सत्यमेव जयते

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

No. उ.क्षे.वि.स./प्रचालन/107/01/2022/4500-4538 दिनांक: 15.06.2022

सेवा में : संरक्षण उप-समिति के सदस्य (सूची के अनुसार) ।
To: Members of Protection Sub-Committee (As per List)

विषय: संरक्षण उप-समिति की 45वीं बैठक की कार्यसूची |
Subject: Agenda for 45th Protection Sub-Committee Meeting.

संरक्षण उप-समिति की 45वीं बैठक, **24.06.2022** को **11:00** बजे से **वीडियो कॉन्फ्रेंसिंग** के माध्यम से आयोजित की जाएगी | उक्त बैठक की कार्यसूची संलग्न है एवं उत्तर क्षेत्रीय विद्युत् समिति की वेबसाइट (http://164.100.60.165/) पर उपलब्ध है | ऑनलाइन बैठक में शामिल होने के लिए लिंक नियत समय पर दी जाएगी।

The 45th meeting of Protection Sub-Committee is scheduled to be held on **24.06.2022** at **11:00 Hrs** through **Video Conferencing**. The agenda for the meeting is attached herewith and also available on NRPC website (http://164.100.60.165/). The link for joining the online meeting will be shared in due course.

15/06/2022.

(सौमित्र मज़ूमदार)
अधीक्षण अभियंता (प्रचालन)

List of Members of PSC

S. No.	Designation	Organization
1	Director (P&C)	BBMB
2	General Manager (SLDC)	DTL
3	GM (O&M)	DTL
4	GM (T)	IPGCL
5	Chief Engineer (TS)	HVPNL
6	SE (M&P)	HVPNL
7	SE (SO & SLDC)	HVPNL
8	SE (SLDC)	PTCUL
9	SE(T&C)	PTCUL
10	Chief Engineer (SLDC)	UPPTCL
11	SE(Tech)	HPGCL
12	SE(O&M-VI)	HPGCL
13	Chief Engineer (Transmission)	HPSEB
14	SE (PR& ALDC)	HPSEB
15	DGM(Protection)	HPPTCL
16	Chief Engineer (Trading)	JKPTCL
17	Chief Engineer (SLDC)	PSTCL
18	Chief Engineer (P&M)	PSTCL
19	CE (M&P)	RRVPNL
20	SE (Electrical)	RRVUNL
21	Chief Engineer (LD)	RRVPNL
22	Superintending Engineer (T&C)	UPPTCL
23	Chief Engineer, (L-2)	UPRVUNL
24	DGM (T&C)	PTCUL
25	Chief Engineer (O&M)	NHPC
26	GM (O&M) NR – I	PGCIL
27	GM (O&M), NR-II	PGCIL
28	GM (O&M), NR-III	PGCIL
29	Chief Manager (TS)	N.R.L.D.C
30	GM(OS-NR)	NTPC
31	GM (OS)	NTPC Ltd
32	DGM (Maintenance)	SJVNL
33	DGM (O&M)	THDC India Ltd
34	Director (GM & NPC division)	CEA
35	General Manager	APCPL
36	Director	JPPVL
37	Addl. CE(M&P-IT)	JVVNL
38	GM (Production)	Jhajjar Power Ltd
39	GM(P&M)	APL
40	Sh. Tarun Tanwar, Sr. Engineer	JSW
41	President (Power Systems)	LPGCL
42	NPCIL	
	1.Maintenance Superintendent	NAPS
	2.Maintenance Superintendent	RAPS

Agenda for

45th Meeting of Protection Sub-committee of Northern Regional Power Committee

Time of meeting : 11.00 Hrs.

Date of meeting : 24.06.2022

A.1. Confirmation of minutes of 44th meeting of protection sub-committee

Minutes of 44th meeting of Protection Sub-committee were issued vide letter dated 10.08.2021. The Minutes are available on NRPC's website at http://164.100.60.165/. No comment has been received.

Sub-Committee may confirm the Minutes.

A.2. Implementation of Recommendations of Task Force

As a follow up of one of the recommendations of Enquiry Committee headed by the Chairperson, CEA on grid disturbances that took place on 30th and 31st July 2012, Ministry of Power had constituted a 'Task Force on Power System Analysis under Contingencies' in December 2012. The Task Force had submitted its report in August 2013. In a meeting taken by Union Power Secretary on 11.03.2014, it was decided that the report be given wide circulation and its recommendations be implemented in a time bound manner. Issue arising out of the recommendations of the Task Force is as under:

A.2.1. Database of protection settings

In 39th and 40th PSC meetings, it was decided to start data collection in phased manner by initially collecting protection setting data for 400 kV & above lines as well as ICTs including nomination of Nodal officer was requested from each utility/state who will co-ordinate for submitting new as well as updating the settings. The updated status of protection setting data submission and Nodal Officer details are attached as **Annexure–IA and IB respectively.** Utilities may intimate if there is any change in Nodal officer details.

In 42nd PSC meeting, NTPC, POWERGRID, UPPTCL, HVPNL, RRVPNL and other utilities were requested to submit the protection setting data for lines, ICTs and Reactors by 15.08.2020. Those utilities which have not yet submitted the data are again requested to share Protection setting details for 400 kV and above Transmission lines, ICTs and Reactors in the formats available at above mentioned link at the earliest. Further, all SLDCs were requested to share the

protection setting data for IPPs and other generators in their control area by 15.08.2020.

In 43rd PSC meeting, JKPTCL and NTPC representative informed that Protection setting data is being collected and will be submitted by 20.10.2020. In 43rd PSC meeting, JKPTCL and NTPC representative informed that Protection setting data is being collected and to be submitted by 20.10.2020. SLDCs were also requested to share the protection setting data for IPPs and other generators in their control area by 20.10.2020.

In the 44th PSC meeting, representative of NTPC stated that they will submit their remaining protection setting database within a week. Further, SLDCs were again requested to share the protection setting data for IPPs and other generators in their control area by 30.04.2021. Furthermore, as decided in 42nd PSC meeting, SLDCs of HP, PTCUL and JKPTCL were requested to submit protection setting data for the network at 132 kV by 30.04.2021.

Further, it was also deliberated that since majority of data for 400 kV and above Transmission lines, ICTs and reactors has been collected, the process of Web based Protection setting database may be initiated in parallel manner. Hence, it was decided to first constitute a committee for preparing comprehensive specifications for relay setting parameters for Web based database. Thereafter, cost estimation for the work and funding options may be explored. It was also decided that nomination letter with ToR of the committee may be issued by NRPC Sectt.

As per decision taken in 43rd PSC meeting, a committee was constituted vide letter dt. 06.04.2021 which was reconstituted vide letter dated 27.01.2022 subsequent to the change in the nominations of few members. The 1st meeting of the committee was held on 10.02.2022 and 2nd meeting of the committee was held on 14.06.2022. **(Minutes enclosed as Annexure–II and III).** In these meetings, committee has finalized scope of work which may be deliberated and approved for further work related to tendering.

***Members may kindly deliberate and update the status*.**

A.3. Protection Philosophy of NR

Task Force on Power System Analysis under Contingencies was constituted by Ministry of Power in December 2012 as a follow up of one of the recommendations of Enquiry Committee headed by Chairperson, CEA on grid disturbances that took place on 30th and 31st July 2012. The report of the Task Force on Power System Analysis made various recommendations including protection system audit, protection relay setting etc. Considering the same and Grid conditions at that time NRPC Protection Philosophy was agreed for implementation in Northern Region.

In 42nd PSC meeting, it was decided to constitute expert group, comprising members from NRPC Sectt, NRLDC, POWERGRID, STUs, APL, NTPC, NHPC, RE Generators and other experts such as CBIP, expert from other RPCs, which may study various recommendations related to Protection setting as well as adopted philosophy in other regions/utilities and further, propose and update protection philosophy in time bound manner.

In compliance to the above, letter has already been communicated to the organisations for nomination of one expert in Power System Protection from the respective organization. The status of nomination received for the same is enclosed as **Annexure-IV**. Utilities may intimate if there is any change in Nodal officer details.

Members may submit nominations for the expert group.

A.4. Tripping Events (Agenda by NRLDC)

The list of tripping events which shall be discussed during 45th PSC meeting is enclosed **Annexure–V**.

All the utilities are requested to submit DR/EL and other tripping related data to NRPC/NRLDC and submit the same, latest by 20.06.2022.

All the utilities are requested to make presentation highlighting cause of the event, actions taken and remedial measure to be taken in future for avoidance of similar instances and share the same with NRPC/NRLDC at mail ID: seo-nrpc@nic.in, nrldcso2@posoco.in , nrldcso2@gmail.com, latest by 20.06.2022.

x

Annexure - 1A

Sr. No.	Utility	400 kV and above Transmission lines	Date of Submission	400 kV and above ICTs	Date of Submission	400 kV and above Reactors	Date of Submission
1	APCPL	Yes	13.06.2020	Yes	13.06.2020	Yes	13.06.2020
2	BBMB	Yes	13.01.2020	Yes	03.07.2020	Yes	03.07.2020
3	DTL	Yes	16.06.2020	Yes	16.06.2020	Yes	16.06.2020
4	HVPNL (Panchkula TS)	Yes	04.07.2020	Yes	04.07.2020	Yes	04.07.2020
	HVPNL (Hissar TS) (Except for 400 kV Nuhiyawali S/s	Yes	10.08.2020	Yes	10.08.2020	Yes	10.08.2020
5	MEJA	Yes	13.06.2020	Yes	13.06.2020	Yes	13.06.2020
6	NHPC	Yes	02.03.2020	No		No	
7	NPCIL						
	RAPP D	Yes	05.03.2020	No		No	
	NAPS	Yes	18.12.2019	No		No	
8	NTPC	No		No		No	
	Only Dadri Coal	Yes	24.06.2020	Yes	24.06.2020	Yes	24.06.2020
9	PPCL	Yes	06.06.2020	No		No	
10	PSTCL	Yes (Not in Format)	13.03.2020	No		No	
11	RVPNL	Yes	28.02.2020	No		No	
12	SJVN	Yes	12.06.2020	NA		Yes	12.06.2020
13	THDC						
	Koteshwar HEP	Yes	22.07.2020	NA		NA	
14	South East UPPTCL	Yes	15.06.2020	Yes	15.06.2020	Yes	15.06.2020
15	WUPPTCL	Yes	10.08.2020	Yes	10.08.2020	Yes	10.08.2020
16	UPPTCL						
	Central Zone	Yes	20.06.2020	Yes	20.06.2020	Yes	20.06.2020
	South Central Zone (Jhansi/ Banda and Orai)	Yes	13.02.2020/11.09 .2020.	Yes	11.09.2020	Yes	11.09.2020
	West Zone	Yes	29.07.2020	Yes	29.07.2020	Yes	29.07.2020
	South West Zone (Fatehabad & Agra	Yes	29.07.2020	Yes	29.07.2020	Yes	29.07.2020
	North West	Yes	11.09.2020	Yes	11.09.2020	Yes	11.09.2020
	North East Zone	Yes	17.02.2020	Yes	17.02.2020	Yes	17.02.2020
17	POWERGRID NR 1	Yes	22.02.2020	Yes	18.09.2020	Yes	18.09.2020
18	POWERGRID NR 2	Yes	24.09.2020	Yes	24.09.2020	Yes	24.09.2020
19	POWERGRID NR 3	Yes	26.02.2020	Yes	28.09.2020	Yes	28.09.2020
20	HPPTCL (132 kV and above)	Yes	09.11.2020	Yes	09.11.2020	Yes	09.11.2020
21	JKPTCL	No		No		No	
22	PTCUL (132 kV and above)	Yes	31.07.2020	Yes	31.07.2020	Yes	31.07.2020
23	UPRVUNL						
	Obra TPS and Parichha TPS	Yes	06.08.2020	Yes	06.08.2020	Yes	06.08.2020
	Anpara ATPS and Harduaganj	Yes	11.08.2020	Yes	11.08.2020	Yes	11.08.2020
	Anpara DTPS	Yes	14.08.2020	Yes	14.08.2020	Yes	14.08.2020
24	HPGCL	No		No		No	
25	UPSLDC						
	Alaknanda	Yes	13.08.2020	NA		NA	
	PPGCL Bara	Yes	10.09.2020	Yes	10.09.2020	Yes	10.09.2020
	Lanco Anpara	Yes	10.09.2020	Yes	10.09.2020	NA	
	LPGCL	Yes	10.09.2020	Yes	10.09.2020	Yes	10.09.2020
	Vishnuprayag	Yes	10.09.2020	NA		NA	
	Rosa TPS	Yes	28.07.2020	Yes	28.07.2020	NA	
26	RRVUNL	Yes	23.11.2020	Yes	23.11.2020	Yes	23.11.2020

Annexure – II

Status of Nodal Officer details:

Sr. No.	Name of the utility	Name and no. of the Nodal officer
1.	BBMB	Er. Vijay Singh Mob No. 9466120870
2.	POWERGRID NR - 1	Sh. Mahendra Singh Hada, DGM(AM), NR-I, mshada@powergridindia.com, 09650555997
3.	POWERGRID NR - 2	Sh. Sushil, Ch. Mgr. (AM), NR-II, sushil.sharma@powergridindia.com, 9419210437
4.	POWERGRID NR - 3	Sh. Nitin Verma, DGM(AM), NR-III, nverma@powergridindia.com, 08005499952
5.	NAPS	Sh. H.S.Singh , Senior Technical Engineer (E&I) Mobile No. 9412768059
6.	NHPC	Sh. S. K. Das , Sr. manager (E) Mob No. 9717786721
7.	PSTCL	Er Rajbir Singh Walia, Adll S.E, P&M
8.	DTL	Sh. Paritosh Joshi, Manager, 9999533933
9.	MUNPL	Sh. Arun Kumar, Sr. Mgr. (Technical Maintenance)
10.	PPCL	Sh. Arif Rehman, Sr. Mgr. 9717694928
11.	APCPL	Sh. Abhishek Jain, Mgr EMD, 9416212489 abhishekjain01@ntpc.co.in
12.	HVPNL	Er. Deepak Bharadwaj, XEN(M&P), Faridabad 9315315640, xenmpccfbd@hvpn.org.in Er. Y.S Gulia XEN M&P Rohtak. , 9354194830 xenmpccrtk@hvpn.org.in
13.	SJVNL	Sh. Soni Kumar, DGM (Electrical Maintenance) 9418450875 soni.kumar@sjvn.nic.in, Sh. Vinay Kumar, Deputy Manager, 9418436838, Email id:- rhpsmaintenance@gmail.com

14.	PTCUL	Sh. Asim Baig, EE (T&C) 9412087885 asim_baig@ptcul.org
15.	NTPC	Sh. R. K. Singh, Sr. Mgr. (OS), 7651821612, 9450963079, rameshsingh@ntpc.co.in
16.	THDC	Sh. Ashutosh Gairola, Koteshwarr HEP; Sh. Laxman Rao, Tehri HEP
17.	UPPTCL	Sh. Pankaj Malviya, SE(T&C), setnclko@upptcl.org
18.	SOUTH EAST UPPTCL	Sh. Prashant Kumar Chauhan, Manager (765kV Mainpuri) 9720490066; Sh. Mukesh Kumar, Manager (400kV Gonda) 7704969000
19.	UPRVUNL	Sh. Ramgyan Singh, EE, Parichha TPS; 9415609722
20.	WUPPTCL	Sh. Kavin, Sr. Engineer, 8122289836, kavinkumar.wupptcl@gmail.com
21.	JKPTCL	Er. Kamal Kishore Thappa (Jammu Region), SE, O&M circle – 1, sesandocr1jmu@gmail.com, 9419112827; Er. Nisar Ahmad Lone (Kashmir Region), EE TLMD – II Pampore; xentlmd2@gmail.com; 9419079578
22.	HPPTCL	DGM(Protection & Communication), Hamirpur Email id: dgmprot@hpptcl.in

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विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

No: NRPC/OPR/106/02/2022/2381 Dated: 04.03.2022

Sub: Minutes of 1st meeting of committee constituted for preparing comprehensive specifications for relay setting parameters for web-based database in NR- reg.

First meeting of the committee was held on 10.02.2022 at 11:30 hrs through Video Conferencing. The minutes of the meeting are attached herewith.

4/3/2022

(ऋतुराज पाण्डेय)
कार्यपालक अभियंता

To,

1. Md Reza Ahmad, SE(T&C), Lucknow, UPPTCL
2. Sh. Rajbir Singh Walia, Adll S.E, PSTCL
3. Sh. Pintu Das, DGM, SJVN
4. Sh. Amit Gupta, Ch. Manager, NRLDC
5. Sh. Sandeep Yadav, Chief Manager (AM), POWERGRID
6. Sh. H.S. Singh, Senior Technical Engineer (E&I), NAPS
7. Sh. S. K. Das, Sr. Manager (E), NHPC
8. Sh. R. K. Singh, Sr. Mgr. (OS), NTPC

Copy to:
SE(O/P), NRPC

Minutes of the 1st meeting of committee constituted for preparing comprehensive specifications for relay setting parameters for web-based database held on 10.02.2022 (11:30 HRS) via video-conferencing

EE(P), NRPC welcomed the members of the committee and other participants. List of participants is attached as **Annexure-I.**

1. EE(P) stated that this committee has been constituted vide NRPC letter no. NRPC/OPR/106/02/2022/1076-1084 dated 27.01.2022 to prepare comprehensive specifications for relay setting parameters for Web based database of Northern Region as per deliberations and decision in 43rd PSC meeting of NRPC. Although, a committee was constituted earlier also vide letter dtd. 06.04.2021 but it could not start discussion due to transfer of nominated member from NRPC Sectt.
2. He briefed about the underpinnings of requirement of protection database in view of July 2012 grid failure. He stressed on Terms of Reference of the committee i.e. to analyze the relay settings received from NR constituents and to prepare specifications for Web based protection setting database.
3. It was informed that majority of data for 400 kV and above system is collected in earlier decided Protection setting database templates of ICTs, Reactors and Transmission lines. Now, this data is to be seeded in a web-based database. The database shall be updated also in time-bound manner by concerned utilities when there is change in settings.
4. He requested members to share their views.
5. PSTCL informed that such a project is already going on in their state with focus on protection setting database of PSTCL transmission lines. He stated that approved protection settings are uploaded in the web-based database.
6. Members deliberated that earlier approved protection setting templates, circulated by NRPC Sectt., can be used as base excel format that can be uploaded in web-based database. It was also noted that there are many different manufacturers of relays and provision of uploading data template for other manufacturers need to be kept in mind.
7. EE (P) opined that existing database available with NRPC Sectt. shall be seeded in web-based database. The same work may be added in tender document. However, updation of settings, if required and entries of new settings shall be done by concerned utilities. Website may have provision of login IDs to each utilities so that they can update/add settings in a time bound manner.

8. NHPC highlighted issue of bulky data and stated that updating of such huge data can be difficult in future. He suggested that different login IDs in a same utility may be provided so that updation/addition of data shall be smoothly and quickly.
9. NRLDC was of view that apart from having excel sheets of complete settings, there shall be a display of major settings also that should be visible at first sight. It highlighted that it is necessary that different reports such as zone settings of particular lines, OV settings etc. can be extracted from database which will be helpful in tripping analysis and protection setting coordination.
10. POWERGRID stated that relay has many parameters but selecting only few parameters may be difficult and very arbitrary. He highlighted that each parameter has significance and will be important for Protection coordination and tripping studies.
11. NAPS informed that data has been submitted in excel templates having all parameters and using them will be helpful for creating and utilizing database in future.
12. It was decided that template of each relay will be uploaded separately having complete parameters. However, few selective parameters may be displayed apart from complete excel sheet, when a particular relay is selected. Members agreed for the same. Members were requested to submit within 7 days the list of reports/query/major parameters. The same may be finalized in next meeting.
13. EE(P) highlighted requirement of power system network data of NR for the database. He opined that NRLDC is already having data of complete network which is being used in different software of NRLDC such as OMS, Tripping Monitoring system etc. NRLDC was requested to share the Network data for database. NRLDC agreed for the same.
14. POWERGRID stated that the database website may have some analytical tool also for protection setting co-ordination study.
15. EE(P) stated that the mandate is only for database. Analytical tool may increase cost of the project. Members agreed for the same.
16. EE(P) stated that the committee may explore suitable method for hosting of database website. He informed that it can be hosted either at NIC cloud or physical server. On proceeding via NIC cloud route, all required IT works shall be put in tender work. On proceeding via physical server route, cost of physical server and accessories can be included in tender. He highlighted that maintaining physical server seems relatively costly and cloud route seems more convenient and economic. He requested members to share their view.

17. NRLDC mentioned that they have no experience in using NIC cloud. They are using physical server that is looked after by IT professionals.
18. Members present had no such experience in IT field, therefore nothing could be finalized regarding hosting route. Committee felt that competent IT professional may give comparative analysis of hosting route.
19. NRLDC informed that they are using software hosted at physical server. POWERGRID also informed that they have physical server located in NCR wherein applications being used by them are hosted. Accordingly, NRLDC and POWERGRID were requested to explore possibility of hosting protection setting database software in their physical servers present in NCR. They were requested to intimate the feasibility in next meeting.
20. EE (P) highlighted that if physical server is to be setup, then NRPC Sectt. may also require one officer from constituents. The members may explore the feasibility of the same.
21. Members expressed that they are not competent to comment on this and they may inform the feasibility in next meeting.
22. NRLDC requested that provision for including RE related settings may also be kept in this database.
23. It was also raised in meeting that FTC clearance of any new element may be granted only after uploading protection settings in database website so that database is updated by utilities in time-bound manner.
24. EE(P) stated that linking the database to FTC clearance may un-necessarily delay the FTC proceedings because for new elements to be modelled in database website, time is required by developer. Moreover, FTC clearance is only for new elements and cases of updation of settings may not come in FTC formalities. There is a different channel of FTC clearance and both may not be linked. Members agreed for the same.
25. NHPC highlighted that there needs to be scrutiny/approval by NRPC/NRLDC, once data is uploaded by utilities. If data is correct, only then it shall be accepted in website, otherwise concerned utility may be asked for necessary changes.
26. NRLDC stated that scrutiny/approval of settings at database website may not be appropriate.
27. EE(P) mentioned that as per current practice, protection settings are approved by respective Nodal officers/divisions of each utility/state, therefore there is no need to create redundancy for approval. Therefore, the same procedure may not be changed if there is no issue with existing system. Utilities are required to upload the protection setting data

set in relay. Thereafter, the same may be updated in website when settings are changed in relay. The process may be in time-bound manner. Members agreed for the same.

28. Accordingly following action points were decided:
    a. NRLDC will share Network data which will be required while developing database website.
    b. NRLDC and POWERGRID will explore possibility of hosting of database website in their physical servers respectively. The same may be intimated in next meeting.
    c. Members may intimate in next meeting feasibility of deputing officer in NRPC Sectt. for database work.
    d. All members will share list of reports (query) for display of major parameters. The same may be shared within a week.
    e. NRPC will prepare draft-bidding document which may be discussed in next meeting.

Meeting ended with vote of thanks.

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Annexure-I

List of participants:

NRPC Sectt.

1. Sh. Reeturaj Pandey, EE (P)
2. Sh. Kaushik Panditrao, AEE (P)

NRLDC

1. Sh. Alok Kumar, GM, NRLDC
2. Smt. Suruchi Jain, DGM, NRLDC
3. Sh. Amit Gupta, Ch. Manager, NRLDC

Others:

1. Sh. Rajbir Singh Walia, Adll S.E, PSTCL
2. Sh. Sandeep Yadav, Chief Manager (AM), POWERGRID
3. Sh. S. K. Das, Sr. Manager (E), NHPC
4. Sh. H.S.Singh , Senior Technical Engineer (E&I), NAPS

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भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

No: NRPC/OPR/106/02/2022/ Dated:15.06.2022

Sub: Minutes of 2nd meeting of committee constituted for preparing comprehensive specifications for relay setting parameters for web-based database- reg.

Second meeting of the committee was held on 14.06.2022 at 11:00 hrs through Video Conferencing. The minutes of the meeting are attached herewith. Comments if any, may be shared within 03 days of issuance.

15/6/2022

(ऋतुराज पाण्डेय)
कार्यपालक अभियंता

To,

1. Md Reza Ahmad, SE(T&C), Lucknow, UPPTCL
2. Sh. Rajbir Singh Walia, Adll S.E, PSTCL
3. Sh. Pintu Das, DGM, SJVN
4. Sh. Amit Gupta, Ch. Manager, NRLDC
5. Sh. Sandeep Yadav, Chief Manager (AM), POWERGRID
6. Sh. H.S. Singh, Senior Technical Engineer (E&I), NAPS
7. Sh. S. K. Das, Sr. Manager (E), NHPC
8. Sh. R. K. Singh, Sr. Mgr. (OS), NTPC

Copy to:
1. MS, NRPC
2. SE(P), NRPC

Minutes of the 2nd meeting of committee constituted for preparing comprehensive specifications for relay setting parameters for web-based database

Second meeting of the committee constituted as per decision in 43rd PSC meeting of NRPC to prepare comprehensive specifications for relay setting parameters for Web based database of Northern Region was held on 14.06.2022 (11:00 AM) through Video Conferencing. List of participants is attached as **Annexure-I.**

The deliberations in the meeting are as under:

1. EE (P) welcomed all the participants and highlighted that list of reports (information required to be retrieved from portal) was to be shared by all members. However, no input has been received from members.
2. In the meeting, POWERGRID and NRLDC suggested that for line protection, zone reach and time delay, line length, O.V setting, SOTF, Power Swing, earth Fault may be displayed in addition to option for download of complete excel sheet. Further, comparative display of both the ends of a particular line may also be included.
3. In case of ICT, its rating, CT/PT ratio, % impedance, DEF (pick up/slope), REF setting can be included. Further, over current, thermal loading and earth fault can also be included.
4. In case of reactor, members suggested that MVAR rating, CT ratio, Differential protection settings (pick up & slopes), REF protection (pick up and stabilizing resistance), Earth fault (pick up and time delay) may be displayed.
5. POWERGRID requested that Network map/connectivity diagram can also be included in the portal similar to RLDC SCADA map. NRLDC suggested that map may complex the portal and day to day updation may be a challenge for state network. Accordingly, the committee decided to drop idea of network map as it will complex the software considering 220 kV network and 132 kV network in few states and may have financial implications also.
6. Regarding physical servers, POWERGRID informed that as per deliberation internally, space constraint is being faced.
7. Regarding server availability at NRLDC, the representative intimated that no discussion has been held internally in this regard.
8. Hence, it was decided that issue of server availability may be deliberated at higher forum. It was also discussed that feasibility of deputing officer from Utilities in NRPC Sectt. for database work may also be highlighted at higher forum.
9. It was decided that in case of non-availability of server space at PGCIL/NRLDC end, hosting at NIC cloud may be done.

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10. Committee also decided that requirement of no. of login id in a utility may be intimated by utilities itself at later stage.
11. It was also decided that settings may be uploaded by utility on portal within 24 hours of change/updation in relay settings at site.
12. Accordingly, committee achieved its mandate as given below: -
    i. To study and analyse the relay setting data received from all constituents of Northern Region.
    ii. To prepare the scope of work to be incorporated for the web-based protection setting database tender.
13. Finalized Scope of work is attached as **Annexure-II.**

Meeting ended with vote of thanks.

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Annexure-I

List of participants:

NRPC Sectt.

1. Sh. Reeturaj Pandey, EE (P)
2. Sh. Kaushik Panditrao, AEE (P)
3. Sh. Rajat Dixit, AEE (O)

NRLDC

1. Sh. Amit Gupta, Ch. Manager, NRLDC
2. Sh. Shashank Tyagi, Ch. Manager, NRLDC

Others:

1. Sh. Pintu Das, DGM, SJVN
2. Sh. Sandeep Yadav, Chief Manager (AM), POWERGRID
3. Sh. S. K. Das, Sr. Manager (E), NHPC

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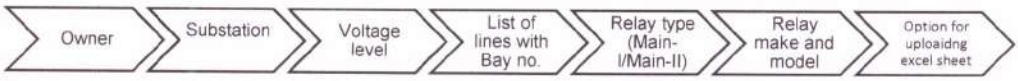
Annexure - II

Finalized Scope of Work to be incorporated for the web-based protection setting database tender

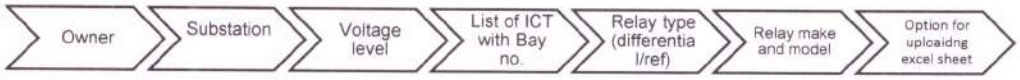
The committee decided scope of work for tender as below: -

1. Publication of website may be on NIC cloud, in case server of PGCIL/NRLDC is not available.
2. Uploading of Protection settings already received in NRPC Secretariat on database portal shall be in scope of tender. For rest of the equipment, utility may upload their settings. In case of change in existing settings, utility shall upload excel sheet on portal.
3. The website shall have facility to upload relay settings excel sheet by utilities for Line, ICT, and Reactor.
4. Following sequence may be facilitated for upload of protection setting excel sheet: -

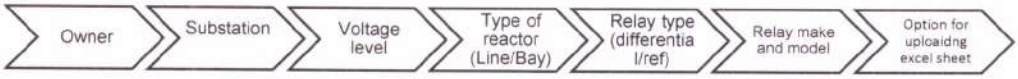
   a) Line:



   b) ICT:



   c) Reactor:



5. Same flow may be facilitated for download/retrieve of already uploaded excel sheet also.
6. Database will comprise of master list of all elements required for fields as mentioned in flow diagram at point no. 4 above. Editing rights in database will be with admin/NRPC Secretariat only. On request from utilities for addition/alteration in network, database shall be modified accordingly.
7. Login IDs are required to be facilitated to utilities who will upload excel sheet. Only owner of element shall have right to upload excel sheet for concerned equipment. Rest of the users shall have viewing rights only.
8. Log report of activities is required for getting information of time and date of upload of excel sheet.
9. Some major parameters of protection setting may be displayed on screen itself in addition to uploaded excel sheet as below: -

   a) Line:

      i. Line length, CT Ratio, PT Ratio
      ii. R, X values

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iii. SOTF (Enable/Disable status) of both ends of line
iv. Power Swing (Enable/Disable status) of both ends of line
v. Zone reach settings and corresponding time delay of both ends of line
vi. Over-voltage settings (Stage-1 & Stage-2) of both ends of line
vii. Earth Fault O/C

b) ICT:

i. Rating, CT Ratio, PT Ratio, percentage impedance, thermal overload
ii. Differential protection settings (pick up & slopes)
iii. REF protection (pick up and stabilizing resistance)
iv. Over-voltage settings
v. Earth Fault O/C/ Backup O/C

c) Reactor:

i. MVAR rating, CT ratio
ii. Differential protection settings (pick up & slopes)
iii. REF protection (pick up and stabilizing resistance)
iv. Earth fault (pick up and time delay)

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Annexure-III

Status of Nomination for Expert Group:

Sr. No.	Name of the utility	Name and no. of the Nodal officer
1.	RVPNL	Sh. Vijay Pal Yadav , XEn(MPT&S), RVPN, Alwar xen.prot.alwar@rvpn.co.in 9414061407
2.	NTPC	Sh. NP Dewangan (DGM-EMD) NTPC Singrauli. Mobile no: 9424141522 E mail ID: npdewangan@ntpc.co.in Sh. Abhishek Kumar singh, Manager-EMD NTPC Tanda, Mobile no: 8005442453 E Mail ID: abhishekkumarsingh02@ntpc.co.in Sh. Vivek Pushpakar, Sr manager-EMD NTPC Tanda, Mobile no: 9473199217 E Mail ID: vivekpushpakar@ntpc.co.in
3.	NHPC	Sh. Swarup Kumar Das, Sr. Manager (E), Mobile no: 9717786721 E Mail ID: onm-protection@nhpc.nic.in
4.	HPPTCL	Sh. Ashish Kumar Kausal, DM(Protection); Sr. Manager (E), Mobile no: 7717548185 9459948185 E Mail ID: dmprotection@hpptcl.in dgmprot@hpptcl.in
5.	BBMB	Er. Ravi Lal, Deputy Director, Mobile No: 09463994207
6.	DTL	Sh. B. L. Gujar, DGM (Protection and Metering), 9999533985, bl.gujar@dtl.gov.in. Sh. Paritosh Joshi, Manager (Protection), paritosh.joshi@dtl.gov.in 9999533933,
7.	POWERGRID	Shri. Mahendra Singh Hada, DGM (AM),09650555997; mshada@powergridindia.com
8.	UPRVUNL	Er. Abu Zar, EE, EMD-I, UPRVUNL, Harduaganj CTPS, Aligarh. (Mobile No. 9412753081)

Points for disscussion for selected trippings to be takenup in 45th PSC

S.No.	Category of Grid Disturbance	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration	Event Brief *(As reported)*	Loss of generation / loss of load during the Grid Disturbance		Fault Clearance time (in ms)	Remark	Points of disscussion/Cause of Concern
					Date	Time	Date	Time			Generation Loss(MW)	Load Loss (MW)			
1	GI-2	1) 400 KV Jaisalmer-Barmer (RS) Ckt-2 2) 400 KV Akal-Jaisalmer (RS) Ckt-1 3) 400 KV Kankani-Jaisalmer (RS) Ckt-2	RAJASTHAN	RRVPNL	28-Apr-21	18:32	28-Apr-21	21:56	3 Hours 24 Minutes	As reported, 400 KV Kankani-Jaisalmer (RS) Ckt-2 tripped on Y-N phase to earth fault, fault distance: 107.5km from Kankani end and 38.9km from Jaisalmer end. At the same time, 400 KV Akal-Jaisalmer (RS) Ckt-1 and 400 KV Jaisalmer-Barmer (RS) Ckt-2 both tripped in Z-2 from remote end only. As per PMU, Y-N phase to earth fault with delayed clearance of 680ms is observed. As per SOE, line didn't trip from Jaisalmer end and later fault cleared in Z-2 tripping of 400 KV Akal-Jaisalmer (RS) Ckt-1 and 400 KV Jaisalmer-Barmer (RS) Ckt-2 from remote end only. In antecedent condition, 400 KV Kankani-Jaisalmer (RS) Ckt-2, 400 KV Akal-Jaisalmer (RS) Ckt-1 and 400 KV Jaisalmer-Barmer (RS) Ckt-2 carrying 53MW, 46MW and 19MW respectively.	0	0	680	Rajasthan is requested to prepare and present the event analysis in 45th PSC.	1. No DR and Event logger submitted by Rajasthan. 2. As reported 400 KV Kankani-Jaisalmer (RS) Ckt-2 tripped on Y-N phase to earth fault, what was the fault clearing time? 3. 400 KV Akal-Jaisalmer (RS) Ckt-1 and 400 KV Jaisalmer – Barmer Ckt-2 tripped on Zone-2 from remote end what was the zone -2 timing? 4. Why delayed clearance of 680ms is there? 5. As per PMU and SOE, it seems that 400 KV Kankani-Jaisalmer (RS) Ckt-2 didn't trip from Jaisalmer end on Y-N fault in Z-1. So, fault cleared in Z-2 tripping of 400 KV Akal-Jaisalmer (RS) Ckt-1 and 400 KV Jaisalmer-Barmer (RS) Ckt-2 from remote end only. Hence, proper operation of distance protection needs to be ensured at Jaisalmer end. 6. Remedial action taken report needs to be shared.
2	GD-1	1) 400/220 kV 315 MVA ICT 3 at Muzaffarnagar(UP) 2) 400/220 kV 315 MVA ICT 2 at Muzaffarnagar(UP) 3) 400/220 kV 315 MVA ICT 1 at Muzaffarnagar(UP) 4) 400/220 kV 315 MVA ICT 4 at Muzaffarnagar(UP) 5) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 6) 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 7) 400 KV Muzaffarnagar-Ataur (UP) Ckt-1 8) 400 KV Roorkee(PG)-Muzaffarnagar(UP) (PG) Ckt-1 9) 400 KV Meerut(PG)-Muzaffarnagar(UP) (PG) Ckt-1	UTTAR PRADESH	POWERGRID, UPPTCL	28-Apr-21	22:30	29-Apr-21	00:03	1 Hours 33 Minutes	As reported, 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1, 400 KV Muzaffarnagar-Ataur (UP) Ckt-1, 400 KV Roorkee(PG)-Muzaffarnagar(UP) (PG) Ckt-1, 400 KV Meerut(PG)-Muzaffarnagar(UP) (PG) Ckt-1, 00 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1, 400/220 kV 315 MVA ICT 1, ICT 2, ICT 3 & ICT 4 at Muzaffarnagar(UP) all tripped on Bus bar protection operation due to Y-ph CT of 400kV Bus coupler got damaged. As per PMU, Y-N phase to earth fault is observed. As per SCADA, load loss of approx. 45MW in Uttarakhand region and generation loss of approx. 75MW of Alaknanda HEP is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1, ICT 2, ICT 3 & ICT 4 at Muzaffarnagar(UP) carrying 75MW, 83MW, 80MW & 121MW respectively.	75	45	440	POWERGRID, UPPTCL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Why 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 tripped? 2. DR of this line not submitted. 3. What was the exact nature and location of fault? 4. Details of remedial measures taken to be shared.
3	GD-1	1) 400KV Bus 2 at Nathpa Jhakri(SJ) 2) 400KV Bus 4 at Nathpa Jhakri(SJ) 3) 400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1 4) 400 KV Nathpa Jhakri(SJ)-Panchkula(PG) (PG) Ckt-1 5) 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-2 6) 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-1 7) 400 KV Nathpa Jhakri(SJ)-Gumma (HP) (PG) Ckt-2 8) 400/22 kV 25 MVA ST 1 at Nathpa Jhakri(SJ)	HIMACHAL PRADESH	JSW, POWERGRID, SJVNL	4-May-21	03:49	4-May-21	08:05	4 Hours 16 Minutes	400 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1, 400 KV Nathpa Jhakri(SJ)-Panchkula(PG) (PG) Ckt-1, 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-1 & Ckt-2 and 400 KV Nathpa Jhakri(SJ)-Gumma (HP) (PG) Ckt-2 all tripped on Bus Bar protection operation. Some problem in Bus Bar 2 Ct wiring lead to Bus Bar Protection operation (Bus2). At the same time, 37MW Sawara Kuddu UNIT-1 HPPCL also tripped on SPS operation. As per PMU, Y-N phase to earth fault is observed. In antecedent condition, 00 KV Nathpa Jhakri(SJ)-Karcham Wangtoo(JSW) (HBPCL) Ckt-1, 400 KV Nathpa Jhakri(SJ)-Panchkula(PG) (PG) Ckt-1, 400 KV Nathpa Jhakri(SJ)-Rampur HEP(SJ) (PG) Ckt-1 & Ckt-2 and 400 KV Nathpa Jhakri(SJ)-Gumma (HP) (PG) Ckt-2 carrying 192MW, 10MW, 117MW, 117MW & 37MW respectively.	37	0	80	JSW, POWERGRID, SJVNL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Exact reason of Bus Bar protection operation not clear. 2. Exact location of Y-N fault and reason of occurrence of fault. Remedial action required: 1. Inspection needs to be done to check the healthiness of Bus Bar protection.
4	GD-1	1) 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 2) 400 KV Alaknanda GVK(UPC)-Vishnuprayag(JP) (UP) Ckt-1 3) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 4) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 5) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-2 6) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1	UTTAR PRADESH	PTCUL, UPPTCL	24-May-21	17:20	24-May-21	18:55	1 Hours 35 Minutes	400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 & 400 KV Alaknanda GVK(UPC) Vishnuprayag(JP) (UP) Ckt-1 both tripped at 17:20 Hrs on Y-N phase to earth fault with delayed clearance in 560ms. At 17:36 Hrs, 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 & Ckt-2 and 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 & Ckt-2 all tripped on DT received at Srinagar end. At the same time, 82.5MW Alaknanda HEP UNIT 2 and 33MW Singoli UNIT 1 & UNIT 2 also tripped. As per PMU, Y-N phase to earth fault is observed at 17:20 Hrs. In antecedent condition, 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 & 400 KV Alaknanda GVK(UPC) Vishnuprayag(JP) (UP) Ckt-1 carrying 57MW & 117MW respectively.	138	0	560	PTCUL, UPPTCL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Reason of occurrence of fault? 2. Complete DR/EL & tripping report not uploaded on tripping portal by SLDC-UP & SLDC-UK. 3. Reason of delayed clearance of fault? 4. As reported, 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 & 400 KV Alaknanda GVK(UPC) Vishnuprayag(JP) (UP) Ckt-1 both tripped at 17:20 Hrs on Y-N phase to earth fault with delayed clearance in 560ms. Why ? 5. Reason for tripping of 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckts not clear? 5. Remedial action taken report needs to be shared. 6. DRs of Alknanda and singoli units not shared.
5	GD-1	1) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1 2) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-2 3) 220KV Amargarh(NRSS XXIX)-Ziankote(JK) (UNDEF) Ckt-1 4) 220KV Amargarh(NRSS XXIX)-Ziankote(JK) (UNDEF) Ckt-2	J & K	PDD JK	27-May-21	14:38	27-May-21	16:54	2 Hours 16 Minutes	220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1 & Ckt-2 and 220KV Amargarh(NRSS XXIX)-Zianote(JK) (UNDEF) Ckt-1 & Ckt-2 all tripped on B-N phase to earth fault. Fault distance was 28.6km from Wagoora(PG) end and fault current was 1.11kA. As per PMU, B-N phase to earth fault with delayed clearance in 2300ms is observed. As per SCADA, load loss of approx. 500MW is observed in J&K control area.	0	500	2280	PDD JK is requested to prepare and present the event analysis in 45th PSC.	1. 220 kV Wagoora(End) – Zianote – 1 TRIPPED ON O/C protection. What was the status of Dist protection? 2. DR of 220 kV Amargarh-Zianakote – 1&2 not submitted by utility. 3. What was the reason of tripping of 220 kV Amargarh-Zianakote Ckts. 4. Exact location of fault and reason of occurrence of fault? 5 Why did all four lines trip? 6. Reason of delayed clearance of fault? Proper functioning of distance protection needs to be ensured. 7. Tripping report needs to be submitted from SLDC-JK end. 8. Remedial action taken report needs to be shared.

6	GI-2	1) 400/220 kV 315 MVA ICT 2 at Akal(RS) 2) 400 KV Akal-Ramgarh (RS) Ckt-1 3) 400 KV Akal-Ramgarh (RS) Ckt-2 4) 400/220 kV 315 MVA ICT 3 at Akal(RS) 5) 400/220 kV 500 MVA ICT 4 at Akal(RS) 6) 400/220 kV 315 MVA ICT 1 at Akal(RS)	RAJASTHAN	RRVPNL	17-Jun-21	01:25	17-Jun-21	05:10	03:45	Y-N phase to earth fault occurred on 400kV Akal-Ramgarh CKt-1 & Ckt-2. 400kV Akal-Ramgarh ckt-1 tripped from both end but Ckt-2 didn't trip due to problem in DC supply to relay coil. As fault persisted, 400/220kV 315MVA ICT-1 & ICT-3 and 400/220kV 315MVA ICT-2 & ICT-4 tripped on back up earth fault protection operation. As per PMU, Y-N phase to earth fault with delayed clearance in 3880ms is observed. As per SOE, delayed tripping was observed at 400kV Ramgarh S/s too.	0	0	3880	RRVPNL is requested to prepare and present the event analysis in 45th PSC.	1. What was the issue in DC supply to relay coil? If same DC supply is available to all relay coils then why did CB of Ckt-2 didn't open if CB of ckt-1 opened in time. 2. If CB of ckt-2 at Akal end didn't open in time then how fault should have cleared. Whether any other line at Akal S/s also tripped? If not then how did fault clear finally? Protection coordination needs to be reviewed at 400kV Akal S/s. 3. As per SCADA SOE, CB at Ramgarh S/s also opened after 1500-1600ms which indicates delayed clearance of fault from Ramgarh end too. Root cause of delayed clearance at Ramgarh S/s needs to be identified and to be shared with NRLDC. 4. Reason of delayed clearance of fault? As per CEA Grid standard fault should be cleared within 100ms for 400 kV voltage level but here fault persisted for 3880ms. 5. Exact sequence of events in view of cause of event; protection operation/non-operation; opening/closing of breaker, isolator; relevant alarms and any other relevant detail to be shared 6. DR/EL from 400/220kV Akal S/s & 400kV Ramgarh S/s and tripping report needs to be shared.
7	GD-1	1) 220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt-1 2) 31.4 MW Tanakpur HPS - UNIT 3 3) 220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1 4) 31.42 MW Tanakpur HPS - UNIT 1 5) 31.4 MW Tanakpur HPS - UNIT 2	UTTRAKHAND	NHPC, POWERGRID	21-Jun-21	14:02	21-Jun-21	14:54	00:52	220 KV Tanakpur(NH)-Sitarganj(PG) (PG) Ckt-1 tripped on B-N phase to earth fault, fault disance was 39.78km & fault current was 1.141kA from Sitarganj end & 3.194kA from Tankapur end. At the same time, 220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1 also tripped on same fault from CB Ganj end only in Z-2 (105km) from CB Ganj end. Due to tripping of both lines, 31.42 MW Tanakpur HPS - UNIT 1 UNIT 2 & UNIT 3 all tripped on over frequency protection operation. As per PMU, B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, generation loss of approx. 95MW is observed at Tanakpur-NH. As per DR of Tanakpur end, it is observed that relay sensed fault in Z-1 even then CB openend in Z-2 time delay of around 350ms. 400kV Tankapur-CBGanj might have tripped from CB ganj end due to delayed clearance of fault from Tanakpur end.	95	0	400	NHPC, POWERGRID are requested to jointly prepare and present the event analysis in 45th PSC.	1. Why AR under Lockout insipte of Carrier receive from remote end in 220 kV Tanakpur-Sitarganj -1. 2. Why carrier is fail at Tanakpur for Ckt-1? 3. 220 kV Bareilly – Tanakpur – 1 DR channels not configured properly. 4. Why 220 kV Tanakpur – Cbganj tripped from CB ganj end?
8	GD-1	1) 400/220 kV 315 MVA ICT 4 at Bamnoli(DV) 2) 400/220 kV 500 MVA ICT 2 at Bamnoli(DV) 3) 400/220 kV 315 MVA ICT 1 at Bamnoli(DV) 4) 400/220 kV 500 MVA ICT 3 at Bamnoli(DV)	NEW DELHI	DTL	9-Jul-21	10:24	9-Jul-21	10:45	00:21	While change over of load from Bus D to Bus B while availing shutdown of 220kV Pappankalan-II Ckt-I, 220kV side Y Phase Bushing clamp along with bushing oil monitoring glass of 400/220kV 315MVA ICT-1 got blast, which resulted into tripping of 400/220kV 315MVA ICT-1, 400/220kV 500MVA ICT 2, 400/220kV 500MVA ICT 3 & 400/220kV 315MVA ICT 4 at Bamnoli(DV) and all 220kV lines. As per PMU, RYB three phase fault is observed with delayed clearance in 2600ms. As per SCADA, load loss of approx. 950MW is observed. As per SOE, 220kV Bamnauli-DIAL-1 & 2 tripped before tripping of ICTs. In antecedent condition, 400/220kV 315MVA ICT-1, 400/220kV 500MVA ICT 2, 400/220kV 500MVA ICT 3 & 400/220kV 315MVA ICT 4 at Bamnoli(DV) were carrying 150MW, 221MW, 220MW & 154MW respectively.	0	950	2600	DTL is requested to prepare and present the event analysis in 45th PSC.	1. Reason of delayed clearance of fault? 2. Why did 220kV Bamnauli-DIAL-1 & DIAL-2 tripped before 400/220 kV 315 MVA ICT 1 at Bamnoli(DV)?(as per SOE obtained at NRLDC) 3. Exact sequence of tripping of elements and detailed tripping report needs to be shared with remedial action taken.
9	GD-1	1) 220KV Bus 2 at Samaypur(BB) 2) 220KV Bus 1 at Samaypur(BB) 3) 220 KV Ballabhgarh(BB)-Badarpur(NT) (BB) Ckt-1 4) 220 KV Ballabhgarh-Samaypur (BB) Ckt-2 5) 220 KV Faridabad(NT)-Samaypur(BB) (PG) Ckt-2 6) 220 KV Faridabad(NT)-Samaypur(BB) (PG) Ckt-1 7) 220 KV Ballabhgarh-Samaypur (BB) Ckt-3 8) 220 KV Ballabhgarh-Samaypur (BB) Ckt-1 9) 400/220 kV 500 MVA ICT 2 at Ballabhgarh(PG) 10) 400/220 kV 500 MVA ICT 1 at Ballabhgarh(PG) 11) 400/220 kV 500 MVA ICT 3 at Ballabhgarh(PG) 12) 400/220 kV 500 MVA ICT 4 at Ballabhgarh(PG)	HARYANA	BBMB, POWERGRID	13-Jul-21	04:58	13-Jul-21	07:38	02:40	There was a heavy spark between male & female fingers of Bus-1 220kV Samaypur red phase isolator of 400/220kV 500MVA ICT-2 at Badshahpur(PG). 400/220kV 500MVA ICT-2 at Badshahpur(PG) tripped on backup impedance protection operation as bus bar protection of Samaypur S/s was out of service since 10/06/21 for the recommissioning of the new central unit. At the same time, 400/220kV 500MVA ICT-1, ICT-3 & ICT-4 at Badshahpur(PG) also tripped on backup impedance protection operation. 220kV lines to Faridabad, Badarpur & Ballabhgarh also tripped in Z-4. As per PMU, B-N phase to earth fault with delayed clearance in 560ms is observed. As per SCADA, load loss of approx. 650MW is observed in Haryana control area. In antecedent condition, 400/220kV 500MVA ICT-1, ICT-2, ICT-3 & ICT-4 at Badshahpur(PG) were carrying approx. 185MW.	0	650	560	BBMB, POWERGRID are requested to jointly prepare and present the event analysis in 45th PSC.	1. DR channels are not properly configured in 220 kV Ballbgarh – Samaypur – 1. 2. The 220 kV Faridabad-Samaypur ckt-1 DR is faulty. 3. Status of Busbar protection at 220 kV Samaypur? 2. As per SOE, opening of Bus sectionlizer is not observed and delay in opening of bus coupler is also observed which led to the tripping of all ICTs and 220V feeders. BBMB may review the same. 3. Remedial action taken report needs to be shared.
	GD-1	1) 400/220 kV 315 MVA ICT 1 at Bareilly(UP) 2) 220 KV Pithoragarh(PG)-Bareilly(UP) (PG) Ckt-1 3) 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 4) 220 KV Dhauliganga(NH)-Bareilly(UP) (PG) Ckt-1 5) 400/220 kV 315 MVA ICT 3 at Bareilly(UP) 6) 400/220 kV 315 MVA ICT 2 at Bareilly(UP) 7) 220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1	UTTAR PRADESH	POWERGRID, UPPTCL	23-Jul-21	16:36	23-Jul-21	17:36	01:00	Flash over was observed in 400/220 kV 315 MVA ICT 3 at Bareilly(UP) which tripped on directional earth fault protection operation. As fault didn't clear, 400/220 kV 315 MVA ICT 1 & ICT-2 at Bareilly(UP) both tripped on over current protection operation. At the same time, 220kV lines to CB Ganj, Dohna, Pilibhit, Dhauliganga & Pithoragarh also tripped. Due to tripping of evacuating lines all units of Dhauliganga also tripped. As per PMU, R-B phase to phase fault is observed with delayed clearance in 2840ms. As per SCADA, load loss of approx. 300MW in UP control area & generation loss of 280MW is observed at Dhauliganga HEP. In antecedent condition, 400/220 kV 315 MVA ICT 1, ICT-2 & ICT 3 at Bareilly(UP) were carrying approx. 99MW each.	280	300	2840	POWERGRID, UPPTCL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Exact location of fault & reason of occurrence of fault? 2. Reason of delayed clearance of fault? 3. As per SCADA SOE, multiple element tripping observed at 132kV Barkhera before tripping of ICTs at Bareilly. Exact location of fault needs to be identified. 4. was there malfunction of SPS of Bareilly ICTs? 5. Reason of tripping of all 220kV lines? 6. DR/EL & tripping report needs to be shared.
11	GD-1	1) 400/220 kV 500 MVA ICT 4 at Muzaffarnagar(UP) 2) 400 KV Muzaffarnagar-Ataur (UP) Ckt-1 3) 400 KV Roorkee(PG)-Muzaffarnagar(UP) (PTCUL) Ckt-1 4) 400 KV Muzaffarnagar(UP)-Vishnuprayag(JP) (UP) Ckt-1 5) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-2 6) 400/220 kV 315 MVA ICT 3 at Muzaffarnagar(UP) 7) 400/220 kV 315 MVA ICT 1 at Muzaffarnagar(UP) 8) 400 KV Meerut(PG)-Muzaffarnagar(UP) (PG) Ckt-1 9) 82.5 MW Alakhanda HEP - UNIT 4 10) 82.5 MW Alakhanda HEP - UNIT 2 11) 82.5 MW Alakhanda HEP - UNIT 3 12) 82.5 MW Alakhanda HEP - UNIT 1 13) 110 MW Vishnuparyag HPS - UNIT 2 14) 110 MW Vishnuparyag HPS - UNIT 3 15) 110 MW Vishnuparyag HPS - UNIT 1 16) 110 MW Vishnuparyag HPS - UNIT 4 17) 220 KV Singoli Bhatwari(Singoli(LTUHP))-Srinagar(UK) (PTCUL) Ckt-1 18) 400 KV Alaknanda GVK(UPC)-Muzaffarnagar (UP) Ckt-1 19) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 20) 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-2	UTTAR PRADESH	POWERGRID, PTCUL, UPPTCL	7-Aug-21	03:02	7-Aug-21	05:50	02:48	400/220 kV 315 MVA ICT 3 at Muzaffarnagar(UP) tripped on differential protection operation on blast of R-ph CT of ICT 3, ICT 3 was connected to bus 2. At the same time, bus bar 1 protection operated which resulted into tripping of ICT 1, ICT 4, 400kV lines to Meerut, Ataur and Vishnuprayag which were connected to Bus 1. 400 KV Alaknanda-Muzaffarnagar Ckt-1 also tripped on B-N phase to earth fault on B-ph CT damaged at Muzaffarnagar S/s, fault distance was 116meter(Z-1) from Muzaffarnagar end. 400 KV Alaknanda GVK(UPC)-Srinagar(UK) (UK) Ckt-1 & Ckt-2 both tripped on DT received at Srinagar end. Due to tripping of all evacuating lines all the units of Alaknanda HEP, Vishnuprayag HEP and Sinoli Bhatwari tripped. As per PMU, R-N & B-N fault followed by Y-N fault observed with delayed clearance in 760ms. As per SCADA, generation loss of approx. 870MW is observed in Alaknanda HEP, Vishnuprayag HEP & Singoli Bhatwari total. In antecedent condition, 400/220 kV 315 MVA ICT 1 & ICT 3 at Muzaffarnagar(UP) and 400/220 kV 500 MVA ICT 4 at Muzaffarnagar(UP) were carrying 108MW, 115MW & 174MW respectively.	870	0	760	POWERGRID, PTCUL, UPPTCL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Why did bus bar protection of Bus 1 operate? (as fault was in ICT 3 which was connected to bus 2) 2. Reason of delayed clearance of fault. 3. Why did B-N fault in 400kV Muzaffarnagar-Alaknanda Ckt also clear with 760ms delay? (As reported fault was in Z-1 from Muzaffarnagar end) 4. Remedial action taken report needs to be shared.

12	GD-1	1) 400/220 kV 315 MVA ICT 3 at Akal(RS) 2) 400/220 kV 500 MVA ICT 4 at Akal(RS) 3) 220 kV Amarsagar-Akal (RS) Ckt-1 4) 220kV Akal--Bhu (RS) ckt-1 5) 220kV Akal--Bhu (RS) ckt-2 6) 400/220 kV 500 MVA ICT 1 at Akal(RS) 7) 220 kV Akal-Barmer Ckt-1 8) 220 KV Akal-Giral Ckt-1 9) 220kV Akal-Mada Ckt-1	RAJASTHAN	RRVPNL	2-Sep-21	16:47	2-Sep-21	19:42	02:55	220 Akal-Bhu Ckt-1 tripped on Y-N phase to earth fault. Fault occurred due to snapping of Y-ph bus side jumper of 220 Akal-Bhu Ckt-1 which was connected to Bus 1. Fault then converted into bus fault resulted into tripping of 220kV feeders to Giral, Amarsagar, Mada & Barmer in Z-4 as Bus bar protection is out of service due to defected PU(peripheral unit). As fault still persisted, 400/220kV 500MVA ICT 1&4 and 400/220kV 315MVA ICT 3 at Akal(RS) tripped on earth fault protection operation. 220kV fedders to Bhu ckt-2, Jajiya, Rajgarh and Mulana were manually opened. As per PMU, Y-B phase to phase followed by Y-N phase to earth fault is observed with delayed clearance in 680ms is observed. As per SCADA, Rajasthan wind generation loss of approx. 690MW is observed. In antecedent condition, 400/220kV 500MVA ICT 1,2&4 and 400/220kV 315MVA ICT 3 at Akal(RS) were carrying 135MW, 136MW. 134MW & 77MW respectively.	690	0	680	RRVPNL is requested to prepare and present the event analysis in 45th PSC.	1. Exact location and nature of fault? 2. As per SCADA SOE at NRLDC, timing of tripped elements are 5min ahead of grid event timing. Time sync needs to be ensured at Akal S/s. 3. Why did 220kV feeders to Bhu-2, Jajiya, Rajgarh and Mulana didn't trip in Z-4? 4. Relay time sync issue found. 5. Status of 220 kV busbar protection at Bhu. 6. Has z-4 timimg of lines kept 160ms?
13	GD-1	1) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 2) 220 KV Kishenpur(PG)-Mir Bazar(PDD) (PDD) Ckt-1 3) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-2 4) 220 KV Wagoora(PG)-Ziankote(JK) (PDD JK) Ckt-1 5) 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1	J & K	PDD JK	20-Sep-21	14:31	20-Sep-21	15:02	00:31	At 14:31 Hrs CB clamp of 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 burnt at Pampore end. 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1 tripped from pampore end during this fault on earth fault protection operation as bus bar protection is not in service at 220kV pampore. As fault still persisted, 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-2 tripped in Z-2 from Wagoora end and on overcurrent protection at Pampore end. At the same time, 220kV Wagoora-Ziankote ckt-1&2 both tripped from Ziankote end only in Z-3 and 220kV Kishenpur-Mirbazar ckt tripped in Z-2 from Kishenpur end. As per PMU, B-N phase to earth fault with delayed clearance in 400ms is observed. As per SCADA, load loss of approx. 400MW is observed. In antecedent condition, 220kV Wagoora-Ziankote ckt-1&2, 220 KV Wagoora(PG)-Pampore(PDD) (PG) Ckt-1& and 220kV Kishenpur-Mirbazar ckt were carrying 57MW, 39MW, 211MW, 221MW & 69MW respectively.	0	550	400	PDD JK is requested to prepare and present the event analysis in 45th PSC.	1. Status of 220 kV Busbar protection at Pampore. 2. Z-3 reach and timer at Ziankote needs to be checked 3. Early installation of Bus bar protection at 220kV Pampore(PDD JK) to be ensured. 4. Z-3 time delay setting at Ziankote(JK) end needs to be reviewed and corrected. It shouldn't be less than 1sec. 5. SCADA SOE data of any of the tripped element is not available at NRLDC. Availability of same needs to be takenup. 6. DR/EL & tripping report needs to be shared. 7. Remedial action taken report to be shared.
14	GD-1	1) 132 KV Pithoragarh(PG)-Almora(PTCUL) (PTCUL) Ckt-1 2) 220 KV Dhauliganga(NH)-Pithoragarh(PG) (PG) Ckt-1 3) 220 KV Dhauliganga(NH)-Bareilly(UP) (PG) Ckt-1 4) 220 KV Tanakpur(NH)-CBGanj(UP) (PG) Ckt-1 5) 400/220 kV 315 MVA ICT 1 at Bareilly(UP) 6) 400/220 kV 315 MVA ICT 2 at Bareilly(UP) 7) 400/220 kV 315 MVA ICT 3 at Bareilly(UP) 8) 220 KV Pithoragarh(PG)-Bareilly(UP) (PG) Ckt-1 9) 220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1	UTTAR PRADESH	POWERGRID, PTCUL, UPPTCL, NHPC	23-Oct-21	16:28	23-Oct-21	17:28	01:00	Jumper of 220 KV Pantnagar(UK)-Bareilly(UP) (UP) Ckt-1 snapped and created bus fault. As bus bar protection is not in service at 220kV Bareilly(UP), 220kV feeders to Dhauliganga, Pithoragarh, Pantnagar, Shahjhanpur, CB Ganj2 ckt-1 & ckt-2 all tripped in Z-4 and 220kV feeders to Dohna ckt-1 & ckt 2, Pilibhit Ckt-1 & ckt2 tripped in Zone 2 because these feeders didn't trip in Z-4 from Bareilly end. At the same time, 400/220 kV 315 MVA ICT 1 at Bareilly(UP) tripped on PRV protection operation, 400/220 kV 315 MVA ICT 2 at Bareilly(UP) tripped on Bucholz protection operation and 400/220 kV 315 MVA ICT 3 at Bareilly(UP) tripped on over current protection operation. As per PMU, R-Y phase to phase fault later converted into R-Y-B three phase fault with delayed clearance in 1800ms is observed. As per SCADA, generation loss of approx. 215MW at Dhauliganga HEP and 55MW at Tankapur HEP is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1, ICT 2 & ICT 3 at Bareilly(UP) all were carrying 48MW each.t 400/220kV Bareilly(UP)	270	0	1800	POWERGRID, PTCUL, UPPTCL, NHPC are requested to jointly prepare and present the event analysis in 45th PSC.	1. Why 220 kV Dhauliganga – Pithoragarh tripped. 2. Why 220 kV busbar protection is out of service at 400 kV Bareilly. 3. Why did 220kV feeders to Dohna ckt-1 & ckt-2, Pilibhit Ckt-1 & Ckt-2 didn't trip in Z-4 from Bareilly end which led to delayed clearance of fault? 4. Proper operation & setting and healthiness of Z-4 to be looked into. 5 Reason of tripping of 400/220 kV 315 MVA ICT 1 on PRV protection operation and 400/220 kV 315 MVA ICT 2 at Bareilly(UP) tripped on Bucholz protection? 6. Remedial action taken report to be shared.
15	GI-1	1) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-2 2) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-3 3) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-2 4) 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1 5) 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1	NEW DELHI	BBMB, DTL	27-Nov-21	09:24	27-Nov-21	13:02	03:38	220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 tripped on R-Y phase to phase fault from Mandola end in Z-2, fault distance was 138.2km & fault current was 1.5kA from Mandola end. At the same time, 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1, Ckt-2 & Ckt-3 all tripped on fault in Z-2 from Panipat(BB) end. As per PMU, R-Y phase to phase fault which converted into R-Y-B three phase fault with delayed clearance in 440ms is observed. In antecedent condition, 220 KV Mandola(PG)-Narela(DV) (DTL) Ckt-1 & Ckt-2 and 220 KV Panipat(BB)-Narela(DV) (BBMB) Ckt-1, Ckt-2 & Ckt-3 were carrying 154MW, 153MW, 56MW, 55MW & 57MW respectively.	0	0	440	BBMB, DTL are requested to jointly prepare and present the event analysis in 45th PSC.	1. 220 kV Mandola – Narela DRs not submitted by utility. 2. What was the reason for fault. 3. Why delayed clearance was there? 4. Whether desirable protection operated at Narela(DV) or not? 5. DR/EL & tripping report to be shared. 6. Remedial action taken report to be shared.
16	GD-1	1) 400 KV Obra_C_TPS-Obra_B (UP) Ckt-1 2) 400 KV Anpara-Obra_B (UP) Ckt-1 3) 400 KV Obra_B-Sultanpur (UP) Ckt-1 4) 400 KV Obra_B-Rewa Road (UP) Ckt-1 5) 200 MW Obra TPS - UNIT 10 6) 200 MW Obra TPS - UNIT 11 7) 200 MW Obra TPS - UNIT 12 8) 400KV Bus 2 at Obra_B(UP) 9) 400KV Bus 1 at Obra_B(UP) 10) 400/220 kV 240 MVA ICT 3 at Obra_B(UP) 11) 400/220 kV 315 MVA ICT 2 at Obra_B(UP)	UTTAR PRADESH	UPPTCL	6-Dec-21	18:27	8-Dec-21	20:08	50:41	While synchronizing the 200MW Unit-13 at Obra_B TPS, B-ph circuit breaker of Unit-13 got blast which was connected to Bus-1. On this fault, bus bar of Bus-1 operated and due to delay in opening of bus coupler, bus bar protection of bus-2 also operated resulted into tripping of all connected transmission lines, ICTs and generating units. As per PMU, B-N phase to earth fault is observed. As per SCADA, generation loss of approx. 500MW is observed at Obra_B TPS due to tripping of 200MW Unit-10,11&12. In antecedent condition, 400 KV Anpara-Obra_B (UP) Ckt-1, 400 KV Obra_B-Sultanpur (UP) Ckt-1, 400 KV Obra_B-Rewa Road (UP) Ckt-1 and 400/220 kV 240 MVA ICT 3 at Obra_B(UP) were carrying 310MW, 208MW, 229MW & 210MW respectively.	500	0	80	UPPTCL is requested to prepare and present the event analysis in 45th PSC.	1. Proper operation of bus bar protection and healthiness of circuit breaker at Obra_B(UP) to be ensured. 2. Remedial action taken report to be shared.
17	GI-2	1) 400KV Bus 1 at Sultanpur(UP) 2) 400KV Bus 3 at Sultanpur(UP) 3) 400KV Bus 2 at Sultanpur(UP) 4) 400 KV Obra_B-Sultanpur (UP) Ckt-1 5) 400 KV Tanda(NT)-Sultanpur(UP) (UP) Ckt-1 6) 400/220 kV 315 MVA ICT 3 at Sultanpur(UP) 7) 400/220 kV 240 MVA ICT 2 at Sultanpur(UP) 8) 400/220 kV 315 MVA ICT 1 at Sultanpur(UP)	UTTAR PRADESH	UPPTCL	5-Jan-22	02:58	5-Jan-22	04:40	01:42	At 02:58 Hrs, during charging of 400 KV Lucknow-Sultanpur ckt from Sultanpur end, line tripped on SOTF protection operated at Sultanpur end. At the same time, 400 KV Obra_B-Sultanpur (UP) Ckt-1 tripped from Obra end only in Z-3, 400kV Sultanpur-Tanda ckt tripped on over voltage protection operation at Tanda end and DT received at Sultanpur end and all three 400/220kV (315MVA ICT-1,3 & 240MVA ICT-2) ICTs tripped on earth fault protection operation. As per PMU, Y-N phase to earth fault with delayed clearance of 1200ms is observed. In antecedent condition, 400kV Sultanpur-Tanda ckt, 400 KV Obra_B-Sultanpur (UP) Ckt-1, 400/220kV 315MVA ICT-1, ICT-3 and 400/220kV 240MVA ICT-2 were carrying 48MW, 275MW, 84MW, 83MW & 60MW respectively.	0	0	1200	UPPTCL is requested to prepare and present the event analysis in 45th PSC.	1. It has been reported that Y-phase fault was there in LKW – Sultanpur Line and line tripped on SOTF on energization. 2. Why delayed fault clearance is there? 3. Did busbar protection trip at Sultanpur? 4. Exact location and nature of fault? 5. Why did 400 KV Obra_B-Sultanpur (UP) Ckt-1 not trip from Sultanpur end? 6. What was the antecedent voltage of 400kV Sultanpur-Tanda ckt at Tanda end? Tripping of line on Over voltage to be reviewed. 7. As per SOE, 400 KV Lucknow-Sultanpur ckt tripped at the end after tripping of all other elements. Exact time of initiation of SOTF to be checked. 8. Remedial action taken report to be shared.

18	GD-1	1) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 3 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 2) 400 KV Fatehgarh_II(PG)-Fatehgarh Pooling(FBTL) (FBTL) Ckt-1 3) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt-1 4) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 5) 220 KV Fatehgarh_II(PG)-EDEN SL_FGRAH_PG (ERCPL) (EDEN (ERCPL)) Ckt-1	RAJASTHAN	EDEN (ERCPL), FBTL, POWERGRID, RENEW	30-Jan-22	11:27	30-Jan-22	12:01	00:34	At 11:27:43:400 Hrs, 240MVAR Bus reactor-2 was opened. With the opening of bus reactor, transient voltage shoot up is observed at Fatehgarh2(PG). As per PMU at Fatehgarh2(PG), phase voltage of 400kV Fatehagrh2-Fatehgarh ckt-2 shoot up from 226kV to 259kV and came back to 239kV within 520ms. Further within 500ms, solar generation loss at Renew Sunwave and EDEN solar is observed. Further after 3sec, 220/33kV transformers at Renew Solar Urja tripped. Further within 3-4 sec Renew Sunbright and some inverters of AHEJ2L, AHEJ3L, Renew jharkhand3 and RE generation at ADANI pooling substation tripped. Total solar generation loss of around 2038MW is observed. Tripping of 765kV Fatehgarh2-Bhadla2 ckt-1 and 400kV Fatehgarh2-Fatehgarh ckt-1 also observed on over voltage protection operation at Fatehgarh2 end. In antecedent condition, as per SCADA, bus voltages at Fatehgarh2 were 816kV, 428kV & 235kV at 765kV, 400kV & 220kV bus respectively.	2038	0	NA	EDEN (ERCPL), FBTL, POWERGRID, RENEW are requested to jointly prepare and present the event analysis in 45th PSC.	1. Affected RE stations may share the DR/EL of trippings at their end. 2. Over voltage settings at RE stations needs to be reviewed. 3. Remedial action taken report to be shared.
19	GD-1	1) 220 KV Samba(PG)-Jammu(PDD) (PG) Ckt-1 2) 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-2 3)220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1	J & K	POWERGRID, NHPC, PDD JK	6-Feb-22	01:45	6-Feb-22	03:32	01:47	R-N phase to earth fault occurred due to 132kV Bus-1 CVT blasted at Jammu(Gladni) (JKPTCL) S/S. 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1 & Ckt-2 both tripped on this fault. At the same time, 220 KV Samba(PG)-Jammu(PDD) (PG) Ckt-1 also tripped on fault in Z-3 (60.93km). As per PMU, R-N phase to earth fault with delayed clearance in 1080ms is observed. As per SCADA, load loss of approx. 185MW is observed in J&K control area. In antecedent condition, 220 KV Salal(NH)-Jammu(PDD) (PG) Ckt-1 & Ckt-2 and 220 KV Samba(PG)-Jammu(PDD) (PG) Ckt-1 were carrying 52MW, 47MW & 84MW respectively.	0	185	1080	POWERGRID, NHPC, PDD JK are requested to jointly prepare and present the event in 45th PSC.	1. No DR/SOE and Tripping report received from 220 kV Jammu s/s (JKPDD). 2. Salal(NHPC) has reported that no tripping occurred at their end. Why Zone-2 did not trip? 3. JKPDD is requested to explain the reason and nature of fault along with reason for non clearance of fault. 4. Why did main protection at 132kV side at Jammu(Gladni) S/S didn't operate? 5. Reason of delayed clearance of fault? 6. Remedial action taken report to be shared.
20	GD-1	1) 220 KV Jessore(HP)-Pong(BB) (PG) Ckt-1 2) 220 KV Jalandhar-Pong (BB) Ckt-2 3) 220 KV Jalandhar-Pong (BB) Ckt-1 4) 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 5) 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-2 6) 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt-1 7) 220KV Bus 1 at Pong(BB)	HIMACHAL PRADESH	BBMB, POWERGRID	17-Mar-22	08:40	17-Mar-22	10:29	01:49	Y-phase wave trap of 220 KV Jalandhar-Pong (BB) Ckt-1 at pong end got blasted. At the same time, 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt-1, 220 KV Jessore(HP)-Pong(BB) (PG) Ckt-1, 220 KV Jalandhar-Pong (BB) Ckt-1 & Ckt-2, 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 & Ckt-2 and 220kV Bus-1 at Pong(BBMB) all got tripped. 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 & Ckt-2 and 220 KV Jessore(HP)-Pong(BB) (PG) Ckt-1 tripped from Dasuya and Jessore end in Z-3 on RYB fault. At the same time, 66MW Unit-1, 2, 3 & 6 at Pong(BBMB) also tripped. As per PMU, R-Y-B three phase fault with delayed clearance in 1080ms is observed, As per SCADA, generation loss of approx. 245MW is observed at Pong HEP. In antecedent condition, 220 KV Bairasiul(NH)-Pong(BB) (PG) Ckt-1, 220 KV Jessore(HP)-Pong(BB) (PG) Ckt-1, 220 KV Jalandhar-Pong (BB) Ckt-1 & Ckt-2, 220 KV Pong(BB)-Dasuya(PS) (BBMB) Ckt-1 & Ckt-2 were carrying 45MW, 3MW, 58MW, 58MW, 74MW & 74MW respectively.	245	0	1080	BBMB, POWERGRID are requested to jointly prepare and present the event analysis in 45th PSC.	1. No DR/SOE received from BBMB Pong end. 2. Exact nature and reason of fault is not clear. 3. Reason of delayed clearance of fault? 3. Remedial action taken report to be shared.
21	GI-2	1) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-2 2) 400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 3) 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-2 4) 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1	UTTAR PRADESH	UPPTCL	6-Apr-22	21:22	6-Apr-22	22:24	01:02	400 KV Noida Sec 148-Noida Sec 123 (UP) Ckt-1 & 2 and 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1 & 2 tripped due to failure of DC Source-I at 400kV S/S Noida Sector-148.As per PMU, no fault is observed in the system. In antecedent conditions, 400 KV Gr.Noida_2(UPC)-Noida Sec 148 (UP) Ckt-1 & 2 carrying 126MW & 127MW respectively.	0	0	NA	UPPTCL is requested to prepare and present the event analysis in 45th PSC.	1. Is there single DC source at Noida Sec – 148? 2. What is the Bus bar protection scheme adopted? 3. In GIS gas detectors whether NO or NC is used? 4. Was 400 kV Noida Sec-148 – Noida Sec – 123 Line already out ? 5. What remedial measures have been taken?
22	GD-1	1) 220 KV Renew SunBright SL_FGARH_PG (RSBPL)-Fatehgarh_II(PG) (RENEW SUN BRIGHT (RSBPL)) Ckt-1 2) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 3 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 3) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1 4) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 5) 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1	RAJASTHAN	AREPRL, POWERGRID	13-Apr-22	16:45	13-Apr-22	17:11	00:26	765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 tripped on R-N fault during heavy wind storm, fault distance was 2km from Bhadla_2 end. At the same time, 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 also tripped on R-N fault along with 220kV Fatehgarh2-Renew Sunbright Solar Ckt-1 from Renew Sunbright end, 220 KV Adani Renew Solar Park - PSS3 & PSS4_ckt. As per PMU, R-N & Y-N fault with delayed clearance in 400ms is observed. As per SCADA SOE, it seems that 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-2 tripped on R-N fault with unsuccessful A/R operation from Bhadla_2 end & no A/R operation from Fatehgarh_2 end, further after 600ms 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 tripped on R-N fault with delayed clearance of approx. 400ms. As per SCADA, change in solar generation of approx. 140MW is observed due to tripping of 220kV Fatehgarh2-Renew Sunbright Solar Ckt-1. In antecedent condition, 765 KV Bhadla_2 (PG)-Fatehgarh_II(PG) (PFTL) Ckt-1 & Ckt-2 were carrying 421MW & 424MW respectively.	140	0	400	AREPRL, POWERGRID are requested to jointly prepare and present the event analysis in 45th PSC.	1. RSBPL side DR has not been submitted. 2. Exact location of fault from Fatehgarh2 end? 3. Reason of delayed clearance of fault? 4. Why did A/R operation not observe at Fatehgarh2 end? 5. Reason of tripping of 220kV Fatehgarh2-Renew Sunbright Solar Ckt-1 from RENEW Sunbright end? 6. Why did 220kV Adani Solar Park - PSS-3 & PSS-4 line trip? 7. DR/EL & tripping report needs to be shared. 8. Remedial action taken report to be shared.
23	GD-1	1) 110 MW Harduaganj-C TPS - UNIT 7 2) 400/220 kV 315 MVA ICT 1 at Harduaganj (UP), 3) 250 MW Harduaganj-D TPS - UNIT 8 4) 250 MW Harduaganj-D TPS - UNIT 9	UTTAR PRADESH	UPPTCL, UPRVUNL	25-Apr-22	22:38	26-Apr-22	05:24	06:46	There was a R-Y-B bus fault at 220kV Harduaganj on which all 220kV feeders emanating from Harduanganj tripped on Z-4 distance protection operation. As fault was still persisting, 400/220 kV 315 MVA ICT 1 at Harduaganj (UP) tripped on over current protection operation. With the tripping of ICT & all 220kV feeders, 220kV bus at Harduaganj became dead which resulted into tripping of 110 MW Harduaganj-C TPS - UNIT 7, 250 MW Harduaganj-D TPS - UNIT 8 & UNIT-9. As per PMU, R-Y-B three phase fault with delayed clearance in 1960ms is observed. As per SCADA, generation loss of approx. 500MW at Harduaganj TPS and change in load of approx. 180MW in UP control area is observed. In antecedent condition, 400/220 kV 315 MVA ICT 1 at Harduaganj (UP), 110 MW Harduaganj-C TPS - UNIT 7, 250 MW Harduaganj-D TPS - UNIT 8 & UNIT-9 were carrying 17MW, 62MW, 223MW & 223MW respectively.	500	180	1960	UPPTCL, UPRVUNL are requested to jointly prepare and present the event analysis in 45th PSC.	1. Reason for voltage dip at 22:38:11 2. Status of 220 kV Bus bar protection at Harduaganj. 3. DRs for 22:28:00 events. 4. Why ICT-2 did not trip on O/C, E/F 5. Weather 400 kV Harduaganj – Aligarh also tripped during said event. 6. Why fault is coming in Zone-1 for Harduaganj-Khurja from Khurja end. 7. Why Harduaganj - Atroli and Hraduaganj – Jhangirabad did not trip. 8. PMU showing HDJ-ATRL tripped. 9. What are O/C E/F settings of ICTs. 10. Time sync and relay nomenclature issues. 11. DR to be sent in cfg format only.