

1. To review the short circuit level impact on 765 /400 kV Raichur SS due to the interconnection and take necessary remedial action and the furnish the action taken to SRPC and SRLDC.

Observations on 765kV KOPPAL – NEW NARENDRA (KUDGI) Line

*PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following **recommendations and suggestions**.*

➤ 765kV KOPPAL END

PSSG had recommended the following:

1. Adopt OVR protection settings in accordance with SRPC approved OVR grading.

Observations on 400kV KOPPAL – GADAG Line

*PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following **recommendations and suggestions**.*

➤ 400kV KOPPAL END

PSSG had recommended the following:

1. Adopt OVR protection settings in accordance with SRPC approved OVR grading.

4	SRPC approval for commissioning of at Madurai-Udumalpet CT Ratio & Neelamangala- Mysore LILO	PGCIL SR-II	14.07.2026
Observations/Views Received: <i>PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by PGCIL SR-II and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations</i> 1a. Observations on 400kV MYSORE - HULIYADURGA Line <i>PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.</i> ➤ <u>400kV MYSORE END</u> <i>PSSG had recommended the following:</i> 1. Adopt OVR protection settings in accordance with SRPC approved OVR grading 1b. Observations on 400kV NELAMANGALA - HULIYADURGA Line <i>PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.</i> ➤ <u>400kV NELAMANGALA END</u> <i>PSSG had recommended the following:</i> 1. Adopt OVR protection settings in accordance with SRPC approved OVR grading. 2a. Observations on 400kV MADURAI-UDUMALPET Line <i>PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.</i> 1. <u>400kV MADURAI END</u> <i>PSSG had recommended the following:</i> 1. Adopt OVR protection settings in accordance with SRPC approved OVR grading. 2. <u>400kV UDUMALPET END</u> <i>PSSG had recommended the following:</i> 1. Adopt OVR protection settings in accordance with SRPC approved OVR grading.			
5	Hero Solar Energy: Kurnool: Request for Relay setting approval	Hero Solar Energy	14.07.2026
Observations/Views Received: <i>PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by Hero Solar Energy and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations</i> Observations on 220kV HPSS – SPSS Line <i>PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.</i> 1. <u>220kV HPSS END</u>			

PSSG had recommended the following:

1. Ensure that all Zone setting calculations are carried out in accordance with remote end utility i.e PGCIL philosophy.
2. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2s.
3. For DEF protection, the operating time shall be coordinated with Zone-3 timing for a remote-end bus fault, considering fault current contribution from station end based on system studies.
4. OVR stage-1 shall be disabled for 220 kV transmission line
5. Load encroachment protection shall be enabled with appropriate load angle settings, and the load impedance shall be calculated as per the RK Committee recommendations.
6. Enable the Pole discrepancy time setting for Circuit breaker.
7. Broken conductor protection shall be enabled for alarm only, with a time delay of 20 seconds
8. Configure PSB such that Zone-1 is allowed to trip, while Zone-2 and higher zones remain unblocked with a time delay of 2 seconds.
9. During VT fuse failure, non-directional overcurrent and Earth Fault protection shall be enabled.

2. 220kV SPSS END

PSSG had recommended the following:

1. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2s.
2. Ensure that all Zone setting calculations are carried out in accordance with remote end utility i.e PGCIL philosophy.
3. For DEF protection, the operating time shall be coordinated with Zone-3 timing for a remote-end bus fault, considering fault current contribution from station end based on system studies.
4. OVR stage-1 shall be disabled for 220 kV transmission line
5. Load encroachment protection shall be enabled with appropriate load angle settings, and the load impedance shall be calculated as per the RK Committee recommendations.
6. Enable the Pole discrepancy time setting for Circuit breaker.
7. Broken conductor protection shall be enabled for alarm only, with a time delay of 20 seconds
8. Configure PSB such that Zone-1 is allowed to trip, while Zone-2 and higher zones remain unblocked with a time delay of 2 seconds.
9. During VT fuse failure, non-directional overcurrent and Earth Fault protection shall be enabled.

3. 192MVA PTR-1 220kV/33kV AT SPSS END

PSSG had recommended the following:

1. The 2nd and 5th harmonic restraint settings in differential protection shall be set at 15% and 25%, respectively in consultation with OEM.
2. Differential and REF relay shall be enabled in two different relays as per CEA Technical Standards
3. The time delay for High set overcurrent and earth fault shall be set to 50ms.
4. HV Standby Earth fault non directional overcurrent Protection shall be disabled.
5. LV Standby Earth fault non directional overcurrent Protection shall be disabled.
6. Thermal overload protection shall be enabled with alarm.
7. Under frequency and under voltage shall be disabled

4. 192MVA PTR-2 220kV/33kV AT SPSS END

PSSG had recommended the following:

1. The 2nd and 5th harmonic restraint settings in differential protection shall be set at 15% and 25%, respectively in consultation with OEM.

2. Differential and REF relay shall be enabled in two different relays as per CEA Technical Standards
3. The time delay for High set overcurrent and earth fault shall be set to 50ms.
4. HV Standby Earth fault non directional overcurrent Protection shall be disabled.
5. LV Standby Earth fault non directional overcurrent Protection shall be disabled.
6. Thermal overload protection shall be enabled with alarm.
7. Under frequency and under voltage shall be disabled

5. 220kV BUSBAR AT SPSS END

PSSG had recommended the following:

1. The re-trip and back trip settings shall be kept at 100ms and 200ms, respectively.

6. 220kV BUS COUPLER SPSS END

PSSG had recommended the following:

1. Disable the Overcurrent earth fault protection.

7. 192MVA PTR-1 220kV/33kV HPSS END

PSSG had recommended the following:

1. The 2nd and 5th harmonic restraint settings in differential protection shall be set at 15% and 25%, respectively in consultation with OEM.
2. Differential and REF relay shall be enabled in two different relays as per CEA technical standards
3. The time delay for High set overcurrent and earth fault shall be set to 50ms.
4. HV Standby Earth fault non directional overcurrent Protection shall be disabled.
5. LV Standby Earth fault non directional overcurrent Protection shall be disabled.
6. Thermal overload protection shall be enabled with alarm.
7. Under frequency and under voltage shall be disabled

8. 192MVA PTR-2 220kV/33kV HPSS END

PSSG had recommended the following:

1. The 2nd and 5th harmonic restraint settings in differential protection shall be set at 15% and 25%, respectively in consultation with OEM.
2. Differential and REF relay shall be enabled in two different relays as per CEA Technical Standards
3. The time delay for High set overcurrent and earth fault shall be set to 50ms.
4. HV Standby Earth fault non directional overcurrent Protection shall be disabled.
5. LV Standby Earth fault non directional overcurrent Protection shall be disabled.
6. Thermal overload protection shall be enabled with alarm.
7. Under frequency and under voltage shall be disabled

9. 220kV BUSBAR HPSS END

PSSG had recommended the following:

1. The re-trip and back trip settings shall be kept at 100ms and 200ms, respectively.

10. 220kV BUS COUPLER HPSS END

PSSG had recommended the following:

1. Disable the Overcurrent earth fault protection.

Observations on 220kV HPSS –KURNOOL GSS Line SS

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

1. 220kV HPSS End

PSSG had recommended the following:

1. Ensure that all Zone setting calculations are carried out in accordance with remote end utility i.e PGCIL philosophy.
2. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2s.
3. For DEF protection, the operating time shall be coordinated with Zone-3 timing for a remote-end bus fault, considering fault current contribution from station end based on system studies.
4. OVR stage-1 shall be disabled for 220 kV transmission line
5. Load encroachment protection shall be enabled with appropriate load angle settings, and the load impedance shall be calculated as per the RK Committee recommendations.
6. Enable the Pole discrepancy time setting for Circuit breaker.
7. Broken conductor protection shall be enabled for alarm only, with a time delay of 20 seconds
8. Configure PSB such that Zone-1 is allowed to trip, while Zone-2 and higher zones remain unblocked with a time delay of 2 seconds.
9. During VT fuse failure, non-directional overcurrent and Earth Fault protection shall be enabled.

6	TANTRANSCO-400 kV Kanarpatty - 400 kV Madurai (PGCIL) & 400 kV Kanarpatty substation - 400 kV Abishegapatty (PGCIL) Line Settings_ submitted for review and approval	TANTRANSCO	14.07.2026
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Observations/Views Received:

PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by TANTRANSCO and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations

Observations on 400kV KANARPATTY – MADURAI (PGCIL) Line SS

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

1. 400kV KANARPATTY END

PSSG had recommended the following:

1. STUB protection to be enabled with 50ms time delay.
2. Adopt OVR protection settings in accordance with SRPC approved OVR grading.

Observations on 400kV KANARPATTY - ABISHEGAPATTY (PGCIL) Line SS

PSSG had concluded that it may implement in compliance with the SR Protection Protocol with following recommendations and suggestions.

1. 400kV KANARPATTY END

PSSG had recommended the following:

1. STUB protection to be enabled with 50ms time delay.
2. Adopt OVR protection settings in accordance with SRPC approved OVR grading.

7	Consent for relay settings of 765KV Raichur- Koppal-II D/C lines at Raichur SS	PGCIL SR-I	14.07.2026
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Observations/Views Received:

PSSG in the meeting held on 14.07.2026 has analysed the proposed settings furnished by PGCIL SR-I and concluded that it may implement in compliance with the SR Protection Protocol with following recommendations

Observations on 765kV KOPPAL – RAICHUR Line

PSSG had concluded that it may implement in compliance with the SR Protection Protocol.

8	Replacement of existing Main-1 GE make D60 relay with ABB make REL670 relay on 220kV LSR feeder at 400/220kV SS Asupaka	TGTRANSCO	14.07.2026
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Observations on 220kV ASUPKA – LSR Line:-

400kV ASUPKA END Line

PSSG had recommended the following:-

1. Enable SOTF with a time delay after pole dead detection (typically 110 s), ensuring its operation is limited within the Zone-2 impedance reach.
2. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2s.
3. Time delay for SOTF operation shall be kept as instantaneous.

9	AMPIN ENERGY C&I TWELVE PRIVATE LIMITED_100 MW Solar Project_C&I_connecting to Kurnool-III PS(ISTS POI)	PGCIL	14.07.2026
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Observations on 220kV AMPIN ENERGY - KURNOOL III(PGCIL)

1. 220kV AMPIN ENERGY End

PSSG had recommended the following:

1. Ensure that all Zone setting calculations are carried out in accordance with remote end utility i.e PGCIL philosophy.
2. Load Blinder to be enabled in relay. If not enabled the Resistive reach (ph-ph) shall be less than the minimum load encroachment resistance.
3. Enable Zone-1 tripping in case of communication failure in the line differential protection scheme.
4. SOTF shall be enabled with Impedance function and breaker close command with Zone reach limited to Zone-2.
5. Time of SOTF function active status after breaker closed in impedance mode may be set to 0.2s.
6. Time delay for SOTF operation shall be kept as instantaneous
7. OVR stage-1 shall be disabled for 220 kV transmission line
8. Load encroachment protection shall be enabled with appropriate load angle settings, and the load impedance shall be calculated as per the RK Committee recommendations.
9. During VT fuse failure, non-directional overcurrent and Earth Fault protection shall be enabled and distance protection shall be blocked.
10. For DEF protection, the operating time shall be coordinated with Zone-3 timing for a remote-end bus fault, considering fault current contribution from station end based on system studies.
11. Broken conductor protection shall be enabled for alarm only, with a time delay of 20 seconds, and shall operate when the Negative Sequence current to Positive Sequence current ratio (I_2/I_1) is greater than or equal to 0.2 (i.e., $I_2/I_1 \geq 0.2$).
12. Enable the Pole discrepancy time setting for main Circuit breaker with a time delay of 1.5s.
13. Communication scheme shall be enabled with POR Scheme.
14. The primary path for tele-protection shall be on point-to-point Optical Ground Wire and alternative path shall be either on Power Line Carrier Communication or predefined **physically diversified Optical Ground Wire paths**.
15. Under frequency and under voltage trip for lines shall be disabled.
16. PMU shall be available at the station.
17. Each line or transformer or reactor or any other bay shall be provided with facility for disturbance recording, event logging and Time Synchronizing Equipment and All Disturbance Recording system shall have minimum recording time of 3 seconds (0.5 seconds for prefault and 2.5 seconds for post fault).

18. Two high tension (HT) supplies (**11kV / 33kV**) shall be arranged from independent sources. One of the two high tension supplies shall be standby to the other. In addition, an emergency supply from diesel generating (DG) source of suitable capacity shall also be provided.

PSSG had suggested:

1. Zone-4 time delay shall be graded with Zone-2 time delay.

2. 120 MVA PTR-1 220kV/33kV AT AMPIN ENERGY END

PSSG had recommended the following:

1. Cross block setting shall be enabled with cross blocking mode (1 out of 3)
2. The time delay for High set overcurrent and earth fault shall be set to 50ms.
3. REF setting shall be enabled with a proper setting calculation in case of Low Impedance with OEM recommended Slopes and In case of High Impedance with Suitable stabilization resistor giving sufficient voltage margin for calculation.
4. The HV overcurrent time setting shall be graded with the downstream side with a sufficient margin of 0.2sec.
5. The HV overcurrent earth fault time setting shall be graded with the downstream side with a sufficient margin of 0.2sec.
6. Overfluxing settings shall be set in accordance with the Manufacturer Overflux curve.
7. Buchholz, WTI and OTI (for 1 MVA and above), MOG with low oil level alarm, OSR for OLTC, PRD, SA on both primary and secondary sides of transformers located outdoors and connected to overhead lines, shall be enabled with the appropriate settings
8. HV Standby Earth fault non directional overcurrent Protection shall be disabled.
9. LV Standby Earth fault non directional overcurrent Protection shall be disabled.

3. 220kV BUS COUPLER AT AMPIN ENERGY END

PSSG had recommended the following:

1. Disable the earth fault protection.
2. Overcurrent protection shall be enabled with pick up 2In and with definite time delay of 2sec.

4. 220kV BUS BAR AT AMPIN ENERGY END

PSSG had recommended the following:

1. OCT operating level shall be enable with a 20% of maximum load current.

Note: For updation of PDMS, the following PRDC personnel may be contacted:

- Mr Varun S, varun.s@prdcinfotech.com
- Mr Bharath B, bharath.b@prdcinfotech.com

- d) It was noted in the earlier meetings that several entities were not submitting the Relay settings as per the timeline mentioned in the Protection Protocol. It is reiterated that as per the SR Protection Protocol, the proposed settings shall be submitted by the entity two months in advance.
- e) In 118th PCSC Meeting (08.05.2024), it was noted that validity of provisional approval is one month only. Hence the entities whose settings were provisionally approved shall get the final approval of those settings within a months' time, else it would be treated as unapproved settings. Responsibility lies with the entity, if any grid occurrence happens due to unapproved settings. Also, the provisional approval of the settings cannot be given henceforth by PSSG if the complete & relevant files/settings are not submitted for the scrutiny and deliberations of PSSG.

- f) SRLDC is requested to ensure the protection settings recommended by PSSG are implemented by the entities during first time energization of the respective elements.
- g) All entities are requested to furnish the relay setting parameters in excel format as per the set values in relay. On analysis, it was observed that the excel file data were not matching with the downloaded relay data. PSSG will scrutinize the parameters given in excel files only and it is the responsibility of the entity to kindly ensure the parameter to be set as per the relay data given in excel file and to consider the recommendations/ suggestions specified.
- h) During first time energization (FTE) of the respective elements, SRLDC needs to verify the settings implemented by the entities and ensure that the proposed settings as per the excel sheets/computations & the recommendations of PSSG are implemented by the entities.

Deliberations:

1. SRPC informed that proposals for **Nine** relay settings had been analysed, reviewed by the PSSG and the proposals had been approved. Recommendations, including specific recommendations /suggestions were provided. Forum concurred to the above. SRPC emphasized the importance of implementing the recommended settings as advised.
2. SRPC requested all entities to submit proposed relay settings, in the specified format, well in advance (two months before the planned commissioning date) to SRPC/PSSG. This allows sufficient time for PSSG to review the settings and provide observations or recommendations. PSSG members were also urged to submit their observations, comments and views within the given timelines to facilitate the timely analysis and recommendation of relay settings.
3. Regarding verification of the settings during FTE process, SRLDC was requested to verify the major/important settings before granting energization clearance.
4. It was noted that some vital protection settings need to be cross-verified by SRLDC with the downloaded relay settings furnished by the entities to confirm that the implemented settings are as recommended by the PSSG, which would ensure reliable and protected power system. SRLDC agreed to check the vital/major settings.
5. SRPC informed that the following protection details/ relay settings (along with computations to arrive at the setting parameters in the relay, in excel file) shall be furnished by all the entities to the PSSG for assessment:

Line Protection	Line Differential Protection	Transformer/ Reactor	Bus Bar/ LBB	Generator Transformer connecting at 400 kV and above	Station Transformer connecting at 400kV and above
Single Line Diagram (SLD)	Single Line Diagram (SLD)	Nameplate Details	Single Line Diagram (SLD) with full feeders connected along with CT ratio	Nameplate Details	Nameplate Details

Line sketch/Gradation Chart	Line sketch/Gradation Chart	Fault level contribution (three phase and single phase) and local feeder with highest time setting for Overcurrent and EF	Differential settings with slope characteristics	Whether Earthing of neutral of Generator transformer is solidly earthed and high voltage winding is in star point	Whether Earthing of neutral of Station transformer is solidly earthed and high voltage winding is in star point
Zone Protection along with all computations, mainly resistive & reactive reach and timings	Differential settings along with Zone settings (slope characteristics). Whether Zone 1 is enabled whenever communication fails	Differential	Whether LBB is a part of BBP or external LBB along with Re-trip and back trip timing details	Overall differential protection (87OA)	Whether segregation of group-A and B protections from DC-1 and DC-2 source has been ensured
SOTF	SOTF	REF	End Fault Protection	Generator transformer differential protection (87GT) for single phase bank	Differential current protection (87)
DEF-IDMT	DEF-IDMT	Over flux (LV & HV)	CT supervision	Restricted earth fault protection for generator transformer (87NGT)	Restricted earth fault protection for LV winding (87NLV)
OVR	OVR	Backup Distance Protection		Overhead line connection differential protection (87L) <i>[For 3 single phase banks, if 87L includes HV winding, separate 87NGT is not mandatory.]</i>	Restricted earth fault protection for HV winding (87NHV)
Load encroachment settings - Blinder	Load encroachment settings - Blinder	Backup directional overcurrent and EF Relay		Back- up earth fault protection on generator transformer HV Neutral (51NGT)	Back-up over-current protection on HV side (51)
A/R	A/R	Tertiary Winding Protection		Over-fluxing protection for generator transformer (99GT) <i>[To be duplicated for units of 500 MW and above]</i>	Back-up earth-fault protection (51N)
Broken Conductor	Broken Conductor			Back- up non-directional over-current protection in all phases on HV side of generator	Over-fluxing protection (99)

				transformer (51GT)	
Communication Scheme adopted	Communication Scheme adopted			Generator transformer oil temperature indicator (OTI) trip (49Q) and winding temperature indicator (WTI) trip (49T)	Buchholz protection (63)
Mutual Compensation	Mutual Compensation			Generator transformer Buchholz (63), Pressure relief valve (PRV)/ other mechanical protections	Winding temperature high (49T)
STUB	STUB			Pole discrepancy protection of generator transformer breaker (162) <i>[To be provided, if single pole breakers are used.]</i>	Oil temperature high (49Q)
PSB	PSB			Breaker failure protection of generator transformer breaker (50Z)	Pressure relief valve trip (PRV)
Zero sequence compensation	Zero sequence compensation			Start-up earth fault protection for LV and HV winding of generator transformer and UATs (64T) <i>[To be provided for GCB scheme only]</i>	Breaker failure protection (50Z)
VT Fuse failure	VT Fuse failure				
LBB- whether enabled in inbuilt relay, if yes settings	TEED Protection				
TEED Protection					
<i>Any other protection functions enabled shall be shared with the reason for setting the same and the computation.</i>					

6. Along with the Excel data, the entities need to share the computation files, stating the clear-cut steps for arriving at the value of each parameter. It is the responsibility of

the entity to ensure the relay settings in the relay as arrived in the Excel computation files and approved by PSSG/forum.

7. The entities are required to furnish the details as suggested by the PSSG and only after the receipt of the relevant & complete details, it would be taken up for deliberation/assessment by the PSSG.
8. Regarding FTE verification, SRLDC confirmed that certain basic/major/important relay settings and DNMS ticket details were being validated and checked.
9. SRPC explained that for every new element to be commissioned/modified element or for reviewing the revised settings of any element, each Generating Company and Transmission Licensee, at voltage levels 400 kV and above and interstate lines, shall submit the protection settings as per the format prescribed, along with the calculation sheets, **two months in advance**, to SRPC/SRLDC. All entities were requested to submit the relay settings as per the timeline mentioned above, rather than a day or two before commissioning, facilitating the PSSG with enough time to discuss the settings among the members. Forum noted the same.
10. PCSC approved the relay settings of nine elements, as listed above, recommended by the PSSG.

Recommendation:

- + **All entities to furnish the relay settings details as per the above finalized protection settings by the PSSG.**
- + **Entities to furnish the proposed relay settings in advance (two months before the planned commissioning date).**
- + **SRLDC to ensure the implementation of proposed protection settings along with the PSSG recommendations by the entity.**

7. Internal Protection Audit of Sub stations

The Clause (5) of Regulation 15 of IEGC Regulations, 2023 stipulates the following:
Quote

- (1) *All users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER).*
- (2) *All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.*
-
- (5) *Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the*

annual audit plan and report compliance of the same to their respective RPC."

7.1 Internal Audit Plan 2026-27

1. In line with the Clause (5) of Regulation 15 of IEGC Regulations, all entities were requested to submit the annual audit plan for the substations 220 kV and above voltage level for FY 2026-27 to SRPC by 31.10.2025

2. The following Entities are yet to submit the Internal Audit Plans.

Indigrid	NLC TS-1 EXP	WKTL
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3. All RE ISTS entities are requested to immediately update Internal Audit Plan for FY 2026-27 through Zoho Forms as sent by mail

4. The Following RE ISTS entities are yet to submit the Internal Audit Plan for 2026-27.

S.No	RE Entity	Total Stations (220kV & Above)	Internal Plan Audit Furnishing status
1	KSPDCL	8	Yes ✓
2	JSW - RE	5	Yes ✓
3	GREENKO	4	Yes ✓
4	Serentica Renewables India Pvt Ltd	4	No ✗
5	RENEW	4	No ✗
6	APSPCL	5	Yes ✓
7	Arcelor Mittal Green Energy Pvt Ltd (AMGEPL)	2	Yes ✓
8	KLEIO SOLAR	2	Yes ✓
9	SAEL Solar	2	Yes ✓
11	AYANA Renewable	2	No ✗
12	Vena Energy	1	Yes ✓
13	Zenataris Renewable Energy	1	No ✗
14	Sembcorp Green Infra Limited	1	Yes ✓
15	Vivid Solaire Energy Pvt Ltd	1	Yes ✓
16	GRT Jewellers (India) Pvt Ltd	1	Yes ✓
17	GREENINFRA	1	No ✗
18	SPRNG Renewable Energy	1	Yes ✓
19	TATA POWER (TP Saurya / TP Vardhaman)	2	Yes ✓
20	MYTRAH	1	Yes ✓

21	NTPC Green	1	Yes ✓
22	APSPCL	7	Yes ✓

Recommendations:

✚ *All RE-ISTS entities are requested to furnish the Internal Audit Plans for 2026-27 immediately.*

✚ *SRLDC is also requested to kindly coordinate with all RE-ISTS connected at 220kV & above voltage level) in furnishing the audit plans.*

7.2 Internal Audit Report 2026-27

The Summary of Reports Received for Internal audit for FY 2026-27 is as below

Internal Audit reports of STU's & PGCIL

Name of utility	Q1		Q2	
	No of stations scheduled	Reports received	No of stations scheduled	Reports received
TGTRANSCO	22	0	19	0
TANTRANSCO	43	27	41	3
KPTCL	46	32	45	0
APTRANSCO	42	1	41	1
KSEBL	12	0	12	0
PED	0	0	1	0
PGCIL SR I	6	5	6	0
PGCIL SR II	8	8	9	1
TOTAL	179	73	174	5

Internal Audit reports of Genco's

Name of utility	Q1		Q2	
	No of stations scheduled	Reports received	No of stations scheduled	Reports received
APGENCO	1	0	7	3
TGGENCO	0	0	1	0
KPCL	0	0	0	0
TNPGCL	2	2	1	0
TNGECL	0	0	0	0
NLCIL	0	0	2	0
STPP	1	0	0	0
NTECL	0	0	0	0
NTPL	0	0	0	0
APSPCL	0	0	0	0
BHAVINI	0	0	1	0
KSPDCL	0	0	0	0
NTPC	0	0	0	0
NPCIL	0	0	0	0
TOTAL	4	2	12	3

Internal Audit reports of Private Genco's, STU & RE-ISTS

Name of utility	Q1		Q2	
	No of stations scheduled	Reports received	No of stations scheduled	Reports received
SPRNG	0	0	0	0
AKSHAYA UJRA	0	0	0	0
APSPCL	0	0	0	0
HNPCL	0	0	0	0
SEL	0	0	1	0
IC&FS	1	0	0	0
CEPL	0	0	1	0
AMGEPL	0	0	0	0
JSWEL	0	0	0	0
GEENKO	0	0	1	0
RENEW	0	0	0	0
STPP	1	0	0	0
SEIL - 1	0	0	0	0
UPCL	0	0	1	0
VENA GADAG	0	0	0	0
GREENKO AP01	0	0	1	0
NTPC GREEN	0	0	0	0
VILATHIKULAM 300kV	0	0	0	0
VILATHIKULAM 230kV	0	0	0	0
SAVALAPER	0	0	0	0
KARUR PS-1	0	0	0	0
KARUR PS -2	0	0	0	0
GREEN INFRA RENEWABLE ENERGY LTD	0	0	0	0
ATHIKINARU	0	0	0	0
MYTRAH	0	0	0	0
NNTPS	0	0	0	0
KARUR (KTL)	0	0	0	0
WKTL	0	0	0	0
KLEIO SOLAR PVT LTD	1	1	1	1
SERENTICA	4	4	0	0
MEL	2	1	0	0
TP SOURYA KOPPAL LTD	1	1	0	0
NLC - TPS -2 EXP	0	0	2	0
NLC TPS - 1	0	0	0	0
NLC TPS - 2	0	0	2	0
TP VARDHAMAN SURYA LTD	1	1	0	0
TOTAL	9	6	6	1

Deliberations:

1. TGTRANSCO stated that the internal audit reports are being consolidated and will be submitted shortly.
2. TANTRANSCO stated that there was a slight change in the internal audit schedule. As per the revised schedule, internal audits of 34 stations were conducted during Quarter-1, of which 29 reports have been submitted. TANTRANSCO assured that the pending reports would be submitted within a week.
3. KPTCL stated that internal audits of a few stations have been rescheduled and the pending reports would be submitted shortly.
4. APTRANSCO stated that field officials have been instructed to submit the internal audit reports through Zoho Forms.
5. KSEBL stated that the reports received from the field are being consolidated and the consolidated reports would be submitted shortly

Recommendations

✚ **Entities to furnish the internal audit report along with recommendation and action plan for rectification of deficiencies detected, if any, to SRPC after completion of the audit. (Only soft copy of Internal Audit report may be furnished, while hard and soft copy of the recommendations and action plan need to be furnished).**

✚ **Entities to include the 'Verification of the relay setting coordination with the connected elements' in the internal protection audit checklist as well as in the audit report.**

✚ **SRLDC also to take up with RE ISTS Entities (220kV & above) and furnish the Internal audit plans.**

8. Third-Party Protection Audit

The Clause (5) of Regulation 15 of IEGC Regulations, 2023 specifies the following:
Quote

(2) All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.

.....

(5) Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC."

8.1 Third Party Protection Audit for FY 2026-27

1. In line with the Clause (5) of Regulation 15 of IEGC Regulations, all entities were requested to submit the annual audit plan for the substations 220 kV and above voltage level for FY 2026-27 to SRPC by **31.10.2025**.
2. SRPC, vide letter dated 20.03.2026 (**Annexure-9a**), issued the schedule to carry out Third Party Protection Audit through SRPC Coordination for FY 2026-27 (**Annexure-9b**). **121** number of Substations in the Region for the period April 2026 - March 2027 as mentioned in the Annexure-9b are to be audited under SCTPPA by the Audit teams constituted by SRPC.

3. **The scheduled audits have to be taken up strictly as per the SCTPPA schedule to enable proper monitoring. In the event of extreme exigencies, the audit may be rescheduled as soon as possible, in consultation with the respective auditors and intimate to SRPC.**
4. All RE –ISTS entities to submit the Third party Audit plans in the above Google sheet link

Deliberations:

SRPC requested SRLDC to coordinate with RE ISTS entities through REMC to ensure submission of third-party protection audit reports & plans of substations at 220 kV and above voltage levels. SRLDC agreed to the same.

Entities (connected at 220 kV & above) to furnish the internal and Third-party audit plans to SRPC at the earliest.

SCTPPA entities to carryout Third party audit as per schedule.

SRLDC also to pursue with RE ISTS entities to furnish Third party audit plans

9. Protection Performance Indices

1. As per the Protection Protocol of SR prepared in compliance with the IEGC Regulations 2023, Users/Entities shall submit the protection performance indices of previous month to SRPC and SRLDC on monthly basis for 220 kV and above by 15th of the subsequent month and the same shall be reviewed in the ensuing PCSC meeting of SRPC.
2. Protection performance Indices for the months of **June 2026** are **pending from the following entities:**

ADANI_ATL	AMGEPL	APSPCL	Ayana Renewable Power Six Pvt Ltd
BHAVINI	GREENINFRA	HIRIYUR_ZREPL	ILFS
INDIGRID	KLEIO_SOLAR	KPTCL	KSEB
KSPDCL	LKPPL	MYTRAH	NLC
NPCIL_MAPS	NTECL	NTPC	NTPC_RSTPS
ORANGE	PGCIL SR-1	PGCIL SR-2	PONDICHERRY
PVG_JSWRenew Twenty Ltd	RENEW POWER PVT LTD	Renew Vyoman PPL	SAEL
SCCL	SEPC	SEPL	SERENTICA_RI1PL
TNGECL	TNPGCL		

3. The consolidated details of protection performance indices received from the entities for the months of June 2026 are at **Annexure 10a**. The same would be reviewed in the meeting.

4. The non-compliance of IEGC Regulations/Protection Protocol of SR by the entities (who have not furnished the protection performance indices of June 2026) would be deliberated in the meeting.
5. In the 126th PCSC meeting, all STUs confirmed that the Protection Performance Indices (PIs) of their Embedded Entities/Independent Power Producers (IPPs) are included in their respective STU/TRANSCOs Monthly PPI reports.
6. In the 135th PCSC meeting SRLDC requested all entities to recheck the classification report before clicking the verify button and to contact SRLDC in case of any discrepancies or variations between the user and SRLDC data.
7. SRLDC to modify the Tripping Classification after Discussion in the previous PCSC meetings and furnish the updated Tripping Classification report.
8. In the 140th PCSC meeting SRPC requested all entities to ensure that successful Auto Reclosure (A/R) operations are also entered in the PPI portal.
9. **As decided in the 139th PCSC meeting, one of the SR utilities would make a detailed presentation, in each meeting, on the PPI performance of its system, including analysis carried out and corrective actions taken. TGTRANSCO to present on the PPI findings in the 145th PCSC Meeting.**
10. In the 140th PCSC meeting SRPC further highlighted that several variations were observed in the tripping classifications furnished by the utilities and SRLDC and requested all entities and SRLDC to coordinate closely and rectify the classification errors, as the errors lead to inaccurate PPI indices.

Deliberations:

1. SRPC expressed serious concern over the continued non-submission of Protection Performance Indices (PPIs) by several ISTS and RE entities. It was reiterated that, in accordance with the IEGC Regulations and the SR Protection Protocol, submission of PPIs on a monthly basis to SRPC and SRLDC is mandatory and shall be ensured by all entities without exception.
2. SRLDC was requested to follow up with the concerned ISTS and RE entities to ensure timely compliance, as deliberated in the earlier PCSC meetings. Further, SRLDC was requested to verify the correctness of the PPIs submitted by the entities and report any discrepancies observed during the PCSC meetings.
3. SRPC requested all entities to ensure that all successful Auto Reclosure (A/R) operations are also updated in the PPI portal.
4. SE, SRPC expressed concern regarding the low PPI indices observed for several utilities and enquired about the corrective measures being taken by the respective entities to improve their performance indices.
5. SE, SRPC requested all entities to treat the PPI as a preliminary diagnostic tool and advised that detailed internal analysis should be carried out by the respective utilities, particularly in cases where low PPI indices are observed.

6. As deliberated during the 144th PCSC Meeting, SRPC requested TGTRANSCO to present its PPI analysis for the month of June 2026. Accordingly, TGTRANSCO presented the PPI analysis report, which is placed at **Annexure-9B**.
7. SRPC further highlighted that several discrepancies had been observed in the classification of tripping events furnished by the utilities and SRLDC. Accordingly, all entities and SRLDC were requested to coordinate closely and rectify such classification errors to ensure the accuracy and reliability of the PPI database.

Recommendations:

-  ***Entities to furnish the Protection Performance Indices for the month of June 2026.***
-  ***Users/ Entities to submit the monthly Protection Performance Indices of the month i.r.o 220 kV and above voltage level to SRPC/ SRLDC by 15th of the subsequent month to enable review in the ensuing PCSC meeting.***
-  ***Along with the Protection Performance Indices details (including all the element tripping details), Users/ Entities to submit the inter-state lines tripping details, however, the entities shall not count those occurrences/incidences while computing Performance Indices.***
-  ***All entities to furnish all tripping details, along with the Protection Performance Indices.***
-  ***ISTS connected RE entities to submit the Protection Performance Indices.***
-  ***SRLDC/REMC to take up with ISTS connected entities (including RE) and ensure the submission of Protection Performance Indices.***
-  ***SRLDC to verify the Protection Performance Indices furnished by the ISTS entities/ Users and discrepancies, if any, may be reported to PCSC in the meetings.***
-  ***SRLDC to update the tripping classification details after discussion in the PCSC meeting.***
-  ***Utilities to give presentation on the PPI performance of its system, including analysis carried out and corrective actions taken.***

10. Status of Islanding Schemes Reviewed during 2025-26

1. Monitoring of Islanding Schemes by SLDCs/SRLDC

- (i) In accordance with Standard Operating procedure (SOP) issued by MoP/CEA, SRLDC and SLDCs (Nodal LDCs of the islanding Schemes) need to monitor the Island generation and load on real-time basis. SOP clauses are reproduced below:

“2. Monitoring of Vital Parameters

- i. Since formation of Island can take place at any time, monitoring of the following vital parameters, which have a significant role in on successful Island formation, is of paramount interest:*
 - a. Anticipated/ actual Generation within the electrical boundary of the Island.*

b. Anticipated/ actual Load within the electrical boundary of the Island.

c. Voltage, Frequency & Power Flows along the peripheral lines which are required to be tripped to form the Island.

ii. Above parameters are to be monitored in real-time basis in the Control Room/Despatch Centre (i.e., Sub SLDCs/SLDC/RLDC/NLDC) of the area by creating a dedicated page specific to the Islanding Scheme in the SCADA display. To accomplish this, provision should also be made, if required, for installing adequate measuring instruments (like PMU) at suitable locations within the Island.”

2. As per the earlier PCSC meeting deliberations, SRLDC to act as a Nodal agency for Neyveli & Kudankulam Islanding schemes, since the IS are covered in 2-3 states/UT and monitor the critical parameters including the Load & Generation of the island in real time. Following are the nodal LDCs of the Islanding Schemes of SR:

Islanding Scheme	Nodal LDC
Vijayawada & Vishakhapatnam IS	AP SLDC
Bengaluru IS	KAR SLDC
Chennai IS	TN SLDC
Hyderabad IS	TG SLDC
Neyveli IS	TNSLDC, KERSLDC, PUDSLDC, SRLDC
Kudankulam IS	TNSLDC, KERSLDC, SRLDC

3. SCADA monitoring displays are made available in the respective SLDCs & SRLDC. Nodal LDCs need to furnish the Island LGB data for four scenarios for previous month along with their observations & SCADA data on monthly basis by 25th of the month in the following format to SRPC:

Peak Load scenario in the Island during the previous month		Off- Peak Load scenario in the Island during the previous month		Maximum Generation scenario in the Island during the previous month		Monthly Average data scenario	
Generation in MW	Load in MW	Generation in MW	Load in MW	Generation in MW	Load in MW	Generation in MW	Load in MW

Note:

Generation in MW: Generation data of all generators participating in the Island scheme only.

Net Load in MW: Total surviving load after deducting the AUFR+df/dt+ (Island feeders, if any) in the Island.

4. SRLDC, vide mail dated 25.07.2026, furnished the Monthly Islanding data which is illustrated below. The Islanding Plots furnished by SRLDC is at **Annexure-12:**

Island	Bangalore	Chennai	Hyderabad	Kudankulam	Neyveli	Vijayawada	Visakhapatnam
Peak Load (Generation)	3046	2826	4456	4253	4919	2146	2794
Peak Load	3859	2783	5281	7860	4356	2668	2354
Peak Load Time	16-06-2026 15.17	16-06-2026 22.50	03-06-2026 16.07	08-06-2026 13.51	16-06-2026 18.57	06-06-2026 22.31	04-06-2026 21.56

Off Peak Generation	1051	2274	4948	5109	4071	907	1979
Off Peak Load	2077	1498	3279	3814	1844	1186	1249
Off Peak Load Time	15-06-2026 3.03	28-06-2026 9.11	14-06-2026 4.31	20-06-2026 4.06	14-06-2026 12.16	13-06-2026 10.31	17-06-2026 16.14
Maximum Generation	4896	3245	6075	7164	5856	2267	3499
Load at Maximum Generation	2809	1927	4220	5788	3649	2455	2054
Maximum Generation Time	01-06-2026 23.02	06-06-2026 4.37	04-06-2026 3.09	17-06-2026 22.21	16-06-2026 21.59	20-06-2026 21.59	02-06-2026 21.46
Average Generation	3180	2518	4532	4857	4347	1667	2545
Average Load	3017	2078	4292	5336	3245	1902	1742
Maximum SR RE time	30-06-2026 10.00	30-06-2026 10.00	30-06-2026 10.00	30-06-2026 10.00	30-06-2026 10.00	30-06-2026 10.00	30-06-2026 10.00
RE Max Gen	2694	2071	3174	4335	3687	1349	1330
RE Max Load	3495	2058	4242	6456	2619	1616	1611
G/L	1.05	1.21	1.06	0.91	1.34	0.88	1.46

5. Substantial variations in the LGB, owing to flexing of generation by conventional generating stations participating in the Islanding Schemes and participating load quantum during high RE injection, particularly during high solar generation period, have been observed. To analyse the IS LGB under various scenarios to enable appropriate review and remedial action, SRLDC is requested to present snapshot of SCADA display of the Islanding page during **solar peak hour** of the previous day.

6. Nodal LDCs were requested

- To furnish their observations regarding the LGB data.
- To provide reasons for Low / High LGB observed.
- Nodal LDCs should present the following for the Island for the month of **June** 2026 during the PCSC meeting:
 - Load Duration Curve
 - Generation Duration Curve
 - G/L Duration Curves

7. STU/TRANSCOs are requested to coordinate with SLDC and to present the data in the PCSC Meeting

Deliberations:

1. SRPC highlighted the very high load values reported for the Kudankulam Islanding Scheme at 12:00 hrs and 18:00 hrs on 06.08.2026. SRLDC stated that similar high load values were also being observed in the Kudankulam IS. It was suspected that the discrepancy may be due to SCADA data or load mapping issues, as a load of around 9000 MW is not expected under the present island configuration.
2. TANTRANSCO stated that the average load in the Kudankulam IS pertaining to the Tamil Nadu network is around 4500 MW.
3. SE, SRPC highlighted that the issue of load values in the Kudankulam IS has been under discussion for a considerable period without a resolution. TANTRANSCO was requested to examine and deliberate on the reasons for the abnormally high load values.
4. TANTRANSCO clarified that, as the high wind generation season is currently prevailing, the issue may be attributable to the methodology adopted for accounting for non-telemetered RE generation. A certain percentage of the non-telemetered RE generation is being considered as load and included in the net load value of the island.
5. SRPC raised concern that RE generation is required to be disconnected during formation of the island and, therefore, considering such generation as load may not provide an accurate representation of the net load of the island. TANTRANSCO was requested to review and suitably modify the methodology adopted for computation of the net load.
6. MS, SRPC requested SRLDC to convene a meeting with TANTRANSCO and KSEBL to identify and resolve the load data-related issues in the Kudankulam Islanding Scheme. SRLDC agreed to the same.
7. SRPC enquired about the mismatch between load and generation observed in the Hyderabad Islanding Scheme. TGTRANSCO stated that the modified Hyderabad IS has not yet been implemented, resulting in the observed mismatch between load and generation. TGTRANSCO assured that the modified islanding scheme would be implemented by the next month.
8. SRPC enquired about the lower generation observed in the Vijayawada Islanding Scheme. APTRANSCO stated that VTPS Units 4 and 5 are presently out of service, resulting in lower generation in the island.
9. Regarding the Visakhapatnam Islanding Scheme, SRLDC stated that one unit of NTPC is under outage, while the other units at HNPCL are operating at their technical minimum, resulting in the present generation level in the island.

Recommendations:

-  ***Nodal SLDCs of the Islanding Schemes to monitor new elements being added across the island boundaries of the respective islanding scheme and to ensure implementation of UFR at islanding frequency.***
-  ***SRLDC to monitor the transmission elements getting added across interstate boundaries affecting the existing IS and intimate the same to respective SLDCs for UFR implementation***

8. In the earlier meetings, it was emphasized that SLDCs and SRLDC are responsible to monitor new elements being added inside or across the island boundaries of the respective islands of their control area (Nodal LDC for the Islanding scheme), and if any element gets added across the boundary of the Island (Island boundary as per the reviewed island document issued by SRPC), UFR at islanding frequency shall be implemented by respective SLDC/TRANSCO/TSP on those elements with intimation to SRPC and SRLDC. In addition, SRLDC shall also monitor the transmission elements getting added across interstate boundaries affecting the existing islands and intimate the same to respective SLDCs for UFR implementation.
9. SRLDC vide mail dated 25-07-2026 furnished the New elements added in the grid, as per the PSSE case for July 2026. **Entitles are requested to verify and confirm any Island crossing feeders are present in the list.**

From Bus	To Bus	From Name	To Name	ID	From Bus Area Name	To Bus Area Name
411009	411148	BHIMAVARAM 132.00	NARSAPURAM 132.00	P2	ANDRAPRADESH	ANDRAPRADESH
411027	411560	GUNTUR 132.00	ANU(KAZA) 132.00	D1	ANDRAPRADESH	ANDRAPRADESH
411085	411560	TADEPALLI 132.00	ANU(KAZA) 132.00	D1	ANDRAPRADESH	ANDRAPRADESH
411148	411155	NARSAPURAM 132.00	RAZOLE 132.00	P2	ANDRAPRADESH	ANDRAPRADESH
411254	411548	PODILI21 132.00	EST_GANGVRM 132.00	P1	ANDRAPRADESH	ANDRAPRADESH
411254	411548	PODILI21 132.00	EST_GANGVRM 132.00	P2	ANDRAPRADESH	ANDRAPRADESH
412013	412205	GOOTY-SWS 220.00	DARMAVARAM21220.00	Z1	ANDRAPRADESH	ANDRAPRADESH
412089	412205	SHAPURAM 220.00	DARMAVARAM21220.00	Z1	ANDRAPRADESH	ANDRAPRADESH
414060	414068	GREENCO_CPSS400.00	GRNCO_PN 400.00	L1	KURNOOL2_S	KURNOOL2_S
414060	414069	GREENCO_CPSS400.00	GRNCO_CH 400.00	L1	KURNOOL2_S	KURNOOL2_S
414067	414071	ANANTHAPUR 400.00	RVSPN_ANP 400.00	L1	SR_ISTS_AP	ANP_W
414067	414071	ANANTHAPUR 400.00	RVSPN_ANP 400.00	L2	SR_ISTS_AP	ANP_W
414068	414069	GRNCO_PN 400.00	GRNCO_CH 400.00	L1	KURNOOL2_S	KURNOOL2_S
414071	414072	RVSPN_ANP 400.00	RVSP684_ATP 400.00	L1	ANP_W	ANP_S
422025	422111	NIRMAL 220.00	NIRMAL_NEW 220.00	M3	TELANGANA	TELANGANA
422036	422111	JAGTYALA 220.00	NIRMAL_NEW 220.00	M1	TELANGANA	TELANGANA
441905	446214	VELLORE 110.00	SATHAMADURAI110.00	1	TAMILNADU	TAMILNADU
441908	446214	ANAICUT 110.00	SATHAMADURAI110.00	1	TAMILNADU	TAMILNADU
441912	446214	KILPALLI 110.00	SATHAMADURAI110.00	1	TAMILNADU	TAMILNADU
441913	446214	SATHAMADURAI110.00	SATHAMADURAI110.00	1	TAMILNADU	TAMILNADU
446214	446215	SATHAMADURAI110.00	TECHNOEHT 110.00	1	TAMILNADU	TAMILNADU

10. In the 140th PCSC meeting SRPC requested SRLDC to take up issues with the respective SLDCs whenever erratic SCADA data is observed, so that the issues can be addressed in real time. SRLDC agreed to inform their SCADA department accordingly.
11. All entities were requested to enter the details in the portal regarding the new elements added in the grid on regular basis.

Deliberations:

1. All STU's expect TANTRANSCO confirmed that the feeders listed under the agenda item are not crossing any island boundary.
2. TANTRANSCO stated that 110kV network some feeders they are having doubt and will consult with TNSLDC and update in this regard.

3. SRPC informed all the entities, that a dedicated page had been created by SRLDC under the Communication Outage Portal for entering details of new grid elements added to the system. All entities were requested to update the details of new grid elements in the portal.
4. SRPC requested SRLDC to provide login credentials to PCSC forum members for data entry in the portal or alternatively to replicate a similar dashboard under the SPHOORTI portal. SRLDC stated that the matter would be examined and update accordingly.

Recommendations:

-  ***Nodal SLDCs of the Islanding Schemes to monitor new elements being added across the island boundaries of the respective islanding scheme and to ensure implementation of UFR at islanding frequency.***
-  ***SRLDC to monitor the transmission elements getting added across interstate boundaries affecting the existing IS and intimate the same to respective SLDCs for UFR implementation.***

12. Furnishing of Monthly Certificate on Healthiness of Islanding Schemes by Generators/ Transmission Utilities / SLDCs/ DISCOMS

1. All Constituents as listed below were requested to submit certificate on Healthiness of Islanding Schemes on monthly basis –by the first week of every month (i.e. status for a month shall be sent before the 3rd day of the succeeding month) to SRPC as per the formats, circulated vide SRPC letter dated 09 August 2021:

Islanding Scheme	Constituents
Hyderabad (Ramagundam) IS	TGTRANSCO, SLDC-TGTRANSCO, TGGENCO, PGCIL (SR-I), NTPC-Ramagundam
Chennai IS	TANTRANSCO, SLDC-TANTRANSCO, PGCIL (SR- II)
Neyveli IS	TANTRANSCO, SLDC-TANTRANSCO, PGCIL (SR- II), PED, NLCIL, NNPTPS, KSEBL
Kudankulam IS	TANTRANSCO, SLDC-TANTRANSCO, PGCIL (SR- II), KSEBL
Visakhapatnam (Simhadri) IS	APTRANSCO, SLDC-APTRANSCO, APGENCO, PGCIL (SR-I), NTPC-Simhadri
Bengaluru IS	KPCL, KPTCL, PGCIL (SR-I), PGCIL (SR-II), UPCL, NTPC-Kudgi, NPCIL-Kaiga
Vijayawada IS	APTRANSCO, SLDC-APTRANSCO, APGENCO, PGCIL (SR-I)

2. As decided in 112th Meeting of PCSC held on 06th November 2023, all Utilities concerned are requested to furnish the certificate in the prescribed format regularly (before 7th day of every month) for onward reporting to CEA/ MoP.
3. The Certificate of Healthiness of Islanding Schemes for the month of **June 2026** has been received from all the utilities.

Recommendations:

-  ***All the entities concerned to submit the certificate of Healthiness of Islanding Schemes on monthly basis, by the first week of every month (i.e. status for a month shall be sent before the 7th day of the succeeding month), to SRPC as per the formats circulated, vide SRPC letter dated 09th August 2021.***

11. Ensuring Readiness of Islanding Schemes

1. In view of the prevailing security concerns across the country and as per the directions issued by the Ministry of Power, it is imperative to ensure the operational reliability and effectiveness of the existing Islanding Schemes. Accordingly, all Nodal Load Despatch Centres (SLDCs), State transmission utilities and ISTS transmission licensees are requested to ensure the following in respect of Southern Region Islanding Schemes (IS) under their jurisdiction:

Sl. No.	Activity	Entity Responsible
1	Testing and verification of all stages of Under Frequency Relays (UFR) and df/dt relays within the Islanding Scheme were requested to be ensured.	Nodal SLDC, STU & ISTS
2	Testing and verification of other relay set points, such as Under Frequency (U/f) and Over Frequency (O/f) settings of the participating generators, PILM feeders, etc., identified within the Islanding Scheme, were advised to be carried out.	Nodal SLDC, STU & ISGS Stations within the Island
3	Confirmation regarding the operational healthiness and readiness of the Islanding Schemes was requested to be provided.	Nodal LDC
4	Continuous monitoring of the Islanding Schemes through SCADA visibility in the LDCs was advised to be ensured.	Nodal LDC

2. Following are the nodal LDCs of the Islanding Schemes of SR:

Islanding Scheme	Nodal LDC
Vijayawada & Vishakhapatnam IS	AP SLDC
Bengaluru IS	KAR SLDC
Chennai IS	TN SLDC
Hyderabad IS	TS SLDC
Neyveli IS	TNSLDC, KERSLDC, PUDSLDC, SRLDC
Kudankulam IS	TNSLDC, KERSLDC, SRLDC

- SRPC, vide email dated 14.05.2025, requested that a report of confirmation of the above may please be shared to SRPC at the earliest.
- APTRANSCO, vide mail dated 02.06.2025, informed that testing and verification of test points was done and found satisfactory.
- Subsequently, TGTRANSCO, TANTRANSCO, KPTCL & PED had confirmed the testing and verification of UFR relays under their purview.
- In the 133rd PCSC meeting PGCIL SR-I informed that they do not have standalone UFR relays and that actual UFR testing would be carried out during Line Clearance (LC). They further confirmed that the physical setting of test points in the relay display had been verified and that testing would be completed during LC.
- In the 134th PCSC meeting KSEBL confirmed that AUFR testing verification was completed.

✚ **All SLDCs to ensure monthly verification of set points.**

✚ **All Nodal Load Despatch Centres (SLDCs), State transmission utilities and ISTS transmission licensees to furnish confirmation report on Island Readiness to SRPC immediately.**

12. Review of SR-Islanding Schemes

1. Due to the variation in generation and load growth in the already designed Islanding Schemes, the Annual Review of SR Islanding Schemes is being undertaken every year.
2. Accordingly, the review meetings of all SR Islanding Schemes were conducted as per the schedule given below:

Sl. No.	Islanding Scheme	Date of Review Meeting			Date of Issuance of Reviewed IS Document
		Review meetings —→	1 st Review	2 nd Review	3 rd Review
1	Hyderabad		11.06.2025	25.09.2025	17.02.2026
2	Bangalore		11.06.2025	09.12.2025	17.02.2026
3	Vijayawada		11.07.2025	25.09.2025	----
4	Visakhapatnam		11.07.2025	25.09.2025	17.02.2026
5	Chennai		15.07.2025	09.12.2025	17.02.2026
6	Neyveli		15.07.2025	16.12.2025	-----
7	Kudankulam		15.07.2025	16.12.2025	-----

Deliberations:

1. SRPC enquired regarding the implementation status of Vijayawada and Visakhapatnam Islanding Schemes. APTRANSCO informed that SCADA mapping and implementation activities for Vijayawada Islanding Scheme had been completed. Further, it was informed that for Visakhapatnam Islanding Scheme, SCADA mapping had been completed and implementation activities were pending.

2. TGTRANSCO stated that implementation status for Hyderabad IS is in progress and is expected to be completed by Month end.
3. SRPC requested TANTRANSCO, KSEBL & PED to implement the modified Kudankulam and Neyveli IS.
4. Regarding Chennai Islanding Scheme, TANTRANSCO stated that implementation activities and SCADA mapping were presently under progress.

APTRANSCO, TANTRANSCO, TGTRANSCO, KSEBL, KPTCL, PED & SRLDC to update the status of implementation of Reviewed IS.

13. Nodal Officer Details for Islanding Schemes — Role, Responsibility & Coordination Activities

As per the Standard Operating Procedure (SOP) (Annexure-13) for Islanding Schemes,

- Roles and responsibilities of the organizations/officers involved in designing and operating the Islanding Schemes are defined in *Annexure-III* of the SOP.
- A **Nodal Officer** is to be nominated by each utility participating in the Island (owners of generating stations, substations, transmission lines, distribution lines, etc.) along with a **Chief Nodal Officer** from the concerned Despatch/Control Centre.
- The Chief Nodal Officer from the LDC and utility-specific Nodal Officers shall ensure free flow of information regarding operational status of the Islanding Scheme and prompt communication between SCADA Control Centres and stations.
- Further, each RLDC shall designate a **Coordination Officer** for regional level monitoring.

Entity	Required Level of Nodal Officer	Key Role/Responsibility
RPCs (Regional Power Committee)	<i>Superintending Engineer</i> (nominated by Member Secretary, RPC)	Preparation, coordination, and periodic review of Islanding Schemes
RLDCs (Regional Load Despatch Centres)	<i>General Manager & above</i>	Coordinating Nodal Officer for region; monitor vital parameters of schemes at SCADA; recommend PMUs/ communication upgrades; certify healthiness of systems
LDCs (State Load Despatch Centres)	<i>Chief Engineer & above</i>	Chief Nodal Officer at state level; coordinate DISCOM/TRANSCO/ GENCO nodal officers; ensure proper data flow; monitor health of SCADA, relays, communication; certify components monthly; implement schemes at state level.
GENCOs (Generating Companies)	<i>General Manager / Chief Engineer & above</i>	Implement schemes at generation end; provide data for study/review; ensure healthiness of generating units, relays, communication; submit monthly certification
STUs / PGCIL (Transmission Utilities)	<i>General Manager / Chief Engineer & above</i>	Implement schemes at transmission end; ensure healthiness of substations, lines, relays,

Entity	Required Level of Nodal Officer	Key Role/Responsibility
		communication; provide data for review; monthly certification.
DISCOMs (Distribution Companies)	<i>General Manager / Chief Engineer & above</i>	Identify essential and defence loads; implement schemes at distribution end; ensure feeder/relay/communication health; monthly certification.

- An updated list of contact details of all such Nodal Officers is to be maintained by the LDC.
- **SLDC, STU, SGS, ISGS, ISTS & RLDC were requested to furnish the details in the below format**
- SLDCs to coordinate with respective DISCOMs w.r.t nomination of nodal officer and discharge of IS related responsibilities.

Utility Name & Location	Name	Designation	Organization	Email ID	Mobile No.

The latest status of nominations received is as below:

S.No	Name of Islanding Scheme	STU	SLDC	Gencos
1	Telangana	✓	✓	✓
2	Andhra Pradesh	✓	✓	✓
3	Tamil Nadu	✓	✓	✗
4	Karnataka	✓	✓	✓
5	Kerala	✓	✓	✓
6	Puducherry	✓	✓	NA
7	PGCIL (SR)	✓	NA	NA
8	NTPC (SR)	NA	NA	✓
9	NPCIL KGS 1&2	NA	NA	✓
10	NPCIL KGS 3&4	NA	NA	✓
11	NPCIL MAPS	NA	NA	✓
12	NPCIL KKNPP	NA	NA	✓
13	ADANI (APL/ATL)	✗	NA	✓
14	HNPCL	NA	NA	✓
15	NLCIL	NA	NA	✓
16	SRLDC	✓		

✓ -- **Furnished**
✗ -- **Not Furnished**
NA- **Not Applicable**

Deliberations:

1. SRPC informed the forum that the roles and responsibilities of the organizations/officers involved in designing and operating the Islanding Schemes are defined in *Annexure-III* of the Standard Operating Procedure (SOP).
2. SRPC stated that a Nodal Officer is to be nominated by each utility participating in the Island (owners of generating stations, substations, transmission lines, distribution lines, etc.), along with a Chief Nodal Officer from the Despatch/Control Centre concerned.
3. SRPC highlighted that Nomination from **TNPGCL & ADANI (ATL)** were pending.

 **Utilities concerned to furnish the details of Nodal Officer as per the SoP.**

14. Periodic Inspection / Audit of Essential Components of Islanding Schemes

As per the Standard Operating Procedure (SOP) for Islanding Schemes, periodic inspection / audit of all essential components is required to ensure continued healthiness and operational reliability. The SOP specifies the following frequency and scope:

- **Under Frequency Relays (UFR)** on Island forming elements (Lines & ICTs) – *Quarterly*
- **Associated communication equipment** at all stations within the Island – *Bi-monthly*
- **Associated DC supply** for control panels and communication systems – *Bi-monthly*

The inspection / audit is to be carried out by a **third party** and the reports submitted to the respective RPC

- In the 138th PCSC meeting All STUs expressed concern regarding the practical feasibility of implementing the third-party audit frequency of essential components as notified in the SOP.
- SRPC informed that the matter of periodic inspection/audit frequency of essential components in Islanding Schemes had been taken up with the NPC. It was further stated that till any revision of the SOP is notified by NPC, the existing frequency for third-party audit, as specified in the SOP, needs to be complied.

 **All Island Participating Utilities to ensure the same.**

15. Monitoring of Vital Parameters for Islanding Schemes

As per the Standard Operating Procedure (SOP) for Islanding Schemes:

- Continuous monitoring of critical system parameters is essential since Island formation can occur at any time.
- The following parameters must be monitored on a real-time basis within the electrical boundary of each Island:

- Anticipated / actual **generation**
 - Anticipated / actual **load**
 - **Voltage, frequency, and power flows** on peripheral lines that are to be tripped to form the Island
- A **dedicated SCADA page** for each Islanding Scheme is to be created in the control rooms / despatch centres (Sub-SLDCs / SLDC / RLDC / NLDC) to display these parameters. If required, **PMUs or other measuring instruments** should be installed at suitable locations.
- **RLDCs/SLDCs are to submit monthly data** in the prescribed format to RPCs certifying the healthiness of the communication system used for monitoring these parameters.

S. No.	Name of Islanding Scheme	Healthiness of Communication Channel

Deliberations:

1. SRPC informed that as per the Standard Operating Procedure (SOP) for Islanding Schemes, following parameters, within the electrical boundary of each Island, must be monitored on a real-time basis:
 - Anticipated / actual generation
 - Anticipated / actual load
 - Voltage, frequency, and power flows on peripheral lines that are to be tripped to form the Island
2. RLDC/SLDCs were requested to furnish monthly data, in the prescribed format, to SRPC certifying the healthiness of the communication system used for monitoring these parameters.

SRPC & SLDCs to furnish the healthiness certifying the Monitoring of Vital Parameters

16. Certificate for Healthiness of Batteries

- (i) As per the MoP direction, given in pursuant to recommendations of the Enquiry Committee (NEW grid disturbance on 30th & 31st July, 2012), *the monthly certificate for healthiness of batteries, installed at 220 KV and above voltage level Substations (for power supply to Relays, RTUs and PLCC equipment)* are required to be obtained by RPCs, from their respective Constituents and furnish the same to CEA/ MoP.
- (ii) With reference to above, the Constituents have been requested to submit the certificate on healthiness of batteries on monthly basis (i.e. status for a month shall be sent by the 7th day of the following month) to SRPC Secretariat.
- (iii) The Certificate of Healthiness of Batteries has been received from all the entities for the month of **June 2026**.

Deliberations:

1. The Certificate of Healthiness of Batteries had been received from all the entities for the month of **June 2026**.
2. SRPC requested all the entities to mention appropriate action plan, with respect to unhealthy batteries, in the monthly status of battery healthiness report.

17. Compliance by the Users of the Grid

a) Submission of Annual Audit Plans by the State embedded Users/IPPs

- (i) Clause (5) of Regulation 15 of IEGC Regulations, 2023 envisages as below:

Quote

(1) All users shall conduct internal audit of their protection systems annually, and any shortcomings identified shall be rectified and informed to their respective RPC. The audit report along with action plan for rectification of deficiencies detected, if any, shall be shared with respective RPC for users connected at 220 kV and above (132 kV and above in NER).

(2) All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC

.

(5) Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC."

Unquote

As per the above Regulations, Users (Entities/Embedded entities/IPPs connected at 220kV & above voltage level) shall furnish the annual audit plans (Internal & third party) for the next financial year to SRPC by 31st October of every year.

- (ii) In the PCSC meetings, it was observed that some users especially State embedded entities/IPPs (including RE) connected at 220kV & above voltage level) have not submitted the Annual Audit Plans.
- (iii) In various meetings, it was requested to SLDCs/TRANSCOs to take up with the Users (Entities/Embedded entities/IPPs connected at 220kV & above voltage level) to furnish the **Audit Plan, both Internal as well as Third party audit plan.**
- (iv) Similarly, SRLDC was requested to take up with ISTS connected entities/Users (including RE) and ensure the submission of Protection Performance Indices and both audit plan.
- (v) State SLDCs/TRANSCOs had been requested to take up with the respective entities to furnish the audit plan both Internal as well as Third Party audit plan for FY **2025-26**.

Recommendations:

 **SLDCs/TRANSCOs to ensure submission of the internal & third-party audit plans by all Users (Entities/Embedded entities/IPPs connected at 220kV & above voltage level).**

 **SRLDC to take up with ISTS connected entities/Users (including RE) and ensure submission of Protection Performance Indices as well as internal & third-party audit plans.**

 **SLDCs/SRLDC to issue non-compliance letters to the Users (Entities/Embedded entities/IPPs connected at 220kV & above voltage level), which are not complying with the Regulations.**

b) Submission of the Flash Report/ DR / EL / Detailed Report of the Grid Events

(i) Regulations 37(2) of IEGC 2023 envisages below:

37(2) System Security Aspects

Regulation 37(2) of Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023, all the Regional Entities of Southern Region subsequent to the incident, including the intimation, flash report, data from Disturbance Recorder (DR), Station Event Logger (EL), Data Acquisition System (DAS) and Detailed Reports are to be submitted, allowing for comprehensive analysis within defined time frames.

Sr. No.	Grid Event [^] (Classification)	Flash report submission deadline (users/ SLDC)	Disturbance record and station event log submission deadline (users/ SLDC)	Detailed report and data submission deadline (users/ SLDC)	Draft report submission deadline (RLDC/ NLDC)	Discussion in protection committee meeting and final report submission deadline (RPC)
1	GI-1/GI-2	8 hours	24 hours	+7 days	+7 days	+60 days
2	Near miss event	8 hours	24 hours	+7 days	+7 days	+60 days
3	GD-1	8 hours	24 hours	+7 days	+7 days	+60 days
4	GD-2/GD-3	8 hours	24 hours	+7 days	+21 days	+60 days
5	GD-4/GD-5	8 hours	24 hours	+7 days	+30 days	+60 days

[^] The classification of Grid Disturbance (GD)/Grid Incident (GI) shall be as per the CEA Grid Standards.

(ii) In the earlier PCSC Meetings, it was decided that SRLDC to issue non-compliance notices to entities that do not follow the timelines stipulated in the IEGC regulations. SRLDC to sensitize the entities & SLDCs on the above Regulations and SRLDC to take up with the entities that have not furnished the required details/information in the specified formats and ensure that all the details of the grid event are available in the portal.

Recommendations:

 **All the users shall adhere to the above Regulatory Provisions and the Timelines.**

 **SRLDC to take up with the entities that had not furnished the required details/information in the specified formats and ensure that all the details of the grid event are available in the portal.**

18. Implementation of OVR gradings for 400 kV and 765 kV Transmission Lines of Southern Region (SR)

1. A comprehensive exercise for OVR grading of 400 kV and 765 kV transmission lines of the Southern Region (existing/known elements as on March 2026) has been carried out.
2. SRPC, vide mail dated 10.03.2026, circulated the draft OVR gradings for 400 kV and 765 kV Transmission Lines of Southern Region (SR).

3. After incorporating the received comments appropriately, the OVR, Stage-I gradings to be adopted for 400 kV and 765 kV lines in the Southern Region is finalized and circulated vide SRPC Letter dated 17.04.2026 enclosed at **Annexure-19** for kind implementation.
4. The OVR gradings as applicable to the respective system shall be implemented by the Constituent/ Utility concerned **with immediate effect**. Utilities concerned are requested to confirm implementation of new OVR gradings by filling the below form, latest by **30.04.2026**.
5. In this regard, it may be noted that the concerned utility shall update the implementation status in the above form only after successful implementation of OVR gradings for all lines under its jurisdiction.
6. **The confirmation of Revised OVR grading's is received from KSEBL, APTRANSCO, TGTRANSCO, TANTRANSCO, JSWEL, KPCL, KPTCL, PGCIL SR-I, PGCIL SR-II & NLCIL only till date.**

Recommendations:

 **All Constituents to confirm the implementation of revised OVR gradings**

 **SRLDC is also requested to take up with RE-ISTS entities for Implementation of OVR gradings**

19. Submission of Static IPv4 Addresses for Whitelisting – Access to SRLDC Web Applications

In line with the deliberations held during the 138th PCSC Meeting dated 07-01-2026, and as communicated vide the letter issued by the Chief Information Security Officer, SRLDC (CISO-SRLDC) (**Annexure-20**), which was also circulated vide email dated 12-02-2026, all users/entities are requested to furnish their Static IPv4 address details at the earliest by submitting the information through the prescribed Google Form

While submitting the details, a **letter of authorization for the IP addresses** may also be uploaded (file upload facility is available in the form). Users who have already submitted the required details need not submit them again; however, in case of any modification, the updated details may be submitted afresh. **Early submission** of the above details is requested to facilitate further necessary action related to **access control and cybersecurity compliance**.

For checking the IPv4 address, users may visit www.whatismyipaddress.com. In case of any difficulty in the whitelisting process or for any clarification, the matter may be taken up with SRLDC through email/official correspondence, or the undersigned may be contacted.

Recommendations:

 **All the users shall furnish the static IP address to SRLDC.**

20. Third Party Protection Audit of Stations due to severe Grid Occurrences

As per the clause 15(3) of IEGC regulations 2023

Quote

“After analysis of any event, each RPC shall identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months.”

Accordingly In line with the IEGC regulations considering severe Grid occurrences affecting the stability of Grid the following stations are recommended for Third party Protection Audit of substations through External agency and are requested to submit the Report within **90 days**.

Proposed for third party protection audit

S.No	Name of station	Voltage Level	Utility	Remarks
1	Renigunta Sub Station	220 kV	APTRANSCO	Grid occurrences with Protection Issues observed in 144 th PCSC Meeting which lead to Equipment failure, Relay failures, Relay Maloperations in the downstream network.

✚ PCSC may recommend the above station for Third Party Protection Audit

As per the deliberations of 144th PCSC Meeting the Following stations need to complete their Third Party Protection Audit and Submit report to SRPC by 90 days (**i.e. by October-26**)

S.No	Name of station	Voltage Level	Utility	Remarks
1	Koppal Pooling Station	400kV	Indigrid	Frequent Grid occurrences with Protection Issues observed in 141 st , 142 nd & 143 rd PCSC Meeting
2	Kalpakka	400kV	APTRANSCO	Frequent Trippings of NTPC-Simhadri, Kalpakka lines affecting Generation and Protection related issues of AR operation etc observed.
3	Kemar	220kV	KPTCL	Frequent Tripping with unwanted protection operations leading to Generation loss of 400kV UPCL. In 143 rd PCSC meeting due to incorrect operation of Kemar 600 MW Generation loss is seen.

✚ Forum noted the same

21. High Short Circuit Levels in 220kV & above substations in SR -region

As per the ATC Peak Demand case file submitted by SRLDC (**Annexure-22**) vide email dated 25.06.2026, it is observed that the following stations in the SR region are experiencing

high three-phase short-circuit currents, and the short-circuit levels are exceeding the fault level capacity of station equipment.

The concerned utilities of the stations mentioned below are advised to submit the details of necessary actions taken/planned to mitigate the short-circuit levels.

Bus Number	Name	Utility	Unit	Current	Angle	Remarks
412021	[TALLAPLLI 220.00]	APTRANSCO	AMP	40884.3	-133.36	
412025	[VTS 220.00]	APGENCO	AMP	47420.2	-130.4	
412038	[NUNNA 220.00]	APTRANSCO	AMP	40187.5	-130.2	
414010	[KURNOOL4 400.00]	APTRANSCO	AMP	54271.1	-130.82	
414013	[VTS-IV 400.00]	APGENCO	AMP	40649.2	-128.62	
414021	[SATENAPALI4 400.00]	APTRANSCO	AMP	40440.5	-128.74	
414029	[NELLORE-AP4 400.00]	APTRANSCO	AMP	59663	-128.39	
414030	[SDSTPS 400.00]	APGENCO	AMP	45455.2	-128.15	Equipment Rating 40kA
414058	[SEIL-P2_AP 400.00]	SEIL	AMP	41888	-128.1	
414060	[GREENCO_CPSS400.00]	GREENKO	AMP	48684.1	-132.56	Equipment Rating 63kA
414064	[GREENCO_PSP 400.00]	GREENKO	AMP	44470.6	-133.47	Equipment Rating 63kA
422003	[GHANAPUR 220.00]	TGTRANSCO	AMP	41750.4	-132.08	Bus-split operation at Moulali is being planned to reduce the short-circuit levels at 220 kV Ghanapur and 220 kV Malkaram substations
422023	[BPD 220KV SS220.00]	TGTRANSCO	AMP	42323.5	-129.94	
422024	[MALKARAM 220.00]	TGTRANSCO	AMP	49612.7	-130.91	
422031	[MMP 220 BUS 220.00]	TGTRANSCO	AMP	46976.1	-131.47	
422037	[HIAL 220.00]	TGTRANSCO	AMP	42270.9	-131.58	
422144	[RAIDURG 220.00]	TGTRANSCO	AMP	40562.3	-131.36	
424006	[MAMIDIPALLI 400.00]	TGTRANSCO	AMP	47107.4	-129.26	
424019	[DINDI 400.00]	TGTRANSCO	AMP	44445.5	-130.42	
424022	[MAHES-TS 400.00]	TGTRANSCO	AMP	66567.5	-127.77	bus sectionalization at the 400 kV Maheshwaram substation has been planned and approved with a view to reducing the fault levels at the station
860090	[ZSWSH_860090400.00]	TGTRANSCO	AMP	44445.5	-130.42	
424002	[RSTPS NTPC 400.00]	NTPC	AMP	41549.8	-128.26	
424043	[RSPTS_FSP 400.00]	NTPC	AMP	41549.8	-128.26	
434006	[RAICHUR TPS 400.00]	KPCL	AMP	42740.9	-127.58	Equipment Rating 63kA

442015	[BASINBRIDGE 230.00]	TANTRANSCO	AMP	43886.8	-134.97	Equipment Rating 40kA
442016	[CHECKN42 230.00]	TANTRANSCO	AMP	40400.7	-126.22	Out of 11 bays, 6 bays having 50 kA and 5 bays having 40 kA
442038	[KOYAMBEDU 230.00]	TANTRANSCO	AMP	41290.9	-134.65	Out of 7 bays, 5 bays having 50 kA and 2 bays having 40 kA
442076	[SPBUDUR2 230.00]	TANTRANSCO	AMP	46918.9	-136.14	All bays having 50 kA
442082	[TARAMANI 230.00]	TANTRANSCO	AMP	42229.5	-134.79	All bays having 50 kA
442083	[TONDIARPET 230.00]	TANTRANSCO	AMP	41807.6	-134.96	All bays having 50 kA
442119	[KOYCMRL 230.00]	TANTRANSCO	AMP	40095.6	-134.62	Out of 8 bays, 1 bay having 50 kA and the remaining bays having 40 kA
442128	[ALDRCMRL 230.00]	TANTRANSCO	AMP	40926.1	-134.47	All bays having 50 kA
442129	[GUINDY 230.00]	TANTRANSCO	AMP	42229.6	-134.52	All bays having 50 kA
442151	[RAPURAM 230.00]	TANTRANSCO	AMP	41250.3	-134.59	All bays having 50 kA
442216	[PULIYANTHOP 230.00]	TANTRANSCO	AMP	44001.7	-134.98	All bays having 50 kA
414001	[GOOTY 400.00]	APTRANSCO	AMP	41885.5	-131.18	
414003	[NELLORE-PG 400.00]	PGCIL SR-I	AMP	59663	-128.39	
414004	[CHINAKMPALLI400.00]	PGCIL SR-I	AMP	45138.7	-131.89	
414006	[CNP-FSC2 400.00]	PGCIL SR-I	AMP	45138.7	-131.89	
414023	[NELLORE-PS 400.00]	PGCIL SR-I	AMP	58106.5	-128.22	
414031	[KURNOOL-PG 400.00]	PGCIL SR-I	AMP	58351.4	-131.2	
414032	[GTYNLM-FSC 400.00]	PGCIL SR-I	AMP	41885.5	-131.18	
414033	[GTYSMN-FSC 400.00]	PGCIL SR-I	AMP	41885.5	-131.18	
414052	[CUDDAPA GIS 400.00]	PGCIL SR-I	AMP	45138.7	-131.89	
424003	[GHANAPUR 400.00]	PGCIL SR-I	AMP	40253.6	-130.05	
424004	[KHAMMAM 400.00]	PGCIL SR-I	AMP	41958.6	-129.24	
424021	[MHSWRM-PG 400.00]	PGCIL SR-I	AMP	66960.5	-127.73	
434008	[TUMKUR 400.00]	PGCIL SR-II	AMP	41218.7	-132.67	
434009	[RAICHUR-PG 400.00]	PGCIL SR-II	AMP	44929.3	-128.03	
444005	[TIRUNELVELLI400.00]	PGCIL SR-II	AMP	45245.2	-126.43	
414012	[SIMHADRI400.00]	NTPC	AMP	38197.1	-124.24	

Updates:

<i>S.No.</i>	<i>Utility</i>	<i>Update</i>
1.	APTRANSCO	Detailed short-circuit studies to be carried out for these substations and the findings, along with the

		proposed mitigation measures, to be submitted to SRPC.
2.	APGENCO	APGENCO to discuss with the Power System Wing of APTRANSCO and to furnish mitigation measures.
3.	TGTRANSCO	<i>As updated above</i>
4.	KPCL	<i>At 400 kV Raichur SS the equipment rating has been upgraded from 43 kA to 63 kA.</i>
5.	TANTRANSCO	<i>As updated above</i>
6.	NTPC, RSTPS	NTPC, RSTPS to furnish the details of the proposed mitigation measures.
7.	PGCIL-SR-I	PGCIL SR-I informed that the necessary measures would be implemented in accordance with the recommendations of CTUIL.

Deliberations:

1. APTRANSCO stated that its System Studies Wing is analysing the short-circuit levels at the substations and will submit a consolidated report, including the APGENCO substations.
2. TGTRANSCO stated that bus sectionalizers are being proposed at most of the substations as a measure to mitigate the short-circuit levels.
3. NTPC-Ramagundam and NTPC-Simhadri stated that the matter has been taken up with their respective Corporate Engineering Departments and the forum would be updated upon receipt of their response.
4. TANTRANSCO stated that, for the pending bays where equipment modification is required, a proposal has been made for PSDF funding for replacement of breakers.
5. PGCIL SR-I stated that the high fault levels have been communicated to CTUIL for further necessary action.
6. PGCIL SR-II informed that the equipment short-circuit rating at Tumkur SS is 50 kA, while that at Tirunelveli SS is 40 kA.

22. Repeated through-faults leading to failure of ICT in SR -Review/Study

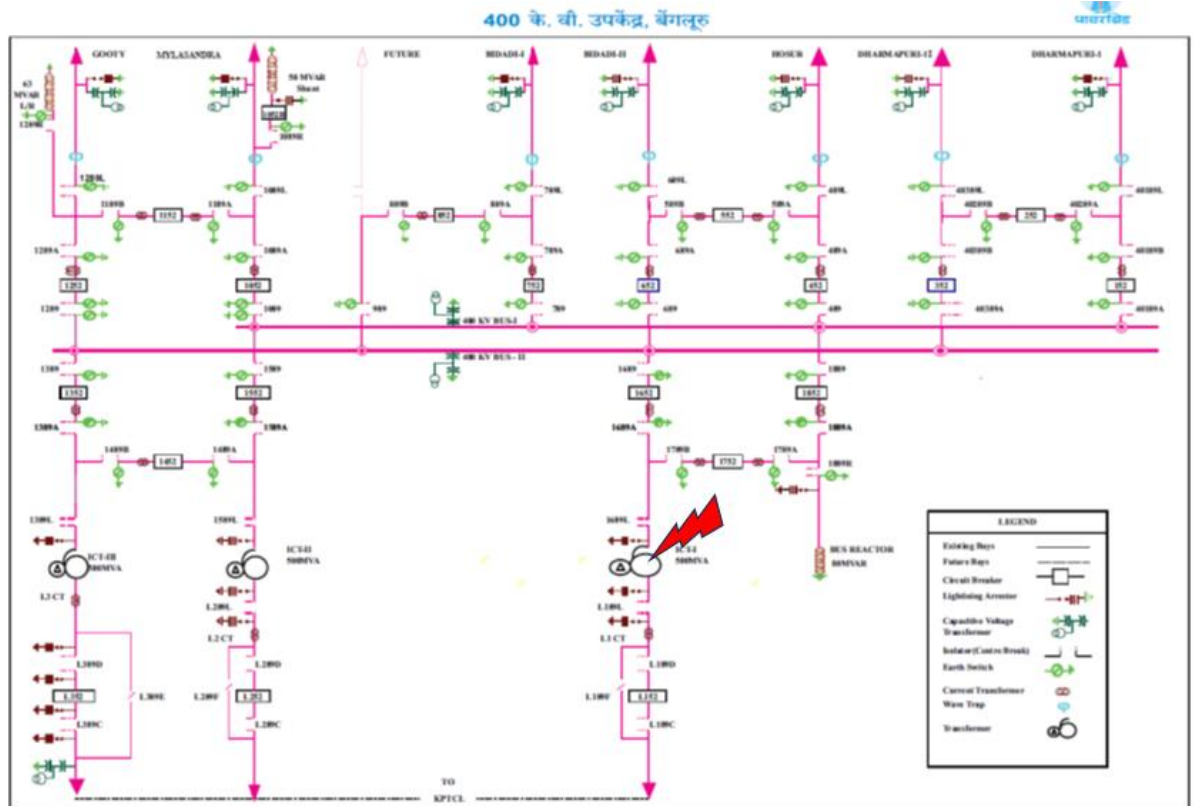
The 500 MVA, 400/220 kV ICT-I at PGCIL Somanahalli Substation failed on 31.05.2026 following repeated downstream faults in the 220 kV KPTCL network. During the OCC deliberations, it was observed that the ICT had experienced multiple downstream fault incidents, including prolonged fault-current feeding and repeated through-fault stresses. The failure highlighted the need to examine the protection coordination, fault-clearing times, bus-section operating practices, test-charging procedures and the adequacy of protection arrangements for ICTs directly connected to downstream networks owned by other utilities.

The OCC Forum decided that the matter may be placed before the **Protection Sub-Committee (PSC) of SRPC** for detailed technical examination and deliberation. The Committee may examine the occurrence of similar incidents across the Southern Region, including the Somanahalli ICT failure, Madurai ICT Failure, Nunna ICT Failure.

PGCIL, other transmission utilities were advised to present similar cases involving ICTs directly connected to downstream networks owned by other utilities before the Protection Sub-Committee (PSC) of SRPC for detailed technical deliberation and to identify suitable protection coordination and system improvement measures to avoid recurrence of such incidents.

Deliberations:

1. PGCIL SR-II informed that Somanahalli Substation has three ICTs and the 220 kV IV side is connected to Somanahalli through the bus section. The transformer loading prior to the fault was approximately 170 MW.
2. On 31.05.2026 at 20:07:37.074 hrs, 500 MVA, 400/220 kV ICT-1 failed, while ICT-2 and ICT-3 remained in service. ICT-1 tripped on mechanical protections, namely PRV and Buchholz, along with Differential and REF protections. The transformer was observed to have bulged, with oil spillage from the transformer.



3. PGCIL SR-II informed that following the through fault, 87T (Differential) and REF protections operated first after 60ms. **Buchholz and PRV operated immediately along with Diff/REF operation**, indicating **rapid gas generation and internal pressure rise due to high-energy fault**.

4. Before the fault incident, there was through fault in the downstream in R & Y Phase (9.0kA & 8.5kA each). After 60ms from the inception of the R&Y phase fault in the downstream, **fault current contribution raised in R& Y phase (HV-22kA & IV-24kA Each in R&Y phase).**

Parameter	Value
Sunday 31 May 2026 20:07:37.142	POC1 I-b1 Start B OFF
Sunday 31 May 2026 20:07:37.142	MS1 HS2 Trip B OFF
Sunday 31 May 2026 20:07:37.138	Logic Inputs 1
Sunday 31 May 2026 20:07:37.132	POC1 I-b4 Start C ON
Sunday 31 May 2026 20:07:37.132	MS1 Trip B OFF
Sunday 31 May 2026 20:07:37.132	MS1 Bus Trip A OFF
Sunday 31 May 2026 20:07:37.132	MS1 Bus Start A OFF
Sunday 31 May 2026 20:07:37.130	Logic Inputs 1
Sunday 31 May 2026 20:07:37.129	MS1 Trip C OFF
Sunday 31 May 2026 20:07:37.129	MS1 HS2 Trip C OFF
Sunday 31 May 2026 20:07:37.123	Output Contacts1
Sunday 31 May 2026 20:07:37.122	Virtual Output02 ON
Sunday 31 May 2026 20:07:37.122	HV O/C TRIP ON
Sunday 31 May 2026 20:07:37.122	POC 1 I-b3 Trip ON
Sunday 31 May 2026 20:07:37.122	POC 1 I-b3 Trip B ON
Sunday 31 May 2026 20:07:37.122	POC 1 I-b3 Trip A ON
Sunday 31 May 2026 20:07:37.109	MS1 Trip C ON
Sunday 31 May 2026 20:07:37.105	MS1 HS2 Trip C ON
Sunday 31 May 2026 20:07:37.105	MS1 Bus Trip B ON
Sunday 31 May 2026 20:07:37.104	MS1 Bus Trip A ON
Sunday 31 May 2026 20:07:37.104	MS1 Bus Start B ON
Sunday 31 May 2026 20:07:37.104	MS1 Bus Start A ON
Sunday 31 May 2026 20:07:37.103	Logic Inputs 1
Sunday 31 May 2026 20:07:37.096	MS1 HS2 Trip C ON
Sunday 31 May 2026 20:07:37.094	MS1 HS2 Trip B ON
Sunday 31 May 2026 20:07:37.094	MS1 HS1 Trip A ON
Sunday 31 May 2026 20:07:37.094	MS1 HS2 Trip A ON
Sunday 31 May 2026 20:07:37.084	Virtual Input 01 ON
Sunday 31 May 2026 20:07:37.083	Logic Inputs 1
Sunday 31 May 2026 20:07:37.083	Output Contacts1
Sunday 31 May 2026 20:07:37.079	MS1 HS2 Trip C ON
Sunday 31 May 2026 20:07:37.075	Logic Inputs 1
Sunday 31 May 2026 20:07:37.075	Output Contacts1
Sunday 31 May 2026 20:07:37.075	MS1 Trip ON
Sunday 31 May 2026 20:07:37.075	MS1 Trip B ON
Sunday 31 May 2026 20:07:37.075	MS1 Trip A ON
Sunday 31 May 2026 20:07:37.074	MS1 HS2 Trip B ON
Sunday 31 May 2026 20:07:37.074	MS1 HS2 Trip A ON
Sunday 31 May 2026 20:07:37.072	POC1 I-b3 Start ON
Sunday 31 May 2026 20:07:37.072	POC1 I-b3 Start B ON
Sunday 31 May 2026 20:07:37.072	POC1 I-b3 Start A ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b2 Start ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b2 Start B ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b2 Start A ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b1 Start ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b1 Start B ON
Sunday 31 May 2026 20:07:37.032	POC1 I-b1 Start A ON
Sunday 31 May 2026 20:07:37.012	Any Start ON
Sunday 31 May 2026 20:07:37.012	POC1 I-b4 Start ON
Sunday 31 May 2026 20:07:37.012	POC1 I-b4 Start B ON
Sunday 31 May 2026 20:07:37.012	POC1 I-b4 Start A ON
Saturday 30 May 2026 16:30:16.187	Fault Recorded
Saturday 30 May 2026 16:30:16.178	Any Start OFF
Saturday 30 May 2026 16:30:16.178	MS1 HS1 Start OFF
Saturday 30 May 2026 16:30:16.148	Any Start ON

5. The R- and Y-phase current magnitudes exceeding 22 kA on the HV/IV sides were highlighted as indicative of a high-energy fault contribution during the incident. The evolution of the fault from an initial R-Y phase through-fault to a subsequent R-Y phase fault within the transformer over approximately 60 ms was also highlighted, indicating possible insulation breakdown.
6. PGCIL SR-II informed that the KPTCL 220 kV Bus Section-1 overcurrent and earth-fault protection scheme was implemented in October 2025. It was also highlighted that there have been multiple instances where downstream faults were not effectively cleared by KPTCL feeders.
7. Multiple instances of non-clearing faults have been observed in the system over the years, resulting in prolonged through-fault current flow through ICTs. Reference was also made to an October 2024 event, during which ICT-1 and ICT-2 tripped, indicating that the bus section was closed during the event.
8. It was stated that the fault current was fed in parallel by all three ICTs, thereby sharing the fault current among the transformers. However, it was observed that Bus Section-1 is generally kept open during load-shedding conditions.
9. KPTCL stated that, on the day of the incident, an operational error occurred wherein the operator closed the lines instead of closing the bus sectionalizer. KPTCL stated that strict instructions have subsequently been issued to the operating personnel to adhere to the prescribed SOP.
10. Regarding the repeated occurrence of downstream faults, KPTCL stated that its Hotline Wing is attending to the issue with a view to minimizing faults in the network.

11. SRLDC stated that, in the ICT failures observed at Nunna and Somanahalli, the failure occurred during through-fault conditions. However, since the other ICTs at the respective substations also carried the fault current during the incidents without failure, the matter requires further analysis from the design and equipment withstand perspective.
12. PGCIL SR-I stated that the ICT failure cannot be attributed to a single fault alone. It was highlighted that repeated faults and trippings in the downstream 220 kV network subjected the ICTs to recurring through-fault currents. The cumulative stress resulting from such repeated fault currents may affect the insulation integrity of an ICT and eventually contribute to its failure.
13. It was further highlighted that the issue may potentially affect other ICTs also, considering the relatively high frequency of faults in the downstream network. The need for a detailed examination of the issue was emphasized.

VIJAYAWADA ICT-2 Disturbance Recorder Data				
Sno	Date & Time	Fault current (400KV)	Fault current (220KV)	Phases
1	21.04.2026 02:10	636	1156	Y
2	21.04.2026 13:11	472	858	B
3	24.04.2026 13:28	750	1364	Y
4	30.04.2026 17:33	1134	2062	R and B
5	30.04.2026 17:38	622	1131	R
6	03.05.2026 19:17	478	869	B and IN
7	11.05.2026 13:46	500	909	Y
8	12.05.2026 13:10	1313	2387	B
9	12.05.2026 18:28	535	973	R
10	13.05.2026 10:22	605	1100	Y
11	15.05.2026 15:45	494	898	R
12	17.05.2026 09:05	508	924	Y
13	19.05.2026 14:17	517	940	R
14	19.05.2026 17:50:30	558	1014	B and IN
15	19.05.2026 17:50:44	558	1014	B and IN
16	20.05.2026 13:00	542	985	B
17	21.05.2026 13:14	782	1422	R
18	22.05.2026 08:05	588	1069	Y and B
19	24.05.2026 18:26	1215	2209	B and IN
20	24.05.2026 19:02:20	1148	2087	B and IN
21	24.05.2026 19:02:31	1351	2456	B and IN
22	24.05.2026 19:13	1040	1891	Y and IN
23	24.05.2026 20:28	795	1445	R
24	24.05.2026 21:02	737	1340	R, Y and B
25	25.05.2026 11:09	2643	4804.974	B
26	25.05.2026 11:09	26252	47726.136	B

14. KSEBL stated that a 220/110 kV transformer at Madakkathara, commissioned in 2019, had also failed prematurely while feeding a through-fault in the 110 kV network. Insulation failure on the 110 kV side was suspected. It was further informed that the fault current during the incident was approximately 6 kA, which was shared among three transformers.
15. TANTRANSCO stated that transformer integration can have an effect while feeding downstream faults. However, considering the large number of line faults experienced in the TANTRANSCO network, during which 230/110 kV transformers also feed fault current, such a high frequency of transformer failures cannot normally be expected. Therefore, downstream faults alone cannot be conclusively considered responsible for transformer failures, and other aspects such as transformer design and associated factors also need to be examined.
16. PGCIL SR-II emphasized the need for strict adherence to the prescribed SOP during restoration/charging of a tripped line or transformer following a fault. The forum may also review the high-set protection settings of transformers.
17. MS, SRPC requested PGCIL to submit the detailed agenda item, including the relevant analysis and supporting information, for deliberation in the forthcoming meeting.

23. SRLDC Agenda item - Non-Compliance of Under-Frequency Protection Settings of GREENKO PSP Generating Units

Reference is invited to the deliberations held during the 143rd Protection Coordination Sub-Committee (PCSC) Meeting held on 08-06-2026 regarding the review and compliance of under-frequency and over-frequency protection settings of Pumped Storage Plants (PSPs) in line with the IEGC Regulations, CEA (Technical Standards for Connectivity to the Grid) Regulations, and the AUFLS Scheme.

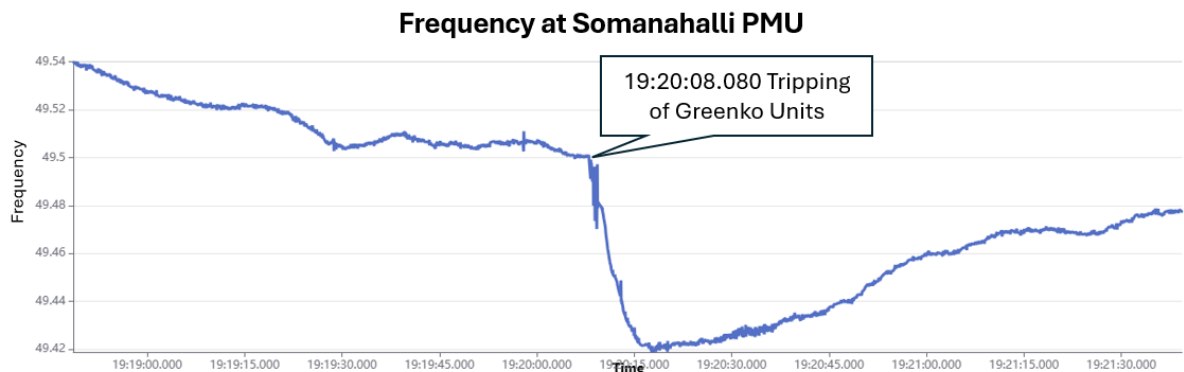
During the 143rd PCSC meeting, GREENKO informed the forum that the under-frequency protection setting for units operating in generation mode was 48.0 Hz and the over-frequency protection setting was 52.0 Hz with a time delay of 1 second, while confirming that the under-frequency protection setting for units operating in pumping mode had been revised to 49.5 Hz for 5sec. Based on the information furnished by GREENKO, the Committee deliberated that the revised under-frequency setting of 49.5 Hz with a near-instantaneous time delay of 50–75 ms was applicable only to pumping mode, whereas the protection settings for units operating in generation mode should comply with the provisions of the CEA (Technical Standards for Connectivity to the Grid) Regulations, which require generating units to remain connected to the grid for system frequencies down to 47.5 Hz and necessary protection modification is to be done in consultation with their OEM. Accordingly, GREENKO informed the forum that the generation-mode protection settings would be reviewed with the OEM and modified to ensure compliance with the applicable regulations.

However, during the subsequent event on 25.07.2026 at 19:20 hrs, when the system frequency declined to approximately 49.5 Hz, all five generating units of GREENKO PSP operating in generation mode tripped simultaneously on under-frequency protection, resulting in a sudden generation loss of approximately 1200 MW. The loss of generation further aggravated the disturbance, causing the system frequency to decline to around 49.42 Hz.

The above event indicates that the actual under-frequency protection setting implemented for units operating in generation mode was around 49.5 Hz, which appears to be inconsistent with the protection settings informed by GREENKO during the 143rd PCSC meeting. Hence, GREENKO is requested to confirm the implemented under-frequency protection settings in compliance with the CEA connectivity standards.

Deliberations:

1. SRLDC stated that during the 143rd PCSC meeting, GREENKO informed the forum that the under-frequency protection setting for units operating **in generation mode was 48.0 Hz and the over-frequency protection setting was 52.0 Hz with a time delay of 1 second**, while confirming that the under frequency protection setting for units operating in pumping mode had been revised to 49.5 Hz for 5sec. Based on the information furnished by GREENKO, the Committee deliberated that the revised under-frequency setting of 49.5 Hz with a near-instantaneous time delay of 50–75 ms was applicable only to pumping mode, whereas the protection settings for units operating in generation mode should comply with the provisions of the CEA (Technical Standards for Connectivity to the Grid) Regulations, which require generating units to remain connected to the grid for system frequencies down to 47.5 Hz and necessary protection modification is to be done in consultation with their OEM. Accordingly, GREENKO informed the forum that the generation-mode protection settings would be reviewed with the OEM and modified to ensure compliance with the applicable regulations



2. However, during the subsequent event on 25.07.2026 at 19:20 hrs, when the system frequency declined to approximately 49.5 Hz, all five generating units of GREENKO PSP operating in generation mode tripped simultaneously on under-frequency protection, resulting in a sudden generation loss of approximately 1200 MW. The loss of generation further aggravated the disturbance, causing the system frequency to decline to around 49.42 Hz.
3. The above event indicates that the actual under-frequency protection setting implemented for units operating in generation mode was around 49.5 Hz, which appears to be inconsistent with the protection settings informed by GREENKO during the 143rd PCSC meeting.
4. SRLDC further informed that, officials from SRLDC visited GREENKO PSP on **04-08-2026** to review the protection philosophy and relay settings implemented for the generating units with particular emphasis on the under-frequency and over-frequency protection settings. 400kV transmission line's SOTF-related overcurrent settings, and the sequence of protection operations during the disturbances of 25.07.2026 and 26.07.2026.
5. The present settings are as follows

		Main 1 (SIEMENS 7UM85)		Main 2 (ABB REG 670)	
Protection	Stage	Generation Mode	Pump Mode	Generation Mode	Pump Mode
Over Frequency	Stage-1	51.5Hz 50s	51Hz 50s	51.5Hz 50s	51Hz 50s
	Stage-2	52Hz 0s	51.1Hz 0s	52Hz 0s	51.1Hz 0s
Under Frequency	Stage-1	47.4Hz 5s	49.5Hz 100ms	47.4Hz 5s	49.5Hz 100ms
	Stage-2	47Hz 0s	49.4Hz 0s	47Hz 0s	49.4Hz 0s

1. Relay Logic for Automatic Switching of Frequency Protection Settings

- During the review, it was observed that the over-frequency and under-frequency protection settings are automatically switched between Generation Mode and Pumping Mode in both Main-1 and Main-2 protection relays.
- GREENKO was requested to furnish the detailed relay logic adopted for automatic switching of the frequency protection settings, along with the associated logic diagrams. The corresponding test reports demonstrating successful testing and validation of the relay logic were also requested.

2. Modification of Under-Frequency Protection Setting in Pump Mode

- SRLDC highlighted that the existing under-frequency protection setting in pumping mode is 49.5 Hz with a time delay of 100 ms. In accordance with the recommendations deliberated during the 143rd PCSC Meeting, GREENKO was requested to revise the operating time to 50–75 ms and confirm compliance.
- GREENKO subsequently stated that, following the SRLDC visit, the under-frequency protection setting for the generators in generation mode has been modified to 47.4 Hz with a time delay of 5 seconds, while the under-frequency setting in pumping mode has been modified to 49.5 Hz with a time delay of 60 ms.

3. Compliance of Over-Frequency Protection Settings in Generation and Pump mode

- SRLDC observed that the over-frequency protection settings confirmed by GREENKO, namely 51.5 Hz with 50 s delay (Stage-1) and 52 Hz instantaneous (Stage-2) in Generation Mode, and 51 Hz with 50 s delay (Stage-1) and 51.1 Hz instantaneous (Stage-2) in Pumping Mode, require review with respect to the provisions of the CEA (Technical Standards for Connectivity to the Grid) Regulations.

The applicable provisions stipulate that:

“The generating units shall be capable of operating in the frequency range of 47.5 Hz to 52 Hz and shall be able to deliver rated output in the frequency range of 49.5 Hz to 50.5 Hz.”

- GREENKO stated that, regarding the over-frequency settings, certain machine limitations had been indicated by the OEM, including the limitation that the machine cannot operate continuously at 52 Hz. GREENKO requested that the protection settings be considered in accordance with the OEM recommendations.
- SRLDC stated that, particularly in pumping mode, maintaining the machine connected to the grid, wherever permissible, would be beneficial from the system operation perspective.

4. Disabling of I>>>> (High-Set Instantaneous Overcurrent) Element

- With reference to the complete outage of GREENKO PSP on 26.07.2026 at 19:13 hrs, it was observed that the I>>>> (high-set instantaneous overcurrent) element configured

for the Switch-On-to-Fault (SOTF) function operated and tripped the 400 kV GREENKO PSP-CPSS-1 & 2 transmission lines at the GREENKO PSP end.

- SRLDC observed that the I>>>> element remained enabled even during normal operating conditions. It was highlighted that Schedule-V of the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022 does not envisage overcurrent protection for 400 kV transmission lines. Accordingly, GREENKO was advised to disable the I>>>> element associated during the normal condition to ensure compliance with the above Regulations.
 - GREENKO stated that the high-set overcurrent element associated with the 400 kV lines has been disabled.
5. MS, SRPC requested GREENKO to furnish the OEM recommendations regarding the over-frequency protection settings to the forum for review and further deliberation.

 **M/s GREENKO to submit the OEM recommendation to SRPC & SRLDC**

24. TGGENCO Agenda item

TGGENCO Vide mail dated 30.07.206 has requested for inclusion of following agenda item

- **Review and Compliance of Under-Frequency and Over-Frequency Protection Settings of Pumped Storage Plants in line with IEGC, CEA Connectivity Standards and AUFLS Scheme**

Deliberations:

1. TGGENCO has stated that as per the recommendations of the 143rd PCSC meeting they have reviewed the Under-Frequency and Over-Frequency Protection Settings of all the Hydel Generating Stations and decided to adopt the separate Settings(SLBHES & NSHES) for Generator Mode and Pump Mode of operations.
2. TGGENCO has decided to adopt the settings as follows.

For Generators:

Over Frequency Setting of >52.0 HZ with 2 Seconds time delay

Under Frequency Setting of <47.5 HZ with 2 Seconds time delay

For Pumps:

Over Frequency Setting of >52.0 HZ with 2 Seconds time delay

Under Frequency Setting of <49.5 HZ with 75 milli Seconds time delay

3. In view of the above tripping settings, time grading was proposed to avoid simultaneous tripping of complete generating units, particularly where there is a possibility of frequency recovery or decline following partial shutdown of units.
4. TGGENCO proposed time grading for the over-frequency protection of generating units, with a time delay of 2 seconds for 50% of the units and 2.5 seconds for the remaining 50% of the units at each station. This arrangement was proposed to avoid simultaneous tripping of all generating units and thereby limit the impact on the grid in the event of frequency variation. The forum agreed to the settings proposed by TGGENCO and suggested for grading for all units if possible.
5. Regarding operation in condenser mode, the forum suggested that TGGENCO adopt the Generator Mode settings, as continued grid connectivity in such conditions would be beneficial to system operation.

6. SRLDC stated that, during under-frequency conditions in Generator Mode and over-frequency conditions in Pump Mode, the units may be retained connected to the grid, as far as permissible, in accordance with the OEM recommendations.
7. SRPC observed that graded tripping, instead of simultaneous tripping of all units, would help minimize the transient impact on the power system.
8. The following was recommended:

In Generation/Condensor mode:

Over Frequency Setting of half units >52.00 HZ with 0.5 Second time delay and balance half @ 1 Seconds delay

Under Frequency Setting of @ OEM recommended Minimum value <47.50 HZ with max OEM recommended time delay (should not be instantaneous)

In Pump mode:

Over Frequency Setting of @ OEM recommended maximum value >52.00 HZ with max OEM recommended time delay (should not be instantaneous)

Under Frequency Setting of @49.50 Hz with 2-3 cycles time delay

25. Sending Agenda items for the PCSC meetings

The entities are requested to furnish the agenda, if any, to deliberate in the ensuing monthly PCSC meeting by 25th of the preceding month to SRPC.

26. Date & Venue of next PCSC meeting

Date & Venue of 146th PCSC meeting would be informed in due course.

27. Conclusion

MS, SRPC thanked all the participants for their active participation in the meeting and noted that the deliberations were productive and informative. He requested all PSSG members to nominate alternate members, wherever required, so that both primary and alternate members could participate as necessary and at least one representative from each entity would be available during the PSSG deliberations.

SE, SRPC requested all concerned utilities to comply with the recommendations made during the meeting and furnish the updates and compliance details regularly. It was emphasized that timely submission of compliance status would help avoid repeated deliberations in subsequent meetings and enable greater focus on other important technical issue.
