सत्यमेव जयते

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

सं. उक्षेविस/ वाणिज्यिक/ 209/ आर पी सी (45 वीं)/2019/
No. NRPC/ Comml/ 209/ RPC (45th)/2019/5683-5730

दिनाँक : 31st मई, 2019
Dated: 31st May, 2019

सेवा में / To,

उ.क्षे.वि.स. और तकनीकी समन्वय समिति के सभी सदस्य (संलग्न सूचीनुसार)
Members of NRPC and TCC (As per List)

विषय: उत्तर क्षेत्रीय विद्युत समिति की 45 वीं तथा तकनीकी समंवय उप-समिति की 42 वीं बैठक की कार्यसूची ।

Subject: 45th meeting of Northern Regional Power Committee and 42nd meeting of TCC– Agenda.

महोदय / Sir,

उत्तर क्षेत्रीय विद्युत समिति की 45 वीं बैठक दिनांक 08 जून, 2019 को 1000 बजे मेफेयर होटल, गंगटोक, सिक्किम में आयोजित की जाएगी । उ.क्षे.वि.स. की बैठक से पहले तकनीकी समन्वय उप-समिति की 42 वीं बैठक दिनांक 07 जून, 2019 को 1000 बजे उसी स्थान पर आयोजित होगी । बैठकों की कार्यसूची संलग्न है ।

The 45th meeting of Northern Regional Power Committee (NRPC) will be held at 1000 Hrs on 08th June, 2019 at Mayfair Hotel, Gangtok, Sikkim. NRPC meeting shall be preceded by 42nd meeting of Technical Coordination Sub-committee (TCC) at 1000 Hrs on 07th June, 2019 at the same venue. Agenda for the meetings is attached herewith.

भवदीय
Yours faithfully,

(नरेश भंडारी) 31/5/19
(Naresh Bhandari)
सदस्य सचिव
Member Secretary

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49. Representative of BRPL (Delhi Private Discom)
50. Representative of Bajaj Energy Pvt Ltd (Member IPP < 1000 MW)
51. Representative of Kreate Energy Pvt Ltd (Member Trader)

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48. Representative of Prayagraj Power Generation Co. Ltd.
49. Representative of BRPL (Delhi Private Discom)
50. Representative of Bajaj Energy Pvt Ltd (Member IPP < 1000 MW)
51. Representative of Kreate Energy Pvt Ltd (Member Trader)

Special Invitee:

i. Member Secretary, WRPC, Mumbai-400 093.
ii. Member Secretary, SRPC, Bangalore-560 009
iii. Member Secretary, ERPC, Kolkata-700 033.
iv. Member Secretary, NERPC, Shillong-793 003.

INDEX

A.1 Minutes of 41st meeting of TCC 4

A.2 Minutes of 44th meeting of NRPC 4

B. OPERATIONAL ISSUES 5

B.1 Revised System Protection Scheme (SPS) for 765 kV Agra-Gwalior line. 5

B.2 System Study for Capacitor Requirement in NR for the year 2019-20. 5

B.3 Reactive compensation at 220 kV/ 400 kV level. 6

B.4 Database of protection settings 8

B.5 Downstream network by State Utilities from ISTS Stations 9

B.6 Certification of 220KV D/C Charor-Banala line under construction by HPPTCL as Deemed ISTS (Agenda by HPPTCL) 15

B.7 RVPNL owned line connected directly to ISGS for certification as ISTS (Agenda by RVPNL) 16

B.8 Phase nomenclature mismatch between BBMB and some interconnected stations of other power utilities 17

B.9 Follow up of Major Decisions of NRPC 18

B.10 Connectivity to Naitwar Mori HEP (NMHEP) (2X30MW) of SJVN Ltd. in Uttarakhand (Agenda by SJVN) 22

B.11 Training Programme/Workshop on Protection system Auditors from CPRI. 23

B.12 Cyber Security Preparedness Monitoring 24

B.13 OPGW connectivity at NHPC power stations under central sector scheme (Agenda by NHPC) 24

B.14 Delay in laying of OPGW through PGCIL (Agenda by PSTCL) 25

B.15 Establishment of State of the Art Unified Centralized Network Management System (U-NMS/ Meta NMS/ OSS) for ISTS Communication Network by CTU. (Agenda by POWERGRID) 25

B.16 Augmentation of transformation capacity in Northern Region: (Agenda by POWERGRID) 26

B.17 2 nos. of 400kV line bays (GIS) at 400kV Chamera (PG) S/s (Agenda by POWERGRID) 27

B.18 2 nos. of 220kV line bays at 400kV Samba (Jatwal) (PG) S/s (Agenda by POWERGRID) 27

B.19 Transmission system for Solar Energy Zones in Rajasthan (Agenda by POWERGRID) 28

B.20 Provision of 125 MVAr bus reactors each at Jalandhar & Patiala (Agenda by POWERGRID) 31

B.21 400/220kV ICT augmentation at Bhadla-II, Fatehgarh-II and Bikaner S/s (Agenda by POWERGRID) 32

B.22 Provision of spare ICT and Reactors in already agreed transmission scheme "Transmission system for Solar Energy Zones in Rajasthan". (Agenda by POWERGRID) 33

B.23 Monsoon preparedness: 34

B.24 Synchronous condenser operation for Voltage regulation & System Stability 41

B.25 Reliability Issues:.....43

B.26 Mock testing of SPS for 765kV Agra-Gwalior D/C.....44

B.27 Grid Events in Northern Region during Feb-Apr'19 period:.....45

B.28 Frequency response characteristic of NR control area from Feb-Apr'19:.....46

B.29 Loss of Solar Generation in Rajasthan due to LVRT issue in solar generators:.....47

B.30 Switchgear issue of 400 kV Mahendergarh-Dhanonda double ckts.....48

B.31 Insulator replacement in Punjab control area: 50

B.32 Real Time data telemetry from Renewable Generators.....50

B.33 Status telemetry of TCSC / FSC.....51

B.34 Telemetry from Kurukshetra HVDC as per agreed in the separate meeting.....51

B.35 Communication connectivity for Shifting of Terminal Server (NRLDC, SCADA) at Site 52

C. COMMERCIAL ISSUES 53

C.1 Default in payment of outstanding dues and surcharge by beneficiaries.....53

C.2 Opening of Letter of Credit (LC).....55

C.3 Non-payment of LPS by the beneficiaries (Agenda by SJVNL).....55

C.4 Recent CERC Orders/draft Regulations 56

C.5 Difference between Real Time SCADA data and SEM data causing huge financial burden on PSPCL- Availability of SEM data on Real Time Basis (Agenda by PSPCL) 58

C.6 Status of DSM Charges:.....59

C.7 Status of LC against Deviation Charges delayed payment:.....60

C.8 Reactive Energy charges status:.....61

C.9 NRLDC Fee & Charges:.....62

C.10 Reconciliation of Pool Accounts (Jan-19 to March-19):.....63

C.11 Status of AGC & Ancillary Services: 63
C.12 Reconciliation of STOA (Short Term Open Access) Charges disbursement: 65
C.13 Reconciliation of Outstanding STOA Delay Payment Interest: 65
C.14 STATUS of AMR as on 25.05.2019 65
C.15 Integration of AMR System with Elster Meters: 66
C.16 AMR data through Fibre Optic Network 66
C.17 Status regarding procurement of DCD: 66
C.18 Ensuring Healthiness of Metering System: 67
C.19 Time drift Correction in SEMS: 67
D. ITEMS FOR NRPC 70
D.1 Reimbursement of Expenditure of NRPC Sectt. for FY 2019-20 by the members of NRPC 70
D.2 Reimbursement of Expenditure of NRPC Sectt. by the members of NRPC for the previous years 70
D.3 Membership in NRPC for Rotational Members 71
D.4 Capacity Building Programme for Northern Regional Constituents (proposed to be funded through PSDF) 73
D.5 HOSTING OF NEXT MEETINGS OF NRPC / TCC 74

Annexures

Annexure I
Annexure II
Annexure III
Annexure IV
Annexure V
Annexure VI
Annexure VII
Annexure VIII
Annexure IX
Annexure X
Annexure XI
Annexure XII

उत्तरक्षेत्रीयविद्युतसमिति

NORTHERN REGIONAL POWER COMMITTEE

AGENDA
FOR
42nd MEETING OF TECHNICAL COORDINATION SUB-COMMITTEE
&
45th MEETING OF NORTHERN REGIONAL POWER COMMITTEE

Time & Date of TCC meeting: 10:00 Hrs. on 07.06.2019

Time & Date of NRPC meeting: 10.00 Hrs. on 08.06.2019

Venue: Mayfair Hotel, Gangtok, Sikkim

C O N F I R M A T I O N O F M I N U T E S (T C C)

A.1 Minutes of 41st meeting of TCC

Minutes of 41st meeting of TCC held on 18th March, 2019, were circulated vide letter No. NRPC/Comml/209/RPC(44th)/2019/5266-5360 dated 21st May2019.

No comments have been received.

Members may kindly discuss and confirm the minutes.

C O N F I R M A T I O N O F M I N U T E S (N R P C)

A.2 Minutes of 44th meeting of NRPC

Minutes of 44th meeting of NRPC held on 19th March, 2019, were circulated vide letter No. NRPC/Comml/209/RPC(44th)/2019/5266-5360 dated 21st May2019.

No comments have been received.

Members may kindly discuss and confirm the minutes.

B. OPERATIONAL ISSUES

B.1 Revised System Protection Scheme (SPS) for 765 kV Agra-Gwalior line.

B.1.1 In 41st TCC/44th NRPC meeting,POWERGRID informed that implementation revised SPS for 765 kV Agra-Gwalior line has been completed. Accordingly, it was requested that mock testing for the scheme may be carried out at the earliest in coordination with NRPC/NRLDC and other concerned utilities.

B.1.2 In 158th OCC meeting, it was decided that mock testing of revised SPS scheme would be done on 30.04.2019. The issues of changed feeders in load groups and non-functioning of DTPC at Nara were also discussed in the meeting. It was informed that no changes were made in the load groups and additional load has been wired in H, I, J & K load Group. Utilities were requested to share the inputs regarding load group which may be discussed in next OCC meeting. Accordingly, POWERGRID was requested to resolve the issue of DTPC at Nara S/s and to check the feasibility of replacement of feeders in existing load group of C, D, E & F

B.1.1 In 159th OCC, NRLDC informed that mock testing has been successfully carried out on 01.05.2019 and report of the same has been already circulated. Asdecieded in 159th OCC meeting,a separate meeting was held on 23.05.2019 to discuss about observations in the mock testing report of the NRLDC.The mock testing report is enclosed as **Annexure–IX.**

NRLDC may kindly apprise the committee about the observations in the mock testing report and actions thereof.

B.2 System Study for Capacitor Requirement in NR for the year 2019-20.

B.2.1 **38th TCC and 41st NRPC** approved the proposal of getting CPRI to conduct the capacitor requirement study for NR at 11/33 kV level so as to obtain more practical requirement of capacitor in the region.

B.2.2 **39th TCC and 42nd NRPC** approved the Techno Commercial offer of CPRI at **Rs. 32 lakhs (Rs. 20 lakhs for previous study and Rs. 12 lakhs for additional assignment) excluding taxes** for conducting the capacitor study. In the meeting, format for data submission was shared with the members and they were requested to ensure timely submission of the data so that the study may be carried out in the stipulated time frame.

B.2.3 In the **150th OCC meeting**, members expressed concerns on the nature of the format and submitted that the format being lengthy would require some time for better understanding of the format and submission of data accordingly.

B.2.4 To address the concerns of the members of OCC forum, in the **151st OCC meeting**, representative of CPRI made a detailed presentation explaining the format in the meeting and based on the inputs received from the members, the format was revised and sent to the respective SLDC.Members were also requested to initially fill the data format for any one 220 kV or 132 kV substation and send it to CPRIto check its suitability for utilization in carrying out the study and further action.

B.2.5 In the subsequent **OCC meetings**, all the utilities are being regularly requested for submission of data to CPRI. Initially, sample data was received from **Delhi, Haryana and HP**. After analyzing the sample data, CPRI has reverted to the concerned SLDCs citing anomalies in the sample data submitted to them for rectification. Since then, no utility except Delhi has submitted the rectified sample data to CPRI.

B.2.6 In 157th OCC, it was decided that all utilities shall submit the data to CPRI in the required format by 30th March, 2019, else manpower would be engaged to collect the data. This was discussed in the **41st TCC/44th** NRPC meeting, wherein utilities agreed that sample data would be submitted by the end of March, 2019.

B.2.7 In 159th OCC meeting, it was informed that CPRI has raised some observations on the data submitted by **Punjab**. Punjab was requested to resubmit the data after resolving the observations while other utilites were requested to consider these observations before submitting the data.

Members are requested to kindly deliberate for early submission of data by the utilities.

B.3 Reactive compensation at 220 kV/ 400 kV level.

B.3.1 The following reactors were approved in the 39th Meeting of SCPSPNR held on 29th & 30th May 2017:

a) TCR of capacity 500 MVAr at Kurukshetra 400 kV bus.

b) Bus Reactors at 30 no. 220 kV sub-stations and 18 no 400 kV level sub-stations, subject to the availability of space. It was also agreed that these reactors shall be provided by the owner of the substations.

B.3.2 37th TCC and 40th NRPC meeting approved the reactors as agreed in the 39th meeting of SCPSPNR.The updated status of commissioning of these reactors is placed below:

a) POWERGRID:

500 MVAr TCR at Kurukshetra: Award placed in January 2019 with completion schedule of 22 months. PGCIL representative informed that 11 no. of 400 kV Bus Reactor and 6 no. of 220 kV Bus Reactor, which were earlier informed to be executed through TBCB project has been allotted to PGCIL for execution. Further, NIT for the said reactors has already been floated and Bid Evaluation is under Process. LoA is likely to be placed by end of June 2019. (**Annexure – I**)

b) PSTCL:

Bid validity period was not extended by the bidder for the tenders of 400 kV bus reactor at Dhuri substation and 220 kV bus reactors at Dhuri and Nakodar substations due to pendency in PSDF funding approval. Queries of PSDF have been clarified and delay was due to shortage of funds in PSDF. Process of retendering would be done within 3 months, once funding from PSDF is received.

c) Uttarakhand:

125 MVAr reactors at Kashipur: Financial Bid for 125 MVAr reactor at Kashipur has been opened and is being evaluated. Further it was informed that funding for the reactor will be done through PSDF.

d) DTL:

The updated status of the reactors as received from DTL is placed below. DTL was requested to pre-pone the commissioning schedule before the onset of winter of 2020.

S.No.	Bus Name	Voltage level (kV)	Reactor (MVAR)	Plg. Status
1	Peeragarhi	220	1x50	NIT is unsder approval.
2	Mundka	400	1x125	NIT is unsder approval.
		220	1x25	
3	Harsh Vihar	220	2x50	NIT is unsder approval.
4	Electric Lane	220	1x50	Proposal have been prepared and it would be placed before the Board for approval.
5	Bamnauli	220	2x25	Board approval is not required, however approval of competent authority may be obtained within 1-2 weeks.
6	Indraprastha	220	2x25	Board approval is not required, however approval of competent authority may be obtained within 1-2 weeks.
		TOTAL	**450**	

e) **Rajasthan:**

Item	Background	Status
3 Nos. each of 25MVAR (220KV) reactors for Akal, Bikaner &Suratgarh.	DPR submitted for PSDF funding on 27.04.2018. Reply to the observations of NLDC submitted on 28.07.2018	Approved in the Monitoring Committee of PSDF. Minutes of the Monitoring Committee meeting to be issued.
1 No. of 25 MVAR (220KV) reactor for Barmer& 125 MVAR (400KV) reactor for Jodhpur, included in 450 MVAR (13x25+1x125MVAR) proposal	Revised DPR for 450 MVAR Reactor after separating STATCOM was submitted vide letter dtd. 12.10.2018 to POSOCO for approval.	Clarifications which were sought have been submitted for PSDF funding.

POWERGRID, DTL, PTCUL, Rajasthan and PSTCL may kindly update the status.

B.4 Database of protection settings

B.4.1 Based on the recommendations of Enquiry Committee on grid disturbance of 30th& 31st July 2012, 'Task Force on Power System Analysis under Contingencies' was constituted by Ministry of Power in December 2012, which inter-alia recommended for **creating and maintaining database of relay settings** (to be compiled by CTU and STUs) and furnished to RLDC, SLDC and RPCs.

B.4.2 In the 29th PSC meeting dt. 09.02.2015, POWERGRID suggested a format for preparing a database of protection relays which was acceptable to all constitutes and it was decided that database (password protected) will be available on NRPC website for reference and record.

B.4.3 Protection setting data (for 400kV and 220kV S/S) was sought from the utilities as per the decision taken in 34th TCC/38th NRPC meeting held on 24th / 25th October 2016 and data was received from thirteen utilities (Annex-VI of MoM of 33rd PSC dt. 22.02.2017).

B.4.4 In the 39th NRPC meeting dt. 02.05.2017, approval was given for engaging a third party for protection database creation as the requisite data was not timely submitted by all utilities. Subsequently, based on the presentation and budgetary proposal of a vendor, detailed scope of work along with estimated cost was prepared for initiating PSDF funding.

B.4.5 Grant from PSDF towards Development of Protection Data Base Management System was sanctioned vide NLDC letter dated 01.08.2018 and thereafter open tender was floated on 30.08.2018, wherein only two bids were received. On account of insufficient competition, retendering was done on 17.10.2018, wherein two out of three bidders were found to be not meeting pre-qualification criteria of the tender.

B.4.6 Retendering for the second time was done on 10.12.2018 without any modified condition, in which only two bidders participated. Technical evaluation of bids showed disqualification of one bidder against multiple tender conditions and non-fulfilment of one tender condition by the second bidder. Third call of tender was finally cancelled on 10.05.2019 in view of the outcome of technical evaluation process and the absence of competition in ongoing tendering process.

B.4.7 The scope of work as well as project estimate had been prepared in consultation with one of the bidders and outcome of three calls of tender failed to indicate healthy competition. It is also noted that project components like web-based DBMS, hardware & associated software, database collection & building activities, AMC of hardware & software and data updation services had major share in the total budgetary quotation and there may not be only one or a few vendor(s) to provide these services/components.

B.4.8 In the 8th NPC meeting, held on 30.11.2018, the efforts of WRPC for in-house development of the database was appreciated and NRPC was suggested to seek assistance of WRPC in case no bidders come up after retendering.

B.4.9 In view of the above, it is proposed that activities related to protection setting data (for 400kV and 220kV S/S) may be undertaken by NRPC Secretariat like WRPC instead of engaging an external agency. In this regard, a dedicated Cell comprising of at least 4 officers may be constituted in NRPC Secretariat for which constituents may voluntarily depute their officer (Executive / Assistant Executive Engineer level) on secondment basis for at least oneyear or till database is established, whichever is earlier. The constituted Cell can expedite the collection of balance protection setting data in already decided uniform excel format. Database on open source technology can be developed on NRPC website portal. Authenticity of data (on sample basis) may be done during protection audit. Access for data updation can be given to the concerened utility and viewing rights can rest with other stakeholders.

Members may kindly deliberate.

B.5 Downstream network by State Utilities from ISTS Stations

B.5.1 Augmentation of transformation capacity in various existing substations as well as addition of new substations along with line bays for downstream network are under implementation at various locations in Northern Region. For utilization of these transformation capacities, implementation of downstream 220 kV system needs to be commissioned:

S. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
1	400/220 kV, 3x315 MVA Samba	2 nos. bays utilized under ISTS. Balance 4 nos to be utilized	Commissioned (1st& 2nd –Mar'13 3rd –Oct'16) Bays-Mar'13	• LILO of 220 kV Bishnha –Hiranagar D/c line. Target completion -Nov, 2019. • 220 kV D/c Samba (PG) – Samba (JKPDD) approved in 1st NRSCT. **PDD, J&K to update.**
2	400/220kV, 2x315 MVA New Wanpoh	6 Nos. of 220 kV bays to be utilized	Commissioned in Jul'14 Bays-Jul'14	• 220 kV New Wanpoh - Mirbazar D/c line. Target completion – March, 2019. • 220 kV Alusteng - New Wanpoh Line. Target completion - March, 2019. **PDD, J&K to update.**

S. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
3	400/220 kV, 2x315 MVA Parbati Pooling Station (Banala)	2 Nos. of 220 kV bays to be utilized.	Commissioned in Dec'17	• 220 kV Charor- Banala D/c line (18 km). Target completion –Dec'18. **HPSEBL to update.**
4	400/220 kV, 2x500 MVA Kurukshetra (GIS)	8 nos. of 220 kV bays to be utilized	Commissioned in Mar'17.	• LILO of one circuit of Kaul-Pehowa 220 kV D/c line at Bhadson (Kurukshetra). **Commissioned on 07.03.2019.** • LILO of one circuit of Kaul-Bastara 220 kV D/c line Bhadson(Kurukshetra). **Work awarded on 12.03.2018.** **Contractual completion date is 11.102019.** • 220kV D/c Bhadson (Kurukshetra) – Salempur with HTLS conductor equivalent to twin moose. **P.O issued on 15.10.18.** **Contract agreement signed on 30.11.2018. Likely date of completion 30.04.2020.**
5	400/220 kV, 2x500 MVA Bagpat GIS	8 nos. of 220 kV Downstream lines commissioned. Balance 3 Nos. of 220 kV bays to be utilized.	Commissioned in Mar/Jun'16	• Bagpat(PG) - Modipuram-II 220 kV D/c line. Target completion - Jan'20. • LILO of 220 kV S/c Muradnagar II –Baghpat (PG) at Baghpat SS. Target completion- Mar'19 **UPPTCL to update.**
6	400/220 kV, 2x315 MVA Saharanpur	All 6 nos. 220 kV bays utilised.	Commissioned in May'16	• LILO of Khara-Shamli 220 kV S/C line at SRN(PG). • 220 kV SRN(PG)-Sarasawa D/C Line. • LILO of SRN-Nanauta 220 kV S/C line at SRN(PG). **UPPTCL to update.**
7	400/220 kV, 2x315 MVA Dehradun	Out of 6 bays, only two bays	Commissioned in Jan'17	• 220 kV Dehradun-Jhajra line. Target completion: Nov, 2021

S. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
		used. Balance 4 bays to be utilised.		**PTCUL to update.**
8	400/220 kV, 2x315 MVA Sohawal	4 Nos 220 kV bays utilized. 2 Nos 220 kV bays to be utilized.	Commissioned in Jun'12	• 220 kV D/C Sohawal (PG) – New Tanda line. Target completion- Dec, 2018. **UPPTCL to update.**
9	Shahjahanpur, 2x315 MVA 400/220 kV	Partially utilized. Balance 5 Nos. of 220 kV bays to be utilized.	Commissioned in Jun/Sep'14	• 220 kV D/C Shajahnapur (PG) - Azizpur D/C line. Target completion - Sept, 2019. • 220 kV D/C Shahajahanpur (PG) - Gola Lakhimpur line. Target completion - Sep, 2019. **UPPTCL to update.**
10	02 nos. bays at Moga	Partially utilized. Balance 2 nos. of 220kV bays to be utilized.	Commissioned in Jun'15.	• Moga–Mehalkalan 220 kV D/c line. Target completion - Dec'18. **PSTCL to update.**
11	Hamirpur 400/220 kV 2x 315 MVA Sub-station (Augmentation by 3x105 MVA ICT)	2 nos. bays utilized under ISTS. Balance 6 nos to be utilized	1st-Dec'13, 2nd – Mar'14 & 3rd Mar'19. 4 bays-Dec'13, 2 bays-Mar'14 2 bays-Mar'19	• 220 kV D/C Hamirpur-Dehan line. Target completion - Apr, 2020. **HPSEBL to update.**
12	Kaithal 400/220 kV 1x 315 MVA Sub-station	July 2017 (Shifting of transformer from Ballabhgarh)	Commissioned	• 220 kV Kaithal(PG)-Neemwala D/c line. Target completion - 31.01.2020. • Work awarded on 08.06.2018. Contractual completion date is 06.01.2020.
13	Sikar 400/220kV, 1x 315 MVA S/s	2 Nos. of 220 kV bays	Commissioned	RVPNL requested to allocate the 220 kV bays for solar / wind developers or utilise for any other purpose. CTU stated that these bays were implemented on the request from RVPNL, however, allocation of these

S. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
				bays to RE developers can be considered in future depending on the stage-II application received at Sikar. • **RRVPNL to update.**
14	Bhiwani 400/220kV S/s	6 nos. of 220kV bays	Commissioned	• 220kV Bhiwani (PG) - Isherwal (HVPNL) D/c line. Target completion - 31.06.2020. • Price bid opened on 27.12.18. • Case scrutinized and sent to DS&D for placing in the next HPPC meeting for decision regarding award. • Likely date of award is 30.06.2019. • Likely date of completion is 31.12.2020.
15	Jind 400/220kV S/s	6 nos. of 220kV bays	Commissioned	• LILO of both circuits of 220kV D/c Narwana – Mund line at Jind (PG). Target completion - 31.06.2020. • Price bid opened on 27.12.18. • Case scrutinized and sent to DS&D for placing in the next HPPC meeting for decision regarding award. • Likely date of award is 30.06.2019. • Likely date of completion is 31.12.2020.
16	400/220kV Tughlakabad GIS (6 no of bays utilized out of 8 no of 220kV bays)	4x 500	Commissioned	• RK Puram – Tughlakabad (UG Cable) 220kv D/c line. Target completion – 2020-21. • **DTL to update.**
17	400/220kV Kala Amb GIS (TBCB) (6 nos. of 220kV bays)	7x105	Commissioned (Jul'17)	HPSEBL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s. Details for remaining 4 nos. of line bays may be provided. • **HPSEBL to update.**

S. No.	Substation	Downstream network bays	Commissioning status of S/s / Transformer	Planned 220 kV system and Implementation Status
18	400/220kV Sikar S/s	2 nos. of 220kV bays	Commissioned	• **RVPN to update.**

Members may kindly update the status and expedite the downstream system.

B.5.2 **Establishment of new 400/220kV substations in Northern Region**

Sl. No.	**Name of Substation**	**MVA Capacity**	**Expected Schedule**	**Downstream connectivity furnished by States in 40th SCPSPNR**
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Sep'19	**DTL to update.**
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Jun'19	**Chandigarh to update.**
3	400/220kV Jauljivi GIS Out of these 8 nos. 220kV Line Bays, 4 nos. (Pithoragath-2, & Dhauliganga-2) would be used by the lines being constructed by POWERGRID and balance 4 nos. (Almora-2, Jauljivi-2) bays would be used by the lines being constructed by PTCUL.	2x315	Dec'2019	• 220kV Almora- Jauljivi line. • 220kV Brammah-Jauljivi line **PTCUL to update.**
4	400/220kV Sohna Road Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	• LILO of both circuits of 220kV D/c Sector-69 - RojKaMeo line at 400kV Sohna Road. NIT to be floated shortly. Case processed for permission of Election Commission of India. • LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road. NIT to be floated shortly. Case processed for permission of Election Commission of India. Alternatively, to expedite the evacuation of power, the proposal for execution of work through EPC

				contractor M/s R S Infra at the rates defined in another contract is under process and deliberated in the HVPNL's internal review meeting dt. 24.04.19.
5	400/220kV Prithla Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	• LILO of existing 220kV Palwal–RangaRajpur D/c line at Prithla. Work awarded on 22.10.2018. Contractual completion date is 08.02.2020. • 220 kV D/c Prithla (400) –Sector-78, Faridabad S/s. Dropped in the HPPC (High Powered Purchase Committee) in meeting dt. 22.01.2019. Work refloated vide NIT dated 25.02.2019. 1st part opened on 27.03.2019 and under evaluation.
6	400/220kV Kadarpur Sub-station (TBCB) (8 nos. of 220kV bays)	2x500	May'19	NIT floated on05.03.2019 with due date of submission on 22.04.2019 (opened on 23.04.2019 and under evaluation).

States are requested to kindly update the details of planned downstream network along with implementation status for utilisation of the ISTS substation.

B.6 Certification of 220KV D/C Charor-Banala line under construction by HPPTCL as Deemed ISTS (Agenda by HPPTCL)

B.6.1 HPPTCL is constructing 17.6km long transmission line (Twin Moose,200kv D/C), from 220/132KV substation of HPPTCL at Charor to 400/220KV Banala (Parbati pooling station) substation of PGCIL in Distt. Kullu for power evacuation of Malana-II HEP and small HEPs in Parbati river basin. Currently, the power of Malana-II (100MW) HEP is being evacuated through 220KV line of AD Hydro upto 400/220KV Nalagarh substation of PGCIL as an interim arrangement.

B.6.2 In the 30th Standing Committee Meeting on Power system Planning-Northern Region held on 20.1.2012, it was decided to construct separate 220kV D/C line from Charor to Parbati Polling station,Banala enabling injection of power from Malana-II HEP as the present evacuation system was not n-1 compliant. It was also decided to construct another 220kV line for evacuation of power of small HEPs.

B.6.3 In 31st Standing Committee Meeting, HPPTCL informed that only one 220kV line can be constructed from Charor to Parbati Pooling station due to ROW constraints. Accordingly, it was decided that only one 220KV D/C line with Twin Moose conductor shall be constructed to evacuate power of 100MW Malana-II and small HEPs.Accordingly, a group was constituted to recommend a methodology for the study to be conducted by NRPC Secretariat, in consultation with RLDC every year to calculate utilization of these lines for inclusion in PoC charges. As per the recommendations of the group, certification of state owned transmission lines (Non-ISTS) carrying ISTS power will be valid for 01 year and the claims/ re-claims for certification for the next financial year will have to be submitted by the **end of December of every year**.

B.6.4 The 220KV Charor-Banala transmission line will terminate at Charor substation of HPPTCL, which is adjacent to M/s EPPL's CharorSubsation, on the completion of the same. The 220KV D/C Charor-Banala Transmission line of HPPTCL is expected to be completed by mid of June 2019. On completion, Charor-Banala line shall replace the LILO of AD Hydro near M/s EPPL's Charor substation. The existing, proposed and final evacuation arrangement for Malana-II HEP and other small HEP's in the Parbati river basin is depicted as **Annexure-II**.

B.6.5 In this context HPPTCL had taken up the matter with NRLDC vide letter no. HPPTCL/C&M/ISTS-Proj/2018-19-16930-31 to certify this line as ISTS line. Since, Malana-ll HEP has long term PPA with PSPCL and LTA at PGCIL, Nalagarh for power evacuation. After completion of 220KV transmission line by HPPTCL from Charor to Banala, Malana-II HEP will be connected to HPPTCL Transmission line near Charor which is then terminated at 400/220KV Parbati Pooling station at Banala, PGCIL a part of ISTS and the LTA currently given at Nalagarh shall shift to Banala substation of PGCIL.

B.6.6 Charor-Balana 220KV D/C transmission line has been constructed for power evacuation and there are no drawl points or interfaces of distribution network and other intra-state transmission system at Charor substation. Based on above facts, HPPTCL feels that line qualifies as interstate. It is also pertinent to mention that scheduling of Malana-II HEP is being done as per PSPCL requirement and this power flow is essentially interstate in nature.

Members may kindly deliberate and recommend this line as deemed ISTS so that tariff petition of this asset of HPPTCL can be filed In CERC for recovery of changes.

B.7 RVPNL owned line connected directly to ISGS for certification as ISTS (Agenda by RVPNL)

B.7.1 Following intra–state transmission lines of RVPN were included in the list of **RPC certified lines before notification of the CERC (Sharing of Transmission Charges and losses) Regulation 2010**, same was intimated vide letter No. NRPC/SE(O)/RTA/2011-12 dated 8th June 2011:

S.No.	Name of transmission line	Line Length	Inter State Generating Station
1	220 kV S/C Anta-Kota line	67 kms.	Anta GTPP
2	220 kV RAPP(B)-Kota	44 kms.	RAPP(B)
3	220 kV RAPP(B)-RAPP(A)		RAPP(B)

B.7.2 In this regard, at item no. B.33 regarding "Certification of Non-ISTS lines for inclusion in PoC Charges" in the MOM of 40th TCC & 43rd NRPC meeting held on 29th and 30th October, 2018, the aforesaid lines were not certified as ISTS as they did not fulfill the criteria (as finalized by the Group) i.e. on the basis of average % utilization.

B.7.3 RVPN vide its letter No.1388 dt.27.12.18 had intimated NRPC that above 3 lines are emanating from ISGS and have already been certified by RPC before the notification of the CERC Regulation 2010 vide letter No. NRPC/SE(C)/RTA/2011-12 dtd. 8.06.2011. Therefore, as per CERC Regulation 2015, these lines do not need certification on the basis of % utilization appearing in POSOCO load flow studies.

B.7.4 It is further to intimated that Rajasthan has been receiving PoC charges for these lines from 2010-11 to 2017-18. Member Secretary, NRPC has been requested for reconsideration of above lines as ISTS have already been made vide this office letters No.1620 Jaipur dt.14.02.19 and D.55 dt.15.04.2019, but the certification of above lines has not been made.

Members may kindly deliberate for considering the above lines to be certified as ISTS.

B.8 Phase nomenclature mismatch between BBMB and some interconnected stations of other power utilities

B.8.1 In the 34thPSC meeting, the issue of mismatch of phase sequence nomenclature of BBMB system interconnected with other utilities was highlighted.

B.8.2 The issue was further deliberated in the 138th OCC meeting held on 23.08.2017, wherein it was observed that nomenclature of phases at BBMB end has inadvertently been marked as:

Phase of the grid	Corresponding nomenclature of the phase at BBMB end
R Phase	B Phase
Y Phase	R Phase

B Phase	Y Phase

B.8.3 To resolve the issue, in the 38th TCC / 41st NRPC meeting it was decided that a committee would be formed to comprising of BBMB constituent states, utilities with which BBMB system is interconnected, NRPC Sectt and POWERGRID.

B.8.4 BBMB drew a draft action plan**(**Annexure B.8.1 of agenda of 40th TCC/43rd NRPC meetings**)** which was duly deliberated by the Committee in its 1stmeeting held on 04.06.18 and was circulated to all the concerned utilities for their comments. The execution of the action plan is tentatively planned during month of November-December, 2018.

B.8.5 HPSEB and PSTCL are in agreement with the action plan proposed by BBMB. However, NTPC and POWERGRID had some comments on the same. BBMB has agreed with the comments from NTPC and has decided to modify their action plan as per the demands of NTPC.The reply of BBMB vis-à-vis the comments of POWERGRID were deliberated in the 151st OCC meeting wherein members were of the view that reply of BBMB was generally in order. However, POWERGRID representative stated that the matter pertains with NR-I and NR-II region of POWERGRID and final decision regarding the same is to be taken up at the level Executive Directors of respective regions. Accordingly, the matter was taken up on 07.10.2018 for POWERGRID consent to the action plan

B.8.6 Although tentative dates for conducting site visits at Bhiwani, Rajpura, Panchkula&Panipat S/s were planned during 154th to 157th OCC meetings; however, committee could not make site visit. In the 41st TCC & 44th NRPC meeting, held on 18th & 19th March 2019, POWERGRID representative stated that there might be some issues in the work such as design constraint of tower, de-stringing and re-stringing of conductors etc. which would be clarified at the time of site visit and decision of committee would be implemented.

B.8.7 Accordingly, a site visit was held on 27.05.2019 and 28.05.2019 to resolve the issues at Bhiwani, Rajpura, Panchkula&Panipat S/s. The MoM of the site visit is enclosed as **Annexure-**III.

POWERGRID & BBMB may kindly apprise the committee regarding recommendations of committee after site visit.

B.9 Follow up of Major Decisions of NRPC

Sl. No.	Name of the project / decision taken	Meeting in which approval was granted/ decision was taken	Updated Status
1.	Provision of Bus Reactors in Northern Region to Control OverVoltages	Provision of Bus Reactors in Northern Region to Control Over Voltages	Out of 17 no. reactors at 15 locations, 12 no. reactors at 10 locations have been commissioned. The status of reactors was as under: • **Nathpa-Jhakri(1x80 MVAr):** Scheduled Commissioning – yet to be updated. • **Chamera-I (1x125 MVAr):** Charged on 25 August 2018 • **Parbati-II (1x125 MVAr) and Parbati-III (1x80 MVAr):** NHPC informed that there is no space at Parbati-III and as such reactors will be installed at Parbati- II. Reactors at Parbati-II will be commissioned along with the commissioning of the project in 2018-19. The case for purchase of reactor is under tendering process.
2.	Transmission system associated with Kishenganga HEP. Kishenganga – Wagoora 220 kV D/c	33rd Standing Committee Meeting held On 23/12/2013	POWERGRID had informed that completion schedule of Transmission system associated with Kishenganga HEP had been delayed due to unrest in Kashmir. The revised schedule was: Kishenganga – Wagoora 220kVD/c line - (expected by **April, 2019**)

Sl. No.	Name of the project / decision taken	Meeting in which approval was granted / decision was taken	Updated Status
3.	Unified Real Time Dynamic State Measurement (URTDSM) Scheme.	Approved in 27th NRPC meeting held on 13th July, 2012 & 30th November, 2012	• Supply: Completed (114 Sub-stations). • PMUs at 112 S/S have been installed and 102 S/S are integrated with NRLDC/SLDCs. • WAMS System Commissioned in NRLDC & SLDCs of Northern Region. • Out of 6 Analytic Software which are being developed by IIT Bombay, 4 have been deployed at NRLDC, Prototype for one application is being tested and remaining one is under development. • In 41st TCC/44th NRPC, NRLDC informed that bugs are being observed in software and they are still in testing version. • POWERGRID informed that software was rectified in SR and 5 out of 6 are expected to be functional in NR by April, 2019. • Installation of Line Parameter Estimation, Vulnerability Analysis of Distance Relay, Supervised Zone-3 Distance Protection, Linear State Estimator is done for NRLDC & Delhi, installation at SLDCs under progress. • Out of 6 Analytic Software which are being developed by IIT Bombay, 4 have been deployed at NRLDC, Prototype for one application is being tested and remaining one is under development. • In 41st TCC/44th NRPC, NRLDC informed that bugs are being observed in software and they are still in testing version

Sl. No.	Name of the project / decision taken	Meeting in which approval was granted / decision was taken	Updated Status
			• POWERGRID informed that software was rectified in SR and 5 out of 6 are expected to be functional in NR by April, 2019. Installation of Line Parameter Estimation, Vulnerability Analysis of Distance Relay, Supervised Zone-3 Distance Protection, Linear State Estimator is done for NRLDC & Delhi, installation at SLDCs under progress.
4.	Fiber Optic based communication system in NR and Additional OPGW connectivity in Northern Region under **Fiber optic expansion project**	18th NRPC meeting held on27th November 2010 and 28th NRPC meeting held in 22ndMarch 2013.	• Fibre Optic Connectivity under Central sector (5193/5203 Kms) has been completed. Uri-Uri-II link (10kms) could not be completed due to severe ROW issues. • OPGW connectivity under State Sector & Additional requirement of Central Sector is under progress and same shall be completed progressively. **NR-I & NR-III :** State Sector Completed - 621 Kms • Central Sector (Addi. Req): 1350 Kms out of 1643 completed.
5.	Third party Protection audit of intra-state system / balance system not covered in Basic Protection Audit	27th NRPC meeting held on 30th November 2012.	• In 40th TCC/ 43rd NRPC meeting, representative of UPPTCL informed that CPRI is working on this and detailed report will be submitted by June, 2019.

Sl. No.	Name of the project / decision taken	Meeting in which approval was granted / decision was taken	Updated Status
6.	Planning, procurement and deployment of Emergency Restoration System	In the 34th NRPC meetings 20th held on March, 2015	• **DTL, PSTCL, UPPTCL and J&K** - 02 nos. of ERS procured. • **RRVPNL** - Rajasthan informed that NIT has been floated on 10.01.2019 for procuring ERS and bids were opened on 10.03.2019 for technical evaluation. • **HVPNL**–Under Tendering. • **PTCUL** - DPR finalization is under process • **HPSEBL** - Matter under consideration regarding fund availability.

B.10 Connectivity to Naitwar Mori HEP (NMHEP) (2X30MW) of SJVN Ltd. in Uttarakhand (Agenda by SJVN)

B.10.1 CTU vide their office letters dated 16.10.2017 & 20.12.2018, has issued the Grant of Connectivity & its revision for NMHEP, wherein it is mentioned that the Tripartite Transmission Agreement is required to be signed within 30 days among SJVN, PTCUL and CTU, failing which the granted connectivity may be liable for revocation.

B.10.2 Further, CTU vide their office letters dated 20.12.2018 & 04.01.2019, has also Granted the Long Term Access (LTA) & its revision for NMHEP, wherein it is also mentioned that the LTA applicant shall enter into tripartite Long Term Access Agreement (LTAA) with CTU and PTCUL within 30 days of the LTA intimation, in default of which the LTA may be liable for revocation.

B.10.3 In compliance of aforesaid timelines, the Tripartite Transmission Agreement (TTA) & Tripartite LTA Agreement (TLTAA) have been signed between SJVN & CTU on 16.01.2019. However, PTCUL has not turned up for signing of same in spite of request made by SJVN & CTU. SJVN vide letter dated 31.01.2019 has again requested PTCUL to sign the Tripartite Transmission TA & Tripartite LTA Agreement, already signed by CTU & SJVN.

B.10.4 Further, as per the minutes of meeting of 9th & 10th Meeting of Northern Region constituents regarding Connectivity / LTA Applications held on 30.05.2016 & 30.05.2017, SJVN is required to sign Implementation Agreement with PTCUL in line with 4th amendment to CERC (IEGC) Regulations.

B.10.5 As per detailed procedure of CERC Connectivity Regulations and sr. no. 2 of Note of FORMAT CON-3 (Intimation for grant of Connectivity) issued by CTU on 16.10.2017, the Bank Guarantee should be made in favour of PTCUL within one month of signing of Transmission Agreement. On signing of Tripartite Transmission Agreement (TTA) & Tripartite LTA Agreement (TLTAA) by PTCUL, SJVN will provide the Bank Guarantee (BG) in favour of PTCUL.

B.10.6 The issue was also discussed in 41stTCC /44thNRPC meetings held on 18th& 19th March, 2019 wherein, representative of POWERGRID informed if PTCUL was in disagreement with the minutes of the meeting held in CEA on 12.09.2018, then they may approach CERC and representative of PTCUL agreed that they would discuss with CTU and SJVN to resolve the issue at the earliest.

B.10.7 However, till date PTCUL has not approached to SJVN for the discussion on signing of Tripartite Agreements and construction Transmission line from location of Mori Sub-Station to Dehradun.

Members may impress upon PTCUL for early discussion with SJVN & CTU.

B.11 Training Programme/Workshop on Protection system Auditors from CPRI.

B.11.1 In 36th PSC meeting held on 19.09.2018, a proposal from Power System Division of Central Power Research Institute for conducting 3 days Training Programme/Workshop at Bangalore on Protection Audit for Protection System Engineers was discussed. They have proposed training at 10,500 per participant exclusive of taxes. Participants have to make their own boarding and lodging arrangements. PSC recommended the training programmed to be organized by CPRI.

B.11.2 The proposal of training programmes was also deliberated in 40th TCC/43rd NRPC meeting held on 29th /30th October, 2018 at Amritsar, Punjab wherein NRPC approved the proposal of carrying out 3 days Training programme on Protection audit at Bangalore through CPRI for 60 nos of participants from utilities of NR.The expenditure on training will be booked in NRPC fund.

B.11.3 Thereafter, NRPC sect. has conveyed the acceptance of offer letter for training programmes to CPRI. Further, CPRI has proposed to organize training in 2 batches of 30 participants. Accordingly, training programme for 1st batch of participants has been heldsuccesssfully from 27th to 29th March, 2019 at Bangalore. The 2nd batch is proposed to be held in the month of June/July, 2019.

Members may kindly send nominations for the 2nd batch training programme.

B.12 Cyber Security Preparedness Monitoring

B.12.1 In the 37thTCC and 40thNRPC meeting Chief Information Security Officer (CISO), MoPgave a detailed presentation on potential cyber threats for power sector along with cyber incidences and shared the desired action points to counter cyber threat. All utilities were also requested to monitor actions being taken in regard to the following points and report the status:

a. Appointment of organization-wise Chief Information Security Officers and its status.

b. Identification of organization-wise Critical Infrastructure and its status.

c. Preparation of organization-wise Crisis Management Plan and its status.

d. Status of Cyber Security Mock Drill activity in coordination with CERT-In.

e. Status of Training / Workshops on Cyber Security organized / participated by power sector entities.

f. Status of action taken on CERT-In / NCIIPC advisories.

B.12.2 In the 159th OCC meeting, POWERGRID representative informed that VAPT of IT equipment has been done. For SCADA system, only VA is being done. Regarding the draft CMP to be prepared by POWERGRID, it was informed that the comments received from CERT-In are being incorporated and the same shall be finalised by next OCC.

POWERGRID may update the status about draft CMP.

Rajasthan: The award for complete cyber security layer under ICT infrastructure is already made and execution is being done. The third party checking/ assessment of the layer is also in the scope of the contractor.

BBMB: VAPT of ICT network related to BBMB Power System is being done on annual basis. Last VAPT was conducted on 8th January, 2019. Next VAPT is due in January, 2020.

All other utilities are requested to intimate the status of VAPT conducted in their respective organization and VAPT plan for the future.

B.13 OPGW connectivity at NHPC power stations under central sector scheme (Agenda by NHPC)

B.13.1 URI-II power station: During 41st TCC and 44th NRPC held on 18th& 19th March 2019, representative of POWERGRID informed that they have exhausted options for URI-II and alternate mode of communication like V-SAT would be implemented which would be booked under ULDC scheme.

B.13.2 Parbati-III: During 41st TCC and 44th NRPC held on 18th& 19th March 2019, representative of POWERGRID informed that RoW issue has been resolved and it is expected to be completed by June 2019.

B.13.3 Sewa-II: During 41st TCC and 44th NRPC held on 18th& 19th March 2019, J&K was requested to resolve the payment issue at the earliest so that OPGW work could be completed at Sewa-II power station.

POWERGRID may update the status.

B.14 Delay in laying of OPGW through PGCIL (Agenda by PSTCL)

B.14.1 There has been inordinate delay by PGCIL, in carrying out the diversion work of OPGW on Lalton Kalan--Sahnewal line. Although, Amount of Rs. 5,82,000/- as sought by PGCIL was deposited in its Account by PSTCL on dated 25.04.2019, but, work could not be commenced till 10.05.2019(Annexure-IV). Due to long delay, tripping occurred 4-5 times on said line as during de-stringing of OPGW, it was kept loose in cross arm of towers and consequently it touched the conductor during storm/heavy winds. Therefore,

PGCIL is requested to avoid such delays in future.

B.15 Establishment of State of the Art Unified Centralized Network Management System (U-NMS/ Meta NMS/ OSS) for ISTS Communication Network by CTU. (Agenda by POWERGRID)

B.15.1 CERC notified Communication Regulation in May'17 and it envisages Centralized Supervision System for ISTS Communication. As per the regulation clause no 7.2 (vii),:
"CTU shall be the Nodal Agency for supervision of communication system in respect of inter-State communication system and will implement centralized supervision for quick fault detection and restoration."

B.15.2 Further, in line with regulation provisions of Centralized NMS and Centralized Monitoring by integrating it's NMS with other users NMS has been kept in the documents of Technical standard & Manual of Communication Planning Criteria being finalized by CEA. In addition to this guideline on availability of Communication system for ISTS has been submitted to CERC by CEA for which centralized NMS/OSS is considered essential.

B.15.3 Accordingly, CTU is to implement State of the Art Unified Network Management System (U-NMS) in a Control Center environment at National/Regional level with 24x7 shift operation.

B.15.4 The U-NMS is proposed to be deployed in all the RLDCs with Servers, Storage Devices, Switches, Routers, Firewall, Remote workstations, VPS etc. in Dual LAN in main and backup configuration. Further, to manage inter-regional communication and also with neighboring countries it is proposed to establish U-NMS at National setup also.

B.15.5 The proposed U-NMS shall acquire data directly from existing NMS and also from nodes not integrated with existing NMS for all ISTS communication links. Adequate provision shall be made to integrate upcoming nodes by having sufficient capacity i.e. 200%. It will be possible to integrate different make NMS and Network Elements with the proposed U-NMS/OSS.

B.15.6 Following functions (Service Assurance, Service Fulfillment, Web Consoles, Ticketing etc) are envisaged in the proposed U-NMS/OSS:-

a) Facility for discovering in Auto and Manual mode, the existing network, service/circuit, topology and logical & physical network inventory.

b) Facility for design, assign, activation, provisioning, configuration re-engineering the system is to enable process activation of new services in the communications networks.

c) Facility of Fault Management is to recognise, isolate, event, alarm, log and identify fault on network and connected machines, nodes, devices.

d) Facility of Performance Management to technologies like transport technologies (SDH, PDH) and MPLS.

e) Facility for Authentication, Authorization, administration and Audit of user accessing the U-NMS/OSS.

f) Facility for trouble ticketing, SLA management, performance management, availability report, order management, inventory management, reporting and dashboards in single window, single URL and single user authentication**.**

U-NMS PROJECT PROPOSAL:

1) Control Centre (Main & Backup Config): **6 Nos**.(5 Reg& 1 National)
2) Estimated cost: **Rs. 600 Cr.** (excluding AMC cost and Civil Works)
3) Implementation Time (from date of Investment Approval): **2 Years (24 months)**

The scheme shall be implemented by POWERGRID on tariff route basis and investment to be recovered as per CERC notification.

Members may deliberate the scheme for consideration of approval.

B.16 Augmentation of transformation capacity in Northern Region: (Agenda by POWERGRID)

B.16.1 This scheme involves augmentation of transformation capacity at existing ISTS substations based upon operational constraints & requirement of system:

- 1x500MVA, 400/220kV ICT (3rd) along with ICT bays 400kV Saharanpur (PG) S/s

B.16.2 1x500MVA, 400/220kV ICT (5th)along with ICT bays 765/400/220kV Bhadla (PG) S/sAugmentation of transformation capacity at Saharanpur (PG) has been discussed and agreed in 40th meeting of Standing Committee of Power System Planning of NR held on 22.06.2018.

B.16.3 Augmentation of transformation capacity at Bhadla (PG) has been discussed and agreed in 1st NRSCT meeting held on 11.09.2018. The above scheme is proposed to be implemented under NRSS-XL.

Memebrs may kindly deliberate.

B.17 2 nos. of 400kV line bays (GIS) at 400kV Chamera (PG) S/s (Agenda by POWERGRID)

B.17.1 This scheme involves implementation of 2 nos. of 400kV line bays (GIS) at Chamera Pooling Station (GIS) for termination of Lahal (HPPTCL) – Chamera 400kV D/c line under ISTS and to be implemented under NRSS-XLI.

B.17.2 This scheme has been discussed and agreed in 40th meeting of Standing Committee of Power System Planning of NR held on 22.06.2018.

Memebrs may kindly deliberate.

B.18 2 nos. of 220kV line bays at 400kV Samba (Jatwal) (PG) S/s (Agenda by POWERGRID)

B.18.1 This scheme involves implementation of 2 nos. of 220kV line bays at Samba (PG) S/s for termination of Samba (Jatwal) (PG) S/s – Samba (JKPDD) 220kV D/c line under ISTS and to be implemented under NRSS-XLII.

B.18.2 This scheme has been discussed and agreed in 1st NR Standing Committee on transmission (SCT) held on 11.09.2018.

B.18.3 The above schemes (mentioned at Sr. No. 2, 3 & 4) were taken up for discussion in 44th NRPC meeting held on 19.03.2019 wherein POWERGRID was advised refer issues related to transmission planning, if any, to Member (Power System), CEA first. Subsequently, the matter was discussed in 3rd NRSCT meeting held on 24.05.2019 (MOM awaited) wherein it was discussed that the schemes have already been agreed in previous Standing committee meetings, the matter may be taken up in next NRPC meeting for approval.

Memebrs may kindly deliberate.

B.19 Transmission system for Solar Energy Zones in Rajasthan (Agenda by POWERGRID)

B.19.1 In the 2nd NR SCT meeting held on 13.11.18, transmission scheme for Solar Energy Zones (8.9 GW) in Rajasthan was technically agreed. Earlier, transmission scheme for integration of envisaged RE generation capacity in Solar & Wind Energy Zones including transmission scheme for Solar energy Zones in Rajasthan was discussed in 1st NR SCT meeting. Subsequently, in 2nd NR SCT, the scheme was reviewed based on present Stage-II/LTA applications (3.1 GW) in Bhadla/Fatehgarh/Bikaner complex as well as future solar potential (5.8 GW) of theses complexes. After detailed deliberations in 2nd NR SCT, following system was technically agreed for evacuation of 8.9 GW Solar power from Bhadla/Phalodi (3.55 GW), Fatehgarh (3.5 GW) & Bikaner (1.85 GW) complexes. Following scheme was agreed to be implemented in two parts viz. Part-A and Part-B:

Transmission system for Solar Energy Zones in Rajasthan

Part A

i. Establishment of 765/400kV, 2x1500MVA pooling station at suitable location near Phalodi/ Bhadla in Jodhpur (Bhadla-II PS)**
ii. Establishment of 765/400kV, 2x1500 MVA S/s at suitable location near Khetri
iii. Augmentation of transformation capacity at Bhadla (PG) by 400/220kV, 2x500MVA (6th & 7th) transformers
iv. LILO of both circuits of Ajmer–Bikaner 765kV D/c line at Bhadla-II PS
v. Bhadla-II PS–Bhadla (PG) 400kV D/c Line (Twin HTLS)*
vi. Bikaner(PG)–Khetri S/s 765kV D/c line
vii. Khetri – Jhatikara 765kV D/c line
viii. Khetri – Sikar (PG) 400kV D/c line (Twin AL59)
ix. Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Moga S/s
x. Augmentation with 765/400kV, 1x1000MVA, transformer (3rd) at Bhiwani (PG) S/s

xi. Establishment of 765/400kV, 3x1500MVA pooling station at suitable location near Fatehgarh in Jaisalmer Distt (Fatehgarh-II PS)**

xii. Fatehgarh-II PS– Bhadla -II 765kV D/c line

xiii. LILO of both circuits of Fatehgarh (TBCB) – Bhadla (PG) 765 kV D/c line (op. at 400kV) at Fatehgarh-II PS so as to establish Fatehgarh (TBCB) – Fatehgarh -II 765 kV D/c line (to be op. at 400kV) and Fatehgarh-II-Bhadla (PG) 765kV D/c line

xiv. Charging of Fatehgarh-II PS –Bhadla section at 765kV level

xv. Ajmer (PG)– Phagi 765kV D/c line

xvi. 1x125 MVAr (420kV), 2x240 MVAr (765kV) Bus Reactor each at Fatehgarh-II PS, Bhadla-II PS &Khetri Substation

xvii. 1x240 MVAR Switchable Line reactors for each circuit at Jhatikara end of Khetri – Jhatikara 765kV D/c line

xviii. 1x240 MVAr Switchable line reactor for each circuit at each end of Bikaner – Khetri 765kV D/c line

xix. 1x330 MVAr Switchable line reactor for each circuit at Bhadla-II PS end for Ajmer - Bhadla-II PS 765kV line (after LILO)

xx. 1x240 MVAr Switchable line reactor for each circuit at Bhadla-II PS end for Bikaner-Bhadla-II PS 765kV line (after LILO)

%With Charging of Fatehgarh-II –Bhadla (PG) section at 765kV level, 2 nos. of 400kV spared bays at Bhadla (PG) S/s, which could be utilized for 400kV Bhadla-II – Bhadla (PG) D/c line (Twin HTLS)

**Space provision to be kept for 220kV level

Part B

Augmentation works to be taken up in above scheme after receipt of Stage-II connectivity/LTA applications at Fatehgarh-II PS, Bhadla-II PS & Bikaner (PG) S/s in Rajasthan (400/220kV ICT shall be taken up in progressive manner commensurate to stage-II connectivity/LTA applications on above pooling stations)

i. Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Bhadla-II PS

ii. Creation of 220 kV level at Bhadla-II PS with Installation of 400/220kV, 5x500MVA transformers at Bhadla-II PS*

iii. Augmentation with 765/400kV, 1x1500MVA transformer (4th) at Fatehgarh-II PS

iv. Creation of 220 kV level at Fatehgarh-II with Installation of 400/220kV, 5x500MVA transformers at Fatehgarh-II PS

v. Creation of 220 kV level at Bikaner (PG) with Installation of 400/220kV, 2x500MVA transformers at Bikaner (PG)*

vi. 220kV line bays for interconnection of solar projects at Fatehgarh-II PS (9 nos), Bhadla-II PS (9 nos) and Bikaner (4 nos) S/s

*220kV side will be implemented with hybrid (AIS+GIS) technology

Subsequently, based on the discussion in 2nd NCT & 3rd ECT, finalized future scope/provision to be kept at new substations/pooling stations, in addition to above Part-A/B scope, was also agreed as under:

1) 765/400kV Bhadla-II pooling station
   - 765/400kV ICT along with bays: 2 no.
   - 400/220kV ICTs along with bays: 9 nos.
   - 765kV line bays: 6 nos
   - 400kV line bays: 6 nos.
   - 220kV line bays: 16 nos
   - 400kV bus reactor along with bays: 1 no.
   - 765kV bus reactor along with bays: 1 no.

2) 765/400kV Fatehgarh -II pooling station
   - 765/400kV ICT along with bays: 3 nos
   - 400/220kV ICTs along with bays: 10 nos.
   - 765kV line bays: 4 nos
   - 400kV line bays: 6 nos.
   - 220kV line bays: 18 nos
   - 400kV bus reactor along with bays: 1 no
   - 765kV bus reactor along with bays: 1 no

3) 765/400kV Khetri pooling station
   - 400/220kV ICTs along with bays: 4 nos.
   - 765kV line bays: 4 nos
   - 400kV line bays: 4 nos.
   - 220kV line bays: 7 nos

B.19.2 Subsequently, the scheme was also discussed in the 2nd NCT meeting as well as 3rd meeting of Empowered Committee on Transmission. In the ECT meeting it was decided that part of comprehensive scheme may be implemented by POWERGRID under regulated tariff mechanism and balance scheme may be implemented through TBCB route.

B.19.3 The above scheme was discussed in 44th NRPC held on 19.03.2019 wherein representative of Rajasthan and Punjab raised concerns. Accordingly, the scheme was referred back to Standing Committee. Subsequently, the scheme was taken up for discussion in 3rd NR SCT meeting held on 24.05.2019 (Minutes awaited).During the meeting, it was also discussed that space for 2 nos. of 765 bays was to be provided by RVPN for Ajmer – Phagi 765kV D/c line.

B.19.4 Representative of RVPN informed that space is available only for 1 no. of 765kV AIS bay at Phagi. For other bay, option of GIS bay may be considered. After deliberations, it was agreed that one bay may be implemented as AIS and for second bay, complete dia may be implemented as GIS. 1x240 MVAr Bus reactor at Phagi may be installed in second GIS bay.

B.19.5 It was also discussed that the scheme has already been technically agreed in 2nd NR SCT meeting held on 13.11.2018. Standing Committee opined that the scheme may be taken in next NRPC meeting for approval.

Members may kindly approve.

B.20 Provision of 125 MVAr bus reactors each at Jalandhar & Patiala (Agenda by POWERGRID)

B.20.1 125 MVAr bus reactors each at Jalandhar & Patiala were agreed under provision of bus reactors at various substations in the 39th meeting of SCPSPNR held on 29-30th May, 2017. During the meeting, it was also agreed that the identified bus reactors may be provided by the owner of the substation subject to the availability of space. Subsequently, in the 2nd meeting of Northern Region Standing Committee on Transmission (NRSCT) held on 13.11.2018, 125 MVAr bus reactors each at Jalandhar & Patiala were agreed to be installed by providing GIB interconnections along with GIS switchgear instead of AIS switchgear in view of the space constraints at Patiala and Jalandhar substations of POWERGRID.

B.20.2 The matter was taken up for approval in the 44th meeting of NRPC held on 19.03.2019. During the meeting, NRPC in-principle approved 125 MVAr bus reactors subject to final approval regarding AIS or GIS reactor and their location from standing committee considering space constraint. Subsequently, the scheme was taken up for discussion in 3rd NR SCT meeting held on 24.05.2019 (Minutes awaited). During the meeting, it was decided that reactors may be installed with AIS switchgear at Jallandhar& Patiala.

Members may note.

B.21 400/220kV ICT augmentation at Bhadla-II, Fatehgarh-II and Bikaner S/s (Agenda by POWERGRID)

B.21.1 Transmission scheme for integration of envisaged RE generation capacity in Solar & Wind Energy Zones including transmission scheme for Solar energy Zones in Rajasthan was discussed in 1st NR SCT meeting held on 13.09.2018. Subsequently, in the 2nd NR SCT meeting held on 13.11.18, Transmission System for Solar Energy Zones (8.9 GW) in Rajasthan was technically agreed. The scheme was proposed to be implemented in two parts i.e. Part-A and Part-B. Part-B was proposed to be taken up for implementation based on Connectivity/LTA applications with following scope:

Part B

Augmentation works to be taken up in above scheme after receipt of Stage-II connectivity/LTA applications at Fatehgarh-II PS, Bhadla-II PS & Bikaner (PG) S/s in Rajasthan (400/220kV ICT shall be taken up in progressive manner commensurate to stage-II connectivity/LTA applications on above pooling stations)

i. Augmentation with 765/400kV, 1x1500MVA transformer (3rd) at Bhadla-II PS
ii. Creation of 220 kV level at Bhadla-II PS with Installation of 400/220kV, 5x500MVA transformers at Bhadla-II PS
iii. Augmentation with 765/400kV, 1x1500MVA transformer (4th) at Fatehgarh-II PS
iv. Creation of 220 kV level at Fatehgarh-II with Installation of 400/220kV, 5x500MVA transformers at Fatehgarh-II PS
v. Creation of 220 kV level at Bikaner (PG) with Installation of 400/220kV, 2x500MVA transformers at Bikaner (PG)
vi. 220kV line bays for interconnection of solar projects at Fatehgarh-II PS (9 nos), Bhadla-II PS (9 nos) and Bikaner (4 nos) S/s

B.21.2 The matter regarding Connectivity/LTA at Fatehgarh-II PS, Bhadla-II PS & Bikaner (PG) S/s was discussed in 20th & 22nd Connectivity/LTA meeting of NR constituents held on 26.02.2019 & 25.04.2019 respectively wherein LTA and Connectivity was agreed/in-principle agreed for grant at Fatehgarh-II PS Bhadla-II PS & Bikaner (PG) with following details:

Sr. No.	**Substation**	**Stage-II Connectivity (MW)**	**LTA (MW)**

1	Fatehgarh-II PS	1790	600
2	Bhadla-II PS	300	-
3	Bikaner	600	-

B.21.3 Accordingly, following scope of works is proposed to be taken up at Fatehgarh-II, Bhadla-II & Bikaner (PG):

i. Creation of 220 kV level at Bhadla-II PS with Installation of 400/220kV, 1x500MVA transformes at Bhadla-II PS

ii. Creation of 220 kV level at Fatehgarh-II with Installation of 400/220kV, 2x500MVA transformers at Fatehgarh-II PS

iii. Creation of 220 kV level at Bikaner (PG) with Installation of 400/220kV, 1x500MVA transformer at Bikaner (PG)

iv. 220kV line bays for interconnection of solar projects at Fatehgarh-II PS (7 nos), Bhadla-II PS (1 nos) and Bikaner (2 nos) S/s

B.21.4 The above works were discussed and agreed in 3rd NR SCT held on 24.05.2019 (Minutes awaited).

Members may kindly approve.

B.22 Provision of spare ICT and Reactors in already agreed transmission scheme "Transmission system for Solar Energy Zones in Rajasthan". (Agenda by POWERGRID)

B.22.1 The above transmission scheme was technically agreed in the 2nd NR SCT meeting held on 13.11.18, for integration of envisaged RE generation capacity in Solar Energy Zones (8.9 GW) in Rajasthan. Subsequently, the scheme was also discussed in the 2nd NCT meeting as well as 3rd meeting of Empowered Committee on Transmission. In the ECT meeting it was decided that part of comprehensive scheme may be implemented by POWERGRID under regulated tariff mechanism and balance scheme may be implemented through TBCB route. Provision of spares was inadvertently missed out during the approval of above scheme. Accordingly, it is proposed to provide following spare ICTs and Reactors in the respective schemes:

Approved in the 3rd ECT meeting held on 21.12.2018	**Corresponding Spare ICT / Reactors units to be additionally included**
Establishment of 2x1500MVA, 765/400kV, Bhadla-II PS with 765kV (2x240MVAR) & 400kV (1x125 MVAR) bus reactor	• 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) • 1x80 MVAR, 765kV , 1-ph Reactor (spare unit) *(for both 1x240MVAr bus reactor and 2x240MVAr line reactor on Bikaner – Bhadla-II 765kV D/c line (after LILO))*

Establishment of 3x1500MVA, 765/400kV, Fatehgarh-II PS with 765kV (2x240MVAR) & 400kV (1x125 MVAR) bus reactor	• 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) 1x80 MVAR, 765 kV , 1-ph Reactor (spare unit)
Establishment of 2x1500MVA, 765/400kV, Khetri PS with 765kV (2x240MVAR) & 400kV (1x125 MVAR) bus reactor	• 1x500 MVA, 765/400 kV, 1-ph ICT (spare unit) • 1x80 MVAR, 765 kV , 1-ph Reactor (spare unit) *(for both 1x240MVAr bus reactor and 2x240MVAr line reactor on Bikaner – Khetri 765kV D/c line at Khetri end)*
330MVAr switchable line reactors at Bhadla-II end for each circuit of Ajmer–Bhadla-II 765kV D/c line (after LILO at Bhadla-II)	• 1x110 MVAR, 765kV , 1-ph Reactor (spare unit)

Approved in the 3rd ECT meeting held on 21.12.2018	**Corresponding Spare ICT / Reactors units to be additionally included**
240MVAr switchable line reactors at Jhatikara end for each circuit of Khetri–Jhatikara 765kV D/c line	• 1x80 MVAR, 765 kV , 1-ph Reactor (spare unit)
240MVAr switchable line reactors at Bikaner end for each circuit of Khetri–Bikaner 765kV D/c line	• 1x80 MVAR, 765 kV , 1-ph Reactor (spare unit)

B.22.2 The above proposal was discussed and agreed in 3rd NR SCT held on 24.05.2019 (Minutes awaited).

Members may kindly approve.

B.23 Monsoon preparedness:

B.23.1 Northern region used to meet its maximum demand (last year max demand was 61653MW & energy consumption 1420 MUs on 10th Jul'18) and energy consumption during Jul-Sept i.e. in Monsoon. As on date, NR maximum demand during this summer has already touched ~ 58.6 GW on 29th May 2019. The demand is anticipated to further increase in coming month. During Monsoon period the demand used to be high throughout the time, hydro generation is also high during this scenario. Sudden thunderstorm, rainfall, large hydro outage out on silt causes load-generation mismatch leading to variations in voltage, frequency, MW loading, poses day to day challenges for grid operation. Though all the above are known phenomena, practices to be followed to combat such situation has been deliberated and agreed in various previous OCC/TCC and other meetings. Advance actions and preparations substantiate to help in different challenges foresee in grid operation during such scenarios. Following agreed actions are presented below for Monsoon preparedness:

i. <u>Weather monitoring and Load forecast:</u>

a. Dedicated weather monitoring website by Indian Meteorological department (IMD) - POSOCO for SLDC/RLDCs: IMD-POSOCO has jointly developed a dedicated weather portal especially design for RLDC/SLDCs operators. The information and features of this website has been shared in 35th TCC-39th NRPC meeting dated 18th-19th Apr'2017. Since then, NRLDC emphasized the usage of such information on regular basis. All the SLDCs/State agencies have been requested to continuously monitor these dedicated websites for operational planning and demand forecast. Recently, in 159th OCC, NRLDC presented that radar image at various locations helped in anticipating & tracking likely thunder storm/weather warning due to cyclone Fani and probable action afterwards. From the various past experiences, it emerges that this is a very powerful tool for demand estimation/behavior also as it has been observed that load pattern in Northern region often follow the seasonal/weather conditions.
Last year, reference document on weather information portal was also issued in Aug'18 and available at https://posoco.in/wp-content/uploads/2018/09/Reference-Document-on-Weather-Information-Portal-for-Indian-Power-System.pdf. All are requested to take benefits from this website for day to day operational planning and share their experiences also.

b. Temperature & Humidity transducer at various location in NR: Location and present telemetry status of temperature & humidity transducer of NR is enclosed in **Annex-V**. Intermittency and non-availability of these transducers have been highlighting in regular OCC/TCC meeting. It has been discussed since 35th TCC-39th NRPC meeting and last 41st TCC-43rd NRPC meeting also. The same is being discussed on regular OCC meetings also and still telemetry of some of the stations need attention. Real time weather data has been helpful for weather prediction and further analysis. All the agencies are requested to co-ordinate and rectify the telemetry issues of respective station highlighted in Annex-V.

c. Load forecasting by SLDCs on daily basis and mapping in SCADA: In line with CERC direction and various decision in OCC/TCC meetings, load forecasting on daily basis has been started by states/SLDCs of NR. It is appreciated that load forecast data has also been mapped to SCADA and it can be visualized on SCADA displays also. NRLDC has provided a platform by which state can upload their forecast data on daily basis. The state's forecasted vs actual data is also being comparing and sharing the feedback in regular OCC/TCC meetings. Significant forecast error has been observed for various states. It has been requested that such forecast error can be reduced further by incorporating weather conditions/Seasonal trend/Festive days/Special days/historical trend etc. In view of this, all the states are requested to further workout to reduce the forecast error and start the forecast of ramping of load also. States may also share their experiences/tools for other states to follow in case such tools/procedure help in reducing the forecast error. Latest status of load forecast data by states is enclosed in **Annex-VI**.

ii. Load Generation Portfolio management: Load generation balance shall be planned based on load forecast and generation availability. Load generation portfolio management shall also cover planning for real time imbalances apart from LTA/MTOA/STOA arrangements. Real time imbalances may be due to sudden outage of generating unit/load crash/hot & humid

conditions etc. In view of high demand and uncertainty in weather condition during monsoon, adequate measure should be taken beforehand as listed below:

a. Maintenance of reserves (keep thermal units on bar): Large state i.e. Punjab, Haryana, Rajasthan, Uttar Pradesh should maintain adequate reserves to combat the real time imbalances in the system. All these states also have big generating stations and outage of one units may cause mismatch in LGB. Small states i.e. Himachal Pradesh, Uttarakhand, Jammu & Kashmir etc. whose major load caters through hydro station shall make banking arrangement with other states in case of outage of Hydro stations on silt.

As per CERC direction and discussion in OCC/TCC meetings, all the generators should provide governor response and to monitor the response, mapping of RGMO/FGMO signal in SCADA was decided. In line with that, ISGS units along with Punjab, Rajasthan, Haryana & Uttar Pradesh have been mapped. However, some of the telemetry is not reliable and hence lot of scope for further improvement. Current status is enclosed in **Annex-VII**. All are requested to expedite the mapping and ensure the telemetry is correct and reliable.

b. Maximize internal generation: Some of the states e.g. Punjab, Uttar Pradesh, Haryana, Delhi etc. met their peak demand during Jul-Sept. During such scenarios, their import capability also gets restricted due to transmission constraints at 400/220kV level, 220kv line loading and voltages at 220kv level. In order to meet the load with reliability during such scenarios, it has been suggested that all states shall maintain their own generation at both 220kv & 400kv under high demand conditions.

c. Load crash

Load crash during thunder storm/Heavy rainfall is likely phenomenon and discussed in details in last 41st TCC-44th NRPC meeting and highlighted in regular in OCC/TCC meeting also. The matter has been deliberated and following preparatory actions has been suggested during such eventualities:

- Weather monitoring and warning/alert issuance within control centers for taking advance & fast actions.
- Backing down of thermal generation up to technical minimum in order to control high frequency operation besides containing over voltages.
- Fast ramping down during reduction in generation.
- Immediate actions to surrender power from ISGS generating stations.
- Synchronous condenser mode operation of HEPS to contain high voltage.
- NRLDC issued flash / preliminary report to inform all stakeholders, other utilities are also requested to report as early as possible to NRLDC.
- Exercise fast restoration of line out on high voltage or manually opened etc.
- ERS: The tower strengthening and availability of Emergency Restoration System (ERS) [for early restoration of supply] have been observed as mitigation tools for

such scenario. At present ERS has been procured by Delhi, Punjab, UP and J&K only, other states are in process of either procuring or under discussion. In view of reliability issues during such eventualities, it is requested to expedite the tower repairing work & procurement of ERS asap.

- Load staggering: Connection/disconnection of sudden large chunk of load poses frequency & voltage excursion leading to line loading/Undesirable line tripping on OV, HV/LV etc. Such issues have been highlighted since long in 27th TCC, 30th TCC-34th NRPC dated 15th May 2015, subsequent TCC/OCC meeting and in last 41st TCC-44th NRPC meeting also. Despite continuous discussion and follow up in TCC/OCC meeting, sharp change in frequency is still being observed at hourly boundaries. States such as Rajasthan and Haryana continue to connect/disconnect large quantum of load at hourly boundaries resulting in frequency spikes and instantaneous over-voltages. Therefore, it is again requested to stagger the load groups while connecting/disconnecting to the Grid.
- Ramping of generation and load: To commensurate the ramping of generation with ramping of load, it is necessary to forecast the ramping of load. Accordingly, plan/schedule the generation ramping to avoid any kind of frequency change due to mismatch of load-generation in peak hours.

All the above factor has been discussed in details in last TCC meeting (41st NRPC-44th NRPC) also and it is again requested to plan portfolio management considering high demand and uncertainty in weather (thunderstorm/Rainfall/hydro outage on silt etc.).

Recently, POSOCO has issued a document on Analysis of ramping capability of coal-fired station in India, available at https://posoco.in/download/analysis-of-ramping-capability-of-coal-fired-generation-in-india/?wpdmdl=23042.

User can go through the above document and may render benefits from it.

iii. Better forecasting of Silt and Planned action for hydro outages:

Large hydro outage in short duration during monsoon on silt is a common phenomenon and the associated challenges has been highlighted in regular OCC/TCC meeting. The agreed action based on deliberation in various meeting are given below:

- Action for Generator
  - Silt monitoring/Silt forecasting for planned hydro outage **[Advance information]**
  - Reduction of Generation/Tripping of Units as per protocol (Staggering of units)
  - Slow ramping down of generation on the units to be closed as per protocol.
- Action by SLDC/Constituents
  - **Generation reserve to be maintained**
    - Own Generation
    - Contracted Generation from Other State/Traders

- Load management to be planned
- Optimization of Hydro generation as per demand requirement

It has been experienced that states those have major share in hydro e.g. Himachal Pradesh over draw from the grid during such condition. The issues were highlighted in details in 41st TCC-44th NRPC meeting also. As deviation mechanism also get strict, it is gentle reminder for each states to plan in advance for such eventualities.

iv. Ensuring intact defense mechanism: Ensure defense mechanism i.e. Protection system, UFR, UVLS, df/dt, SPS, islanding schemes, Black start etc. are intact and reliable in operation during hours of need.

As per Hon'ble commission order, all the UFR and df/dt relays needs to be mapped and centrally monitored in respective state load despatch centres. As we all are aware about the poor telemetry of 33 kV, 66 kV and 132 kV stations so it was decided in OCC/TCC meetings that in the meantime alternate feeders (data telemetry available) will be mapped and all the utilities were suggested to expedite the telemetry/mapping of all the feeders. Available data telemetry of the feeders mapped in UFR and df/dt is ~**30%** of the total feeders mapped under UFR and df/dt.

In line with various decision in OCC/TCC meetings, information regarding feeder, real time load against planned load etc. for UFR and df/dt has been mapped in SCADA displays. However, due to non-reliability of telemetry upto 132kV feeders, observability is still poor and effective utilization at the need of hour would not be possible. At present, status of df/dt& UFR mapping of all the constituents is enclosed in **Annex-VIII**.

SPS is useful tool which helps in protecting in real time based on some logic. There are around 33 SPS in Northern Region and monitoring of SPS is also important to assess its reliability. The same has been discussed in last TCC meeting also.

A document "Roles and Responsibility regarding SPS" was approved in 121st OCC meeting wherein the following roles were mentioned among others:

- Mapping of SPS feeders CB status, analog data in SCADA or Station Event log.
- Periodic mock testing of SPS schemes (at least once in half year) and certification of healthiness by utility.
- Timely updating the scheme in case of any network or schematic changes.

It has been observed that the most of the utilities are yet to assume the roles and responsibilities as per the approved procedure.

v. Reactive Power Management: Adequate measures should be taken for keeping the voltages of the grid within the specified limits. Recently, STATCOM at Nalagarh& Lucknow has also been synchronized with the grid. In past years, three SVCs at Ludhiana, Kankroli

and New Wanpoh has also been synchronized. All these devices help in dynamic response of voltage variations however the response would be limited. Generating stations would definitely help in dynamic response to larger extent based on grid conditions, therefore it has been requested to all since long, that generating station should also participate as per its capability curve for dynamic response to help in keeping voltages within limits.

Apart from above, regular action agreed for reactive power management are as:

a) Switching off/On of Reactor/Capacitor, Mapping of BR & LR that can switch as BR in SCADA displays
b) Tap optimization (ICTs /GTs)
c) Generation/Absorption by generating units as per capability curve
d) Synchronous condenser operation
e) Opening of EHV lines after study and considering reliability & security of Grid

vi. Telemetry

Based on CERC/CEA regulations and decisions of TCC/NRPC, the telemetry integration is being insured before charging of new system element at ISTS (super grid) level. However, the reliability of data from newly integrated sub-stations is still very poor. Though the telemetry integration is ensured before charging the new element, the reliability of telemetry is not at all ensured. Reliability of telemetry for some of the stations is poor since its integration.

	Northern Region summary sheet and details of current status of implementation of telemetry system												
										Updated Till:		30.04.2019	
Sl. No.	User Name	Total Nos of Stations		Telemetry not Provided				Telemetry Intemittent				Total non-availability of data in %	
				Total nos of		Non-availability		Total nos of		Non-availability			
		GS	SS	GS	SS	GS	SS	GS	SS	GS	SS	GS	SS
1	Punjab	17	173	-	86	-	50%	4	21	24%	12%	24%	62%
2	Haryana	5	70	-	13	-	19%	-	-	-	-	-	19%
3	Rajasthan	20	223	-	-	-	-	1	4	5%	2%	5%	2%
4	Delhi	6	43	-	-	-	-	-	5	-	12%	-	12%
5	UP	22	180	-	-	-	-	3	50	14%	28%	14%	28%
6	Uttarakhand	10	29	-	-	-	-	6	27	60%	93%	60%	93%
7	HP	15	25	-	-	-	-	3	-	20%	-	20%	-
8	JK	4	17	3	12	75%	71%	1	5	25%	29%	100%	100%
9	POWERGRID	-	80	-	-	-	-	-	5	-	6%	-	6%
10	NTPC	14	-	-	-	-	-	-	-	-	-	-	-
11	NHPC	14	-	-	-	-	-	4	-	29%	-	29%	-
12	NPCIL	5	-	-	-	-	-	-	-	-	-	-	-
13	NJPC	2	-	-	-	-	-	1	-	50%	-	50%	-
14	THDC	2	-	-	-	-	-	1	-	50%	-	50%	-
15	BBMB	6	16	-	-	-	-	-	-	-	-	-	-
16	IPP/JV/Patran	6	2	-	-	-	-	2	1	33%	50%	33%	50%
	TOTAL	148	858	3	111	2%	13%	26	118	18%	14%	20%	27%
	Total (over all)	1006		114		11%		144		14%		26%	

Note: The above % is based on number of RTU/gateway reporting and not based on number of measurands. It would much lower percentage based on number of measurands.

Also even though the telemetry is available correct Digital telemetry is not available. Proper status of CBs and Isolators is required for SE to form network model resembling to actual Power System Model via Topology Processor.

Suspected/Inverted status of switches lead to formation of wrong topology and difficulty in smooth grid monitoring/operation.

Members may discuss and ensure reliability of data.

vii. Important documents i.e. updated power maps, operating procedure, telephone directory, etc. shall be maintained at control room. In 159th OCC meeting, it was suggested to Renewable rich states to kindly prepare separate power maps for RE generations and its connectivity at 33 kV voltage level and above.

Members may discuss all the above factor and ensure the timely implementation of agreed actions.

B.24 Synchronous condenser operation for Voltage regulation & System Stability

B.24.1 Northern region has been experiencing extreme weather condition under different seasons which also gets reflected in the demand met of the region. As demand is very high during Summer/Monsoon and low during winter, subsequent low and very high voltage has been experiencing during summer & winter respectively. Adequate measures have been adopted to optimize the available resources to regulate the voltage. All the static, FACTS devices i.e. Bus reactor, Line reactor, SVC, STATCOM etc. has been mapped in SCADA displays for better utilization. Tap optimization, line opening etc. has also been continuously used for voltage management. In spite of all the above measure, high and low voltage is continuously being experienced all across the NR grid. Some of the factor e.g. sudden load connection/disconnection, load crash during thunderstorm, ramping of load, less loading on EHV lines & HV cable etc. causes voltage variations which can be set off by appropriate dynamic response. Dynamic response can be provided by generating stations, SVCs/STATCOMs etc. and hence, NRLDC has been requesting in regular OCC /TCC meeting that all the generator must generate/absorb MVAr as per its capability curve to contain the voltage within the limits.

B.24.2 To further explore the dynamic reserves for reactive power compensation, it has been discussed that hydro units are usually off during winter night, can be operated in synchronous condenser mode to control the extreme high voltage during winter nights. It has been decided in OCC/TCC that all hydro generating stations including state own would explore and test the synchronous condenser capability of their machines. In line with above decision, trial test of Tehri Unit # 1 & 2, Chamera-1 unit #2, Larji HEP etc. has been conducted.

B.24.3 Status of condenser mode of operation is given below:

i. Gas stations namely Anta, Auraiya, Dadri, Bawana informed that they do not have the capability of condenser mode. On a query from MS, NRPC, NTPC representative informed that due to clutch arrangement issue the gas stations are not capable of running in Condenser mode. (MoM of 139th OCC)

ii. Trial testing of Tehri unit#1 & 2 for synchronous condenser operation has been done on 30.11.2017 (only one unit can run in synchronous condenser mode at a time)

iii. Pong units of BBMB have been used for synchronous condenser mode of operation for dynamic voltage regulation

iv. Larji Unit#3, HP confirmed the trial operation though unit generated less MVAr during the test.

v. Chamera-2 unit#3 of NHPC has done trial operation in Feb'17.

vi. Uttarakhand representative stated that Shravanti gas station has expressed inability to operate in synchronous condenser mode. (MoM of 142nd OCC)

vii. Punjab representative informed that OEM has confirmed that RSD could be operated in synchronous condenser mode upon small modifications although with added cost for which the issue is being taken up with higher officials. (MoM of 151st OCC)

B.24.4 In 156th OCC meeting, MS, NRPC stated that all hydro generators are generally capable of running as synchronous condenser mode, therefore, all the hydro generators were directed to show the capability to operate in synchronous condenser mode and if any hydro generator is showing inability for the same, a certificate from OEM needs to be submitted to NRPC/NRLDC along with valid reasons. However, the action on same is still pending.

B.24.5 Delhi SLDC also reported very high voltage during winter night due to less loading on overhead transmission line along with HV cable in Delhi control area. After deliberation, it was proposed that SLDC, Delhi along with DTL may explore the possibilities of GTs (Operationally not in service) to operate as synchronous condenser mode during such high voltage conditions.

B.24.6 DTL representative informed in 155th OCC meeting that in line with the deliberation held in 40thTCC and 43rdNRPC meetings regarding utilization of generators as synchronous condensers for reactive compensation, DTL had taken up the matter with CEA for further deliberations with Delhi Generators.

B.24.7 In the same line, BTPS NTPC was also asked to explore the possibilities of synchronous condenser operation of its units in 151stOCC meeting, in which NTPC informed in 153rd OCC that that BTPS Generators are not designed to run as "Motor" as per informal discussions with OEM and hence cannot be used for Condenser Mode of Operation.

B.24.8 Recently, Ropar & Bhatinda TPS units in Punjab are also not operating and likely to shut down. These generating stations may also look the possibilities of synchronous mode to help the Punjab area to control the HV especially during winter nights. In Uttar Pradesh, Panki TPS, Harduaganj TPS and Obra TPS units may also explore for such synchronous mode of operation.

B.24.9 Apart from voltage stability, synchronous condenser operation is also useful for system stability in view of providing inertia, reactive power support during fault and angular stability specially during large renewable generation in the grid. Many of the thermal units are either not operating or likely to shut down and these number will keep on increasing along with more RE integration in the grid. Synchronous Condenser operation for thermal units needs to be explored.

Member may please discuss to encourage more units for synchronous condenser operation for voltage regulation and system stability.

B.25 Reliability Issues:

B.25.1 As per CERC procedure & direction, computation of import capability of state control area is to be done by SLDCs and respective region by RLDCs. NRLDC has been requesting since long in regular OCC/TCC meetings that SLDCs should start computing their state control area transfer capability on regular basis. NRLDC has also conducted various workshop on assessment of import capability & usage of simulation tools for stakeholders of NR.

B.25.2 In our continuous endeavor, some of the SLDC has motivated and start computing its state control area TTC. It is encouraging that Punjab & Uttar Pradesh SLDC are actively involved in co-ordination of TTC studies. Recently, Delhi, Haryana has also shown interest though active participation in ATC/TTC studies is yet to be seen. It is requested to each SLDC to start computing its state control area import/export capabilities, likely constraints and action plan to mitigate those constraints. Such studies would help in day to day operational planning and feedback to planner also.

B.25.3 As per data available at NRLDC, TTC/ATC of states of NR for summer scenarios is tabulated below:

- **Delhi:** As per studies carried out by Delhi SLDC and NRLDC, TTC limit was assessed as 6800MW. Considering reliability margin of 300MW, ATC limit comes out 6500MW. Simulation studies suggest N-1 non-compliance at 400/220kV Mundka and Harsh vihar ICTs. In real-time, under import of 5000MW, loading of Mundka ICTs is 600-700 MW, which is high although loading is below N-1 contingency limit.

  Revival of 400kV Bamnauli-Tughlakabad D/C lines on normal towers which are in service through ERS may be expedited. SLDC Delhi informed in 159th OCC that revival would be by the end of May'19.
  Delhi may kindly update the status.

- **Uttar Pradesh**: In preliminary simulation studies performed in May 2019 after incorporating network changes given by UP, NRLDC has assessed TTC as 12700 MW under state generation scenario of 10700MW. Considering reliability margin of 600 MW ATC comes out as 12100 MW. UP has assessed TTC limit of more than 12100MW under generation scenario of ~10700MW which is quite similar to limits assessed by NRLDC. Simulation studies based on data provided suggest N-1 non compliances at 400/220kV Agra(PG) and 400/132kV Mau ICTs. TTC/ATC of UP state control area depends on its own generation scenario and would increase/decrease depending upon internal generation.

- **Punjab**: As per coordinated studies by SLDC Punjab & NRLDC, TTC of Punjab assessed as 6800 MW and ATC is 6200 MW at Punjab own generation 6035 MW. N-1 non-compliance are at 400/220kV Amritsar, Rajpura, Mukatsar etc., 220kV Voltages at

Sahnewal, Ghulal, Kohara, Gaunsgarh and underlying 220kv network at Amritsar, Ludhiana etc.

B.25.4 NRLDC is in process of reassessing TTC/ATC of Rajasthan, Haryana & other states with updated network and requesting SLDCs to co-ordinate the studies for valid inputs. All the SLDCs are requested to further study their own system and give feedback to NRLDC/NRPC for further tuning of ATC/TTC studies.It is also requested to perform these studies on regular/monthly basis.

Members may please opine.

B.26 Mock testing of SPS for 765kV Agra-Gwalior D/C

B.26.1 The 765kV Agra-Gwalior D/C is an important link between WR-NR. An SPS is in place to take care of the contingencies associated with the aforesaid link. The mock testing of the aforesaid link has been carried out on 01-May-19. The exercise also witnessed the testing of additional load of 1000MW (200MW each in Punjab, Haryana, Rajasthan, Uttar Pradesh and Delhi) added in the modified scheme. A detailed report dated 09-May-19 attached as **Annex-IX** has also been issued by NRLDC.

Following are the key highlights of the mock exercise:

- *Mock testing earlier planned for 30-Apr-19 was postponed to 01-May-19 in view of requirement of shutdown of 765 kV Gwalior bays at Agra end by POWERGRID for affecting changes in the logic (CT input to PLC controller were required to be changed) as per revised scheme.*
- *Mock testing was successful with the collaborative effort of all the concerned utilities.*
- *During mock testing, all four conditions tested and signal was sent to all the location except 220 kV Nara (UP) due to communication issue between Bhiwadi (PG) and 220 kV Nara (UP).*
- *Mock testing report has been received from most of the utilities.*
- *The testing of the scheme was by and large OK with few observations* viz. *communication problem, non-increment of counter, non-radial nature of mapped feeder, less than planned load observed during testing.*

B.26.2 A separate meeting has also been called on 23-May-19 to address the issues emerged during the mock exercise and finalize the load groups for Agra-Gwalior SPS. Following are the key highlights of the discussion during he meeting:

- *NRLDC representative raised concern about submission of load relief information by most of the utilities on the basis of average load on the feeders however it has already been discussed and approved in NRPC meeting that load relief quantum shall be calculated on minimum load on these feeders.*
- *For calculation of minimum load, it was suggested that utilities shall take the yearly data and calculate the average of 30days of minimum load period on that particular feeder and share the details in next OCC meeting.*
- *If there is any shortfall in load relief than utilities shall submit the additional load feeders on the same locations where DTPC is already available/ installed.*

- *Load groups shall be finalized in next OCC meeting after input from all the concerned utilities (Punjab, Haryana, Rajasthan, Uttar Pradesh and Delhi).*

B.26.3 Outcome of the meeting and action taken by constituents will again discuss in next (160th) OCC meeting.

This is for the information of the members.

B.27 Grid Events in Northern Region during Feb-Apr'19 period:

B.27.1 A total 70 number of CEA standard based Grid Events have been occurred in Northern Region in Feb'19 to Apr'19 period. The number is around 1.5 times than the last year figure of same period.

B.27.2 Monthly GD/GI summary is given below:

Month	**Event Category**		**Event Share (in %)**	**Fault duration > 100ms/160ms**
	GD	**GI**		
Feb'19	12	18	43%	26%
Mar'19	9	11	29%	25%
Apr'19	11	9	29%	36%
Total	32	38	100%	29%
GD as % of total		**46%**	**Fault duration > 100ms/160ms for almost every third event**	
GI as % of total		**54%**		

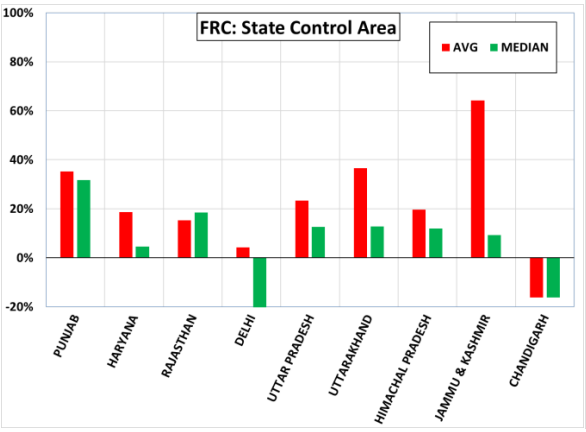
B.27.3 These tripping events have been discussed in various OCC, PSC and other special meetings.

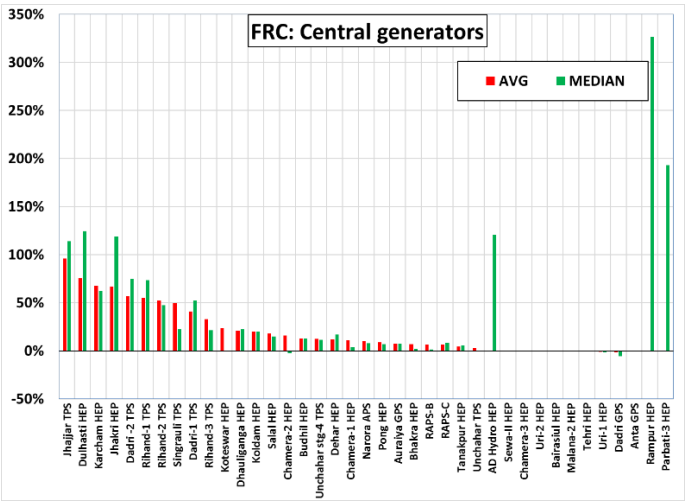
B.27.4 From the above, it could be observed that during the past three-month period there were three grid events occurring in every four days.

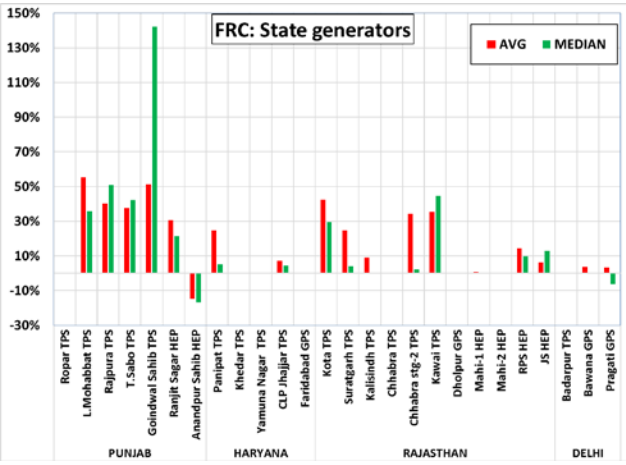
Members may like to discuss plans for reducing such tripping events and for quality analysis and implementation of remedial measures.

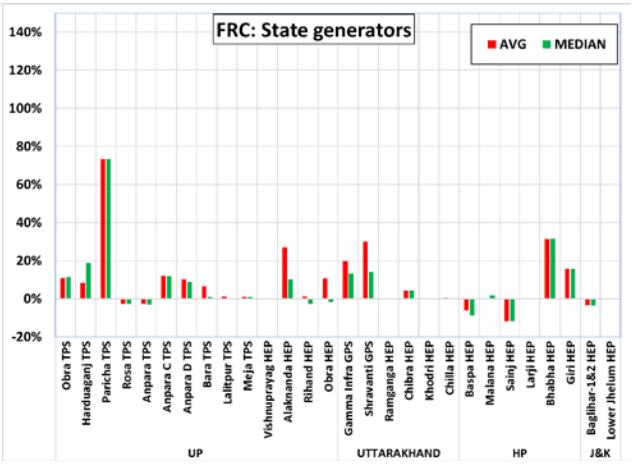
B.28 Frequency response characteristic of NR control area from Feb-Apr'19:

B.28.1 Three FRC based events occurred during Feb-Apr'19. The response as calculated at NRLDC (using SCADA data) is shown in the plots below:









B.28.2 The following could be summarized from above details:

- Among the State control area, Punjab and Rajasthan have showed improvement in the FRC. The reason for above could be observed as the improvement in FRC of state control area.
- Among the central generators, Jhajjar TPS, Dulhasti HEP, Karcham HEP, Jhakri HEP, Dadri stg-2 TPS, Rihand stg-1, 2 TPS and Singrauli TPS have good FRC of more than 50% of ideal response. The response of almost all other stations is less than 40% of ideal response.
- Among the state control area generators, Punjab and Rajasthan generators showed good response.

Member may discuss the respective Frequency Response Characteristics as analyzed and measures to improve the same.

B.29 Loss of Solar Generation in Rajasthan due to LVRT issue in solar generators:

B.29.1 The issue of non-compliance of the Technical Standards for Connectivity to the Grid, (Amendment), regulations, 2012 by most of the wind generators in Rajasthan was discussed in 38th TCC and 41st NRPC meeting, 40th TCC and 43rd NRPC meeting and in 41st TCC and 44th NRPC meeting

B.29.2 On 6th February 2019, CEA Technical Standards for connectivity to the Grid (amendment) regulations 2019 has been notified. As per the amended regulation, wind generating stations, wind-solar PV hybrid systems, energy storage systems and stations using inverters, getting commissioned after six months from the commencement of amended regulation, are required to have frequency response capability (generating stations with installed capacity of more than 10 MW connected to 33 kV & above), LVRT facility, HVRT facility and SCADA facility (Generating stations of 500 MW & above capacity). For remaining generating stations, earlier regulation will be applicable.

B.29.3 LVRT issue in wind generators was already discussed in various TCC/ NRPC meeting. In recent event on 7th May 2019, 11:33 hrs in which multiple element tripped at 400kV Bikaner &Bhadla (Raj) (Preliminary report is enclosed as **Annex-X**). This multiple element tripping leads to solar generation loss of ~ 800 MW pooled at 400kV Bhadla (Raj) although fault cleared within 100ms. In this event ~120MW generation loss occurred at ISTS connected Solar generators and ~680MW generation loss occurred in solar generation connected at intra-state level.

B.29.4 In this event, non-compliance of CEA Technical Standard & CERC direction w.r.t LVRT was observed. Such events lead to frequency dip in the grid and such sudden outages may pose threat to grid security.

B.29.5 This issue has been taken up separately in 159th OCC meeting, analysis needs to be done by plant owner within Rajasthan and generators connected at ISTS (Inter State Transmission System) in view of non-compliance of LVRT. Rajasthan shall apprise the members about further details and remedial measures taken.

Members may like to discuss.

B.30 Switchgear issue of 400 kV Mahendergarh-Dhanonda double ckts

B.30.1 Switchgear rating issue for both end of 400 kV Mahendergarh-Dhanonda double ckts has been raised multiple times in NR operational feedback as well as in OCC/ TCC meetings.

B.30.2 Switchgear rating issue for 400kV Mahendergarh (Adani)-Dhanonda (HVPNL) has already been discussed in various OCC/TCC meetings as well as in operational feedback from RLDCs.

B.30.3 Further, this issue was also discussed in the 39th Standing Committee Meeting of NR on 29th & 30th May 2017". The extracts from the same are given below:

"*The line is a 5 km quad line, but the switchgears at both the ends are of 2000A, therefore, upgradation of switchgear should be taken up by HVPNL. HVPNL was requested to carry out the upgradation works at the earliest. HVPNL informed that the average load of about 700 MW (each ckt) is continuously running on the said line. However, they agreed for carrying out the equipment upgradation at both the sub-stations."*

B.30.4 Already 400 kV Mahendergarh-Dhanonda is not N-1 compliant due to limitation of 2 kA isolator at both Mahendergarh and Dhanonda substation. This constraint has further got aggravated with commissioning of 400 kV Dhanonda-Neemrana D/C.

B.30.5 In recent past, two incident occurred in which constraint of 2 kA isolator rating resulted into power order reduction on HVDC Mundra-Mahendergarh. Gist of the event is as below:

- 07th May 2019 event:
  - On 07th May '19, at 18:28 hrs instructions were given to increase power order from 1500MW to 2000 MW on HVDC Mundra-MahendergarhBipole to avoid high loading in parallel AC network in Western Region.
  - The HVDC Mundra-MahendergarhBipole power order got increased to 2000 MW as per instruction, however flow on AC lines from Mahendergarh also went on increasing. At 18:38 hrs, 400 kV Mahendergarh – DhanondaCkt II tripped reportedly on burning of isolator. After 1 second, 400 kV Mahendergarh – DhanondaCkt I also tripped reportedly on overloading.
  - Flow on 400 kV Mahendergarh-Bhiwani (PG) D/C (Twin Moose) reached to 960 MW each circuit which is above its thermal limit of 874 MVA.
  - Flow on HVDC Mundra-MahendergarhBipole was quickly reduced from 2000 MW to 1200 MW to avoid further overloading on 400 kV Mahendergarh-Bhiwani double ckts.

- 08th May 2019 event:
  - Power flow of HVDC Champa-Kurukshetra Pole 3 was increased from 700MW to 1500 MW for testing purposes.
  - It resulted in decrease in flow of 400 kV Mahendergarh-Bhiwani (PG) D/C due to increase in power flow from link 400 kV Kurukshetra-Jind-Bhiwani. This has also resulted in increase of power flow on 400 kV Mahendergarh-Dhanonda D/C.

- Considering N-1 contingency and 2 kA isolators limitation at Dhanonda and Mahendergarh, power order of HVDC Mundra-MahendergarhBipole was reduced from 1500 MW to 1200 MW.

B.30.6 The above two events have clearly brought out the limitation on HVDC Mundra-MahendergarhBipole power order on account of 2 kA isolators limitation at Dhanonda and Mahendergarh substation.

B.30.7 The restrictions in power order of HVDC's links due to constraint in AC transmission network pose a challenge to real time operators. Also, the northern region demand is expected to be higher due to upcoming hot and dry weather, it would result in more power flow on AC network. Hence AC transmission constraints need to be attended at the earliest for reliable and secure grid operation.

B.30.8 Therefore, following is needed:

a. The long pending upgradation of rating of switchyard equipment at 400 kV Dhanonda station may be expedited at the earliest for permanent resolution of this situation. (Long term solution, it will take time)
b. The 400 kV Mahendergarh and 400 kV Neemrana feeders are in same diameter at 400 kV Dhanonda station. As an interim measure, 400 kV main bays of the above mentioned feeders at 400 kV Dhanonda station may be opened which will result in 400 kV Mahendergarh-Neemrana –D/C direct lines. A study of this interim arrangement has also done and discussed during special meeting on 23rd & 24th May 2019.
c. HVDC Mundra-MahendergarhBipole need to be operated at 1400 MW power order for N-1 compliance of system for outage of one circuit of 400 kV Mahendergarh-Dhanonda-D/C. This may lead to reduction in ATC/TTC value of WR-NR corridor. However, it is not advisable due to increase in demand in Northern Region during forth coming summer.

B.30.9 This Agenda was also discussed in 159th OCC meeting as well as in special meeting with HVPNL representative held on 23rd & 24th May 2019. After this meeting, HVPNL representative visited NRPC to understand the study done by NRLDC/NLDC. MoM of the said meeting of 24th May 2019 is attached as Annex-XI. During the meeting, it was suggested to Haryana to kindly expedite the approval process in view of high demand period of Northern Region however communication is still awaited from Haryana.

Haryana representative may please apprise.

B.31 Insulator replacement in Punjab control area:

B.31.1 It has been observed that during winter nights, multiple EHV lines tripped during fog conditions in Punjab control area. Last winter, Punjab experienced multiple element tripping at 400 kV Makhu on 23rd Dec 2018 and another event on 25th Dec 2018 wherein multiple element tripped at 400kV Muktsar, Dhuri, Talwandi Sabo TPS, Nakodar&Rajpura during fog conditions also leading to complete outage of TalwandiSaboo station. Tripping in 400 kV Punjab ring during night hours of last winter is attached as Annex-XII.

B.31.2 Multiple element tripping during fog conditions and associated issues were highlighted in regular OCC (155th meeting) and 40th TCC-43rd NRPC, 38th TCC-41st NRPC meeting also.

B.31.3 NRLDC has been alsoemphasizing that transmission line connected to the generating pockets are more important because tripping of these feeders affects the generation and operation of grid.

B.31.4 In view of upcoming winter, it is requested to Punjab for plan in advance to identify the 400kV lines where insulator replacement is required to avoid fog related tripping in coming winter. It is requested to locate the EHV lines which frequently tripped during fog conditions and share the action plan with NRPC/NRLDC for necessary approvals. Punjab may please expedite its action plan to avoid the fog related tripping in its control area.

Members may please discuss.

B.32 Real Time data telemetry from Renewable Generators

B.32.1 As per CERC approved procedure for “implementation of the framework on forecasting, scheduling and imbalance handling for Renewable Energy(RE) generating stations including Power Parks on Wind and Solar at Inter-State Level” following data points are required from Wind and Solar Power Plants.

B.32.2 With increasing Renewable generation and necessity for forecasting of Renewable generation, the telemetry from developer’s pooling station is required to be available at the concerned load despatch center. This telemetry is also essential for Renewable Energy Management Centre (REMC) Telemetry of Wind and Solar is very poor from Renewable rich state like Rajasthan, Uttar Pradesh and Punjab. All are requested to please arrange for Telemetry from Wind and Solar for better visibility.

B.32.3 Matter was also discussed in 40th TCC Meeting & 41st TCC Meeting whereas Rajasthan was requested for availability of data from renewable generators. Rajasthan may please update the status.

Member may please discuss.

B.33 Status telemetry of TCSC / FSC

B.33.1 NRLDC has been continuously requesting utilities to ensure reliable telemetry at the control centre. However, it is being observed that FSC/ TCSC status is not available from following locations.

S. No.	Station	Line	FSC Data Status
1	Bareilly 400	Meerut	Not reporting
2	Unnao	Bareilly (UP)	Not reporting

B.33.2 Utilities are requested to arrange for integration of telemetry of FSC/TCSC at the earliest. Matter was also discussed in 41st TCC Meeting where PGCIL has assured for status by April 2019.

B.34 Telemetry from Kurukshetra HVDC as per agreed in the separate meeting

B.34.1 In meeting held at Kurukshetra on issues related to HVDC Champa-Kurukshetra, POWERGRID had agreed to provide telemetry of additional data of HVDC as shown below which is still to be completed:

S. No.	Description	Clause in MoM dated 12-07-2018
1	Extinction angle *(inverter and rectifier stations)* and Firing angle *(inverter and rectifier stations)*	17
2	Telemetry of "real-time mode *(bi-polar with both DMR, bi-polar with one DMR, etc.)* of operation" and "instance of changeover"	20

B.34.2 Matter was already discussed in 40th TCC Meeting & 41st TCC Meeting, in which NRPC requested PGCIL to explore the possibility.

PGCIL may update the status.

B.35 Communication connectivity for Shifting of Terminal Server (NRLDC, SCADA) at Site

B.35.1 As per approved SCADA architecture, RTU / SAS of a group of Generating stations / Sub-stations shall report to the respective redundant terminal servers through redundant channels (with path diversity) installed at remote (beyond RLDC) communication nodes and from remote communication nodes the terminal servers shall report to Main and Back-up control centre. But due to non-availability of communication channels, terminal servers were installed at NRLDC and from NRLDC, links were established to Back-up Control Centre for data transfer.

B.35.2 It may be noted that Back-up Control Centres are so designed that in case of any disaster happens at Main Control Centre, then complete visibility is available at back-up control centre and control room operations and real time dispatch activities should be possible from back-up control centre. However, with present configuration of data routing, if any disaster happens at Main Control Centre, the visibility of real time data from stations directly reporting to NRLDC will not be available at back-up control centre.

B.35.3 The matter was discussed in various TeST Meetings in which POWERGRID informed that due to non-availability of the communication ring, the channel planning of terminal sever could not be done so far and informed that the channel planning would be done based on the planned network and terminal server placement would be completed once the communication links are established.

B.35.4 As the communication links are reported to be established, NRLDC has given a letter dated: 22nd March 2019 to PGCIL regarding shifting the terminal servers to site as per approved plan.

Member may please discuss.

C. COMMERCIAL ISSUES

C.1 Default in payment of outstanding dues and surcharge by beneficiaries

C.1.1 The details of outstanding dues are as under:

THDC (as on 24.05.19)

Sl. No.	Discoms	Total Outstanding including Surcharge (Rs. in Cr.)	Total Outstanding due for more than 60 days (Rs. in Cr.)	Remarks
1	BRPL, Delhi	149.25	135.45	**(A) Payment due for the bills raised in the months** (i) For Energy bills - Feb'19 to May'19 (ii) For LPSC bills - **Aug'13 to** May'19 (B) BRPL is deducting TDS on LPS bills but not releasing balance payment.
2	BYPL, Delhi	274.47	270.44	**(A) Payment due for the bills raised in the months** (i) For Energy bills- **Feb'15 to** May'19 (ii) For LPSC bills - **Mar'11 to** May'19 (B) BYPL is deducting TDS on LPS bills but not releasing balance payment
3	PDD, J&K	251.46	225.32	**Payment due for the bills raised in the months** (i) For Energy bills - June'18 to May'19 (ii) For LPSC bills - June'18 to May'19
4	UPPCL, UP	1348.09	1212.81	**(A) Payment due for the bills raised in the months** (i) For Energy bills - Aug'18 to May'19 (ii) For LPSC bills - Apr**'18 to** May'19 **(B)** UPPCL has stopped verification of LPS bills. In the last TCC & NRPC meetings, it was assured that matter will be resolved but the same is pending. **THDCIL request to NRPC to kindly intervene and to discuss the matter with the higher officials of UPPCL**
5	PSPCL, Punjab	19.07	0.77	**(A) Payment due for the bills raised in the months** (i) For Energy bills - Apr'19 to May'19 (ii) For LPSC bills - Jul**'16 to** May'19 (B) In the last TCC & NRPC meetings, they committed for release of old LPS payment of Rs. 74 Lakh but payment is still awaited. **THDCIL also requested to also provide bill-wise payment details of LPS bills since 2015-16 for proper reconciliation.**
6	JdVVNL, Rajasthan	31.29	24.31	**Payment due for the bills raised in the months** (i) For Energy bills - Feb'19 to May'19 (ii) For LPSC bills - Feb'19 to May'19
7	UPCL, Uttrakhand	23.01	9.61	**Payment due for the bills raised in the months** (i) For Energy bills - Mar'19 to May'19 (ii) For LPSC bills - Mar'19 to May'19

SJVNL (as on 22.05.19)

S.No.	Beneficiary	Total Dues (in Rs Cr.)	Remarks
1.	Govt. of HP/HPSEB	22.39 + 325.15 (LPS)	GoHP has agreed to release Rs. 8.39 Crore alongwithRs. 3.51 Crore (through PTC) out of the long pending outstanding. The notice for regulation of power issued on 11.01.2019 was withdrawn by SJVN on the assurance from PDD, J&K to release the outstanding amount. PDD, J&K may please be pursued to release the outstanding amount at the earliest. A default notice was issued to Jodhput VVNL dtd. 3.4.2019 for Non-Payment against power supply from NJHPS and RHPS. JdVVNL is requested to clear the outstanding dues at the earliest failing which SJVN will left with no option except to regulate the power.
2.	PDD, J&K	177.67	
3.	UPPCL, Uttar Pradesh	8.23 + 164.48	
4.	AVVNL	2.86	
5.	JdVVNL	3.38	

NHPC (as on 29.05.19)

(Rs. in Cr.)

Sl. No.	Beneficiary	Principal Dues	Outstanding Dues of more than 60 days	Surcharge up to 30.04.2019	Total Dues including Surcharge
1.	PDD, J&K	1039.29	829.60	106.15	1145.44
2.	UPPCL, UP	841.62	627.75	76.20	917.83
5.	JdVVNL, (Hydro Power) Jodhpur	56.58	26.04	0.96	57.53
6.	JdVVNL (Wind Power), Jodhpur	10.31	9.24	1.53	11.84

POWERGRID (as on 22.05.19)

(Rs. in Cr.)

Sl No.	DIC	60-90 days dues	>90 Days dues
1	Uttar Pradesh	191.44	76.10
2	Ksk Mahanadi(UP)	65.23	161.35
3	TRN Energy(UP)	19.79	37.87
4	RKM Powergen(UP)	7.92	
5	Rajasthan (Jodhpur) JDVVN	49.79	42.70
6	Rajasthan (Ajmer) AVVN	34.47	
7	DB Power (Rajastan)	2.41	
8	Delhi	3.85	
9	Delhi (Tata PDDL)	3.15	
10	Uttarakhand	46.08	36.97
11	Jammu And Kashmir	35.70	132.74

12	MB Power	34.71	
13	National Fertilizer Ltd.		0.48
14	LancoBudhil Hydro	0.10	7.79
15	LancoBudhil (PTC)		29.30
16	Himachal Sorang		68

C.2 Opening of Letter of Credit (LC)

C.2.1 As per mutually signed Power Purchase Agreement, beneficiaries have to submit a confirmed, revolving, irrevocable Letter of Credit for an amount equivalent to 105% of average monthly billing of preceding 12 months with appropriate bank as mutually acceptable to parties. The LC shall be kept valid at all the time during the validity of the Power Purchase Agreement. This matter had been discussed regularly in various Commercial Sub-committee meetings as well as TCC and NRPC meetings. However, the following beneficiaries are yet to submit the requisite LoC for the FY 2019-20.

Utility	Beneficiary	Remarks
SJVNL	PDD, J&K	Request letters for issue of letter of credit for 2019-20 have also been issued. Beneficiaries are requested to issue letter for credit for 2019-20.
	BRPL, Delhi	
	BYPL, Delhi	
	HPSEBL	
THDC	PDD, J&K	Beneficiaries are requested to open the Letter of Credit on priority.
	BRPL, Delhi	
NHPC	PDD, J&K	In spite of regular follow up, PDD (J&K) and BRPL(Delhi) have not provided LC till now
	BRPL (Delhi)	
POWERGRID	BYPL, BRPL, J&K, LancoAnpara and Uttarakhand	LC not opened
	NDMC, Railways, Chandigarh, Punjab, Lanco Green and TRN Energy	Inadequate LC

C.2.2 Members may kindly discuss.

C.3 Non-payment of LPS by the beneficiaries (Agenda by SJVNL)

C.3.1 It is to point out that while releasing the amount of energy bill raised by SJVN Limited, the amount of late payment surcharge is being excluded by the beneficiaries while releasing the payments.

C.3.2 It is reiterated that the LPS is an integral part of energy bills which is imposed/charged in view of CERC regulation and provision contained in the Power Purchase Agreement for non-payment of dues. Hence, the non-payment of LPS is violation of Power Purchase Agreement and CERC guidelines on the subject.

C.3.3 It is, therefore, requested that the beneficiaries may be advised to make payment of energy bill including the amount of LPS in future while making the payments.

C.4 Recent CERC Orders/draft Regulations

C.4.1 **Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters)(Fifth Amendment) Regulations, 2019**

C.4.2 CERC notified Central Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) (Fifth Amendment) Regulations, 2019 on 28.05.2019 to be implemented w.e.f. 03.06.2019. The salient provision of the Regulations are:

(i) Certain clarifications issued by nodal agency have been incorporated in the principal regulations. The definitions of Time block DSM, Daily base DSM, UMCP for IR deviation have been included in the principal regulations

(ii) Cap rate for all Generators has been changed to 303.04 paise/unit

(iii)Frequency above which Additional charge would be levied for OI/UD has been increased from 50.05 Hz to 50.1 Hz. A cap rate of 303.04 paise/unit would be applicable for additional deviation in this case.

(iv)Clause (10) of Regulation 7 regarding Additional Charge due to sustained deviation has been modified.

a. For the period up to 31.03.2020: If the sustained deviation from schedule continues in one direction (positive or negative) for 12 time blocks, the regional entity (buyer or seller), shall correct its position by making the sign of its deviation from schedule changed or by remaining in the range of +/- 20 MW with reference to its schedule, at least once, latest by 13th time block, such range being a subset of volume limit as specified under Regulations 7(1) & 7(2) of these Regulations. Provided that each violation of the requirement under this clause shall attract an additional charge of 10% of the time block DSM charge payable or receivable as the case may be.

b. For the period from 01.04.2020: If the sustained deviation from schedule continues in one direction (positive or negative) for 6 time blocks, the regional entity (buyer or seller), shall correct its position, by making the sign of its deviation from schedule changed or by remaining in the range of +/- Central Electricity Regulatory Commission 20 MW with reference to its schedule, at least once, latest by 7th time block such range being a subset of volume limit as specified under Regulations 7(1) & 7(2) of these Regulations. Provided

that violation of the requirement under clause (b) of this Regulation shall attract an additional charge as specified in the table below:

No. of violations in a Day	Additional Charge Payable
From first to fifth violation	For each violation, an additional charge @ 3% of daily base DSM payable / receivable
From sixth to tenth violation	For each violation, an additional charge @ 5% of daily base DSM payable / receivable
From eleventh violation onward	For each violation, an additional charge @ 10% of daily base DSM payable / receivable

(v) Exemption in sustained deviation charges has been provided in the following cases:

a. renewable energy generators which are regional entities

b. run of river projects without pondage

c. any infirm injection of power by a generating station prior to CoD of a unit during testing and commissioning activities, in accordance with the Connectivity Regulations.

d. any drawal of power by a generating station for the start-up activities of a unit

e. any inter-regional deviations.

f. forced outage of a generating station in case of collective transactions on Power Exchanges.

C.4.3 **Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (Sixth Amendment), Regulations, 2019**

C.4.4 CERC notified Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) (Sixth Amendment), Regulations, 2019 on 27.03.2019. The salient provision of the Regulations are:

C.4.5 No transmission charges and losses for the use of ISTS network shall be payable for the generation based on solar and wind power resources for a period of 25 years from the date of commercial operation of such generation projects if they fulfill the following conditions:

(i) Such generation capacity has been awarded through competitive bidding process in accordance with the guidelines issued by the Central Government;

(ii) Such generation capacity has been declared under commercial operation between 13.2.2018 till 31.3.2022;

(iii) Power Purchase Agreement(s) have been executed for sale of such generation capacity to all entities including Distribution Companies for compliance of their renewable purchase obligations.

C.5 Difference between Real Time SCADA data and SEM data causing huge financial burden on PSPCL- Availability of SEM data on Real Time Basis (Agenda by PSPCL)

C.5.1 PSPCL is generally observing Grid Discipline by way of remaining within its drawal schedule. PSPCL is doing State's daily day ahead demand forecast and also keeping adequate spinning reserves at its disposal in a manner so that all the requirements of in force DSM Regulations are fulfilled and DSM penalty on any account is avoided. Further, in order to take care of an extreme contingency such as outage of any of its IPPs 700/660 MW unit(s), available spinning reserves are pressed into service and as a last resort power curtailment is imposed in order to be within the drawl schedule. However, lately after the implementation of 4th amendment to DSM Regulations w.e.f. 01.01.2019, its DSM charges have increased manifolds despite all such proactive measures adopted by it.

C.5.2 Although PSPCL is taking all the necessary steps to maintain Grid Discipline yet the huge imposition of DSM charges is due to lack of availability of reliable and accurate real time data. It is pertinent to mention here that the system operator operates the system based upon the real time data whereas the actual post facto SEM data, on the basis of which DSM account is prepared, indicates huge variation from the real time SCADA data. The daily variation between Real Time and SEM data variation for the period from 01.01.2019 is attached as Annexure-XIII.

C.5.3 It becomes evident from the data that, the operator has in real time effected the sign change on most of the occasions but due to mismatch between Real Time/SEM data, the sign change has not taken place in actual. Besides mismatch of energy between SEM/SCADA, results into heavy charges on account of deviation and additional deviation charges due to overdrawal (as per SEM data), though the system has mostly been operated in underdrawal (as per real time SCADA data) by PSPCL. The inaccurate real time data has resulted into financial liability (for the period from 01.01.19 to 28.04.19) on account of only sustained deviation violation, to the tune of about Rs. 40.32 crores out of total liability of Rs. 73.66 crores. Other than that energy mismatch between SEM/SCADA has resulted into heavy charges on account of deviation and additional deviation charges though the system has been operated in underdrawal on most of the time.

C.5.4 It is mentioned that availability of reliable telemetry is of utmost importance to have a reliable and dependable display of SCADA data. However, the telemetry provided is quite fragile as some of the drawal points get suspected very frequently. Despite raising the issue of availability of accurate real time data at various forums, no positive result has yielded so far. The DISCOMs are paying staggering amount of DSM charges without any of their fault as the responsibility to upgrade and maintain the infrastructure of

telemetry lies with CTU/RLDC/STU/State SLDC. DISCOMs are being unnecessarily penalized on account of deficiency in providing adequate services by other constituents.

C.5.5 Since the issue related with availability of accurate real time SCADA data has not been addressed, it is therefore proposed that SEM data on real time basis may be made available by CTU from various ISTS drawal points so that DISCOMs have to bear only those DSM charges which are actually due to them as per the in force DSM Regulations.

C.5.6 Members may discuss the same for concrete action plan on it.

C.6 Status of DSM Charges:

C.6.1 Deviation Pool Account Fund of NR is being maintained & operated by NRLDC, in accordance with the CERC Regulations. As per Regulations 10 (1) of "Deviation Charges Related matters" the payment of charges for Deviation shall have a high priority and the concerned constituents shall pay the indicated amounts within 10 days of issue of statement of Charges for Deviation including Additional Charges for Deviation by the Secretariat of the respective Regional Power Committee in to the "Regional Deviation Pool Account Fund" of the concern region.

C.6.2 DSM Charges payable to pool status as on 27' May-2019 considering week no-4 (due dated of which is 19th May 2019) is indicated here in below:-

All figures in Rs. Lakhs

S No.	Constituents	Deviation Charges Payable/ Receivable	Remarks (Outstanding More than 90 days)
1	JAMMU AND KASHMIR	7453.48	Since 04.02.2019
2	Punjab	4032.22	
3	Uttarakhand	770.51	
4	POWERGRID NR	334.25	Since 02.02.2019
5	GREENKO BUDHIL	33.49	

Note: (+) ve figure are Payable to Pool and (-) ve figures are receivable from Pool

C.6.3 In the 41st TCC/44th NRPC meeting held on 18th/19th March, NRLDC has brought to the notice of the Members that Punjab, Chandigarh and POWERGRID which were paying regularly before implementation of 4th Amendment in CERC DSM Regulations, have stopped paying the DSM charges. POWERGRID informed that they will not pay the DSM charges till outcome of the case in the petition filed before CERC in this matter.

C.6.4 NRPC has noted the discussions and urged utilities to clear outstanding DSM charges to avoid late payment surcharge and regulation of power supply. Now Chandigarh has

cleared all its outstanding dues and Punjab has made a partial payment for liquidation of outstanding DSM charges.

C.6.5 The issues pertaining to additional charges for sustained duration in the DSM account issued by RPCs as per the 4th Amendment of the CERC Regulation is sub-judice in the Hon'ble High Court. In the mean time CERC has published a draft notification dated 18.04.2019 of the Regulation taking into account the issues related to additional charges for sustained deviation. However, the payments on account of Deviation charges need to be settled in line with prevailing CERC Regulation as per the DSM account issued by RPCs till the amendments, if any notified by CERC or any order from the High Court.

C.6.6 Therefore all payable utilities are requested to clear the outstanding's at the earliest so that, receivable parties will be paid and to avoid further increase of Delay Payment Interest.

Members may please deliberate.

C.7 Status of LC against Deviation Charges delayed payment:

C.7.1 NRLDC Proviso (4) of Regulations 10 of CERC (Deviation Settlement Mechanism & related matter) dated 06.01.2014 provides that

"All regional entities which had at any time during the previous financial year failed to make payment of Charges for Deviation including Additional Charges for Deviation within the time specified in these regulations shall be required to open a Letter of Credit (LC) equal to 110% of its average payable weekly liability for Deviations in the previous financial year, in favour of the concerned RLDC within a fortnight from the date these Regulations come into force."

C.7.2 In accordance with CEC Regulations, NRLDC has informed vide its letter dated 13.05.2019 to all the defaulting entities regarding the opening of LC and the amount for which the LC is to be opened. The status for LC in this regards is tabulated below:

S. No	Name of NR Pool members	LC Amount (Rs. in Lakh.)	Status	No of defaults in Deviation Payment FY 2018-19
1	PUNJAB	272.20	LC ofRs. 229 Lakhs has opened for the period of 20-07-18 & valid upto 19-07-19.	27
2	UT CHANDIGARH	117.76	LC of Rs. 85 Lakhs opened for the period upto 31.03.20.	9
3	UTTAR PRADESH	768.05	LC not opened	24
4	UTTARAKHAND	204.98	LC not opened	10

5	HIMACHAL PRADESH	395.72	LC not opened	1
6	PDD,J&K	404.26	LC not opened	34
7	EPPL	1.39	LC not opened	10
8	GREENKO BUDHIL	17.19	LC not opened	4
9	PGCIL	19.94	LC not opened	15
10	RAJASTHAN	619.25	LC not opened	4
11	NFL	1.28	LC not opened	4
12	NEPAL	29.53		2

C.7.3 NRLDC has also enclosed a standard format for LC opening along with its letter dated 13.05.2019.

C.7.4 Therefore it is requested that all the above mentioned entities to open the LC of the required amount (as per the LC format enclosed) within a fortnight in accordance with CERC Regulations.

Members may please deliberate

C.8 Reactive Energy charges status:

C.8.1 Reactive Reactive Energy Charges status as on 27th May 2019 considering week no-04 (due dated of which is 19th May 2019) is indicated here in below: -

All Figures in Rs. Lakhs

S No.	UTILITY	NET OUTSTANDING
1	JAMMU AND KASHMIR	171.85
2	DELHI	65.74
3	UTTARAKHAND	-0.72
4	CHANDIGARH	-0.61
5	HARYANA	-9.22
6	HIMACHAL PRADESH	-7.60
7	PUNJAB	-21.92
8	UTTAR PRADESH	-34.56
9	RAJASTHAN	-28.78

Note: (+)ve figure are Payable to Pool and (-)ve figures are receivable from Pool

C.8.2 All Payable constituents i.e.; Punjab and Delhi are requested to release outstanding RE charges payments at the earliest so that, receivable parties will be paid and to avoid further increase of Delay payment Interest.

Members may please deliberate.

C.9 NRLDC Fee & Charges:

C.9.1 NRLDC NRLDC is sending the hard copies of bills to all the users regularly on monthly basis. The bills are also being mailed to all users on the day of billing and soft copies of bills are also available to the link "https://nrldc.in/commercial/bill-details/".

C.9.2 Performance Linked Incentive (PLI) bill for the financial year 2016-17 and 2017-18 (Provisional) has been raised on 15.02.2019, in line with the CERC Regulation. NRLDC Fee and Charges outstanding details (including PLI bills) considering up to Feb-2019 bills (due date of which is 30.04.2019) are shown here in below:

S No.	Constituents	Outstanding (in Rs. In Lakhs)	Remarks
1	UPPCL	34.39	Outstanding against PLI (Provisional) 2017-18.
2	Sorang HEP	1.58	Outstanding against Feb-19, PLI 2016-17 and PLI (Provisional) 2017-19.
3	PDD J&K	0.40	Outstanding against Feb-19 (Part Payment)

C.9.3 Except UP and Sorang HEP all the users has settled the outstanding against PLI of 2017-18 (provisional).UPPCL vide letter dated 11.04.2019 (received on 20.05.2019) the PLI Bill for the financial year 2017-18 will not be verified till issuing of orders from CERC.

C.9.4 NRLDC has clarified the PLI (Provisional Bill) for 2017-18 has been issued in accordance with proviso (6) of Regulation 29 of CERC (Fees and Charges of Regional Load Despatch Centres) Regulations, 2015. The matter was also deliberated in 39 commercial subcommittee meeting, and it was advised to UPPCL the settle the PLI outstanding at the earliest.

C.9.5 It is requested to the above users to clear the outstanding at the earliest.

C.9.6 NRLDC is requesting all the Users that while making the payment please provide the payment details in the prescribed format, as provided below:

NRLDC Fee & Charges Format for Payment made /TDS Deduction

USER Name									
BILLING DETAILS			SETTLEMENT DETAILS						
BILL MONTH AND YEAR -	DATE of Bill issue	Billed AMOUNT	Date of Bill Receipt by Users	Mode of Payment RTGS/NEFT/Others	Date of Clearing of Payment from Users Bank A/c	Amount Paid into POSOCO Fee & Charge A/c by Users	TDS-deducted by Users if any	Rebate-deducted by Users if any	Amount-Admitted (Paid+TDS +Rebate) by Users
			(1)	(2)	(3)	(4)	(5)	(6)	(7)=(4)+(5)+(6)

C.9.7 However, it is observed that most of the Users are not providing the details as per the enclosed formats.

C.9.8 All Users are requested to make timely payment of RLDC Fees and Charges and also provide the information as per above mentioned Format for easy reconciliation.

Members may please deliberate

C.10 Reconciliation of Pool Accounts (Jan-19 to March-19):

C.10.1 Reconciliation statement of Deviation Charges and Reactive Energy Charges has been forwarded to entities and uploaded on website by NRLDC on 09.04.2019. The constituents are requested to verify /check the same & comments if any on the same were to be reported to NRLDC by 30.04.2019. In case of non-receipt of any communication it will be presumed that reconciliation statement stands reconciled.

C.11 Status of AGC & Ancillary Services:

C.11.1 The The Status from week 01 to 53 of financial year 2018-19 & Week 01 to Week 05 of FY 19-20 as on 27-05-2019 is as herein below as per NRPC bill (**All fig. In Rs. Cr**.) :-

Week		Surplus in DSM A/C (A)	RRAS Billed			AGC	FRAS
			Regulation UP (B)	Regulation Down ('C)	Net (D=B-C)		
W-1	(26.03.18-01.04.18)	17.39	11.38	0.02	11.37	1.01	
W-2	(02.04.18-08.04.18)	19.78	9.90	0.00	9.90	2.47	
W-3	(09.04.18-15.04.18)	10.09	8.38	0.00	8.38	2.15	
W-4	(16.04.18-22.04.18)	15.99	9.51	0.00	9.51	1.31	
W-5	(23.04.18-29.04.18)	17.99	8.33	0.00	8.33	2.21	
W-6	(30.04.18-06.05.18)	13.82	5.75	0.00	5.75	-0.36	
W-7	(07.05.18-13.05.18)	29.27	10.20	0.14	10.06	0.00	
W-8	(14.05.18-20.05.18)	30.17	12.88	0.16	12.72	0.05	
W-9	(21.05.18-27.05.18)	26.24	7.68	0.00	7.68	1.69	
W-10	(28.05.18-03.06.18)	21.79	10.91	0.10	10.81	1.46	
W-11	(04.06.18-10.06.18)	19.85	11.35	0.02	11.33	1.43	
W-12	(11.06.18-17.06.18)	28.09	9.60	0.18	9.42	1.79	
W-13	(18.06.18-24.06.18)	43.12	17.48	0.07	17.40	1.85	
W-14	(25.06.18-01.07.18)	26.93	13.40	0.05	13.34	0.69	
W-15	(02.07.18-08.07.18)	42.67	7.52	0.02	7.50	0.85	
W-16	(09.07.18-15.07.18)	43.66	9.51	0.00	9.51	2.31	

Week		Surplus in [illegible]	RRAS Billed			AGC	FRAS
W-17	(16.07.18-22.07.18)	37.31	13.12	0.01	13.11	2.18	
W-18	(23.07.18-29.07.18)	50.13	38.26	0.00	38.25	2.79	
W-19	(30.07.18-05.08.18)	50.67	42.24	0.00	42.24	2.61	
W-20	(06-08-18-12.08.18)	59.01	43.07	0.00	43.07	1.50	
W-21	(13.08.18-19.08.18)	41.79	34.12	0.02	34.10	-0.08	
W-22	(20.08.18-26.08.18)	46.63	34.75	0.00	34.75	1.11	
W-23	(27.08.18-02.09-18)	43.56	28.22	0.00	28.22	1.24	
W-24	(03.09.18-09.09.18)	27.24	25.84	0.00	25.84	0.49	
W-25	(10.09.18-16.09.18)	36.65	33.00	0.00	33.00	0.63	
W-26	(17.09.18-23.09.18)	29.35	56.05	0.00	56.05	0.38	
W-27	(24.09.18-30.09.18)	57.97	133.40	0.00	133.40	2.34	
W-28	(01.10.18-07.10.18)	41.42	134.26	0.00	134.26	0.40	
W-29	(08.10.18-14.10.18)	47.23	126.53	0	134.26	0.22	
W-30	(15.10.18-21.10.18)	33.39	94.56	0.00	94.56	0.00	
W-31	(22.10.18-28.10.18)	44.58	143.49	0.00	143.49	1.43	
W-32	(29.10.18-04.11.18)	50.80	150.23	0.00	150.23	1.08	
W-33	(05-11-18-11.11.18)	15.30	42.63	0.04	42.59	2.72	
W-34	(12.11.18-18.11.18)	-67.77	21.22	0.03	21.19	2.27	
W-35	(19.11.18-25.11.18)	11.05	5.53	0.08	5.46	2.68	
W-36	(26.11.18-02.12.18)	14.30	7.18	0.01	7.17	2.84	0.00
W-37	(03.12.18-09.12.18)	13.39	10.59	0.00	10.59	2.83	0.01
W-38	(10.12.18-16.12.18)	12.77	13.17	0.00	13.17	2.86	0.01
W-39	(17.12.18-23.12.18)	9.16	7.66	0.10	7.56	2.69	0.01
W-40	(24.12.18-30.12.18)	15.48	21.85	0.06	21.79	2.20	0.01
W-41	(31.12.18-06.1.19)	55.15	7.72	0.44	7.28	1.46	0.01
W-42	(07.01.19-13.01.19)	52.15	13.26	0.13	13.13	1.09	0.01
W-43	(14.01.19-20.01.19)	55.40	5.04	0.46	4.58	1.02	0.02
W-44	(21.01.19-27.01.19)	50.43	2.57	0.80	1.77	1.77	0.02
W-45	(28.01.19-03.02.19)	34.94	4.30	0.24	4.06	0.93	0.01
W-46	(04.02.19-10.02.19)	-157.07	1.54	1.07	0.47	0.40	0.02
W-47	(11.02.19-17.02.19)	63.65	0.63	1.70	-1.07	1.68	0.02
W-48	(18.02.19-24.02.19)	64.83	0.39	1.17	-0.78	1.11	0.02
W-49	(25.02.19-03.03.19)	-32.10	0.31	2.81	-2.50	0.13	0.01
W-50	(04.03.19-10.03.19)	25.37	1.88	1.08	0.79	1.30	0.01
W-51	(11.03.19-17.03.19)	9.04	2.20	0.33	1.87	1.09	0.01
W-52	(18.03.19-24.03.19)	17.13	0.19	0.80	-0.62	0.60	0.02
W-53	(25.03.19 -31.03.19)	30.50	0.37	0.70	-0.34	0.11	0.03
W-1 (2019-20)	(01.04.19-07.04.19)	29.63	2.75	0.28	2.46	1.27	0.02
W-2	(08.04.19-14.04.19)	41.47	2.68	0.50	2.18	2.25	0.03
W-3	(15.04.19-21.04.19)	47.01	0.85	0.18	0.67	1.13	0.03
W-4	(22.04.19-28.04.19)	40.55	2.58	0.20	0.67	1.02	0.05
W-5	(29.04.19-05.05.19)	36.09	0.79	1.41	-0.62	0.00	0.02
Total		**1592.43**	**1474.81**	**15.40**	**1465.36**	**78.68**	**0.40**

C.11.2 Ancillary Services i.e, RRAS, AGC & FRAS has been settled upto Week 05 of FY 2019-20. There is no outstanding amount for payment of RRAS, AGC or FRAS.

Members may like to note the same.

C.12 Reconciliation of STOA (Short Term Open Access) Charges disbursement:

C.12.1 NRLDC has sent the reconciliation statement of open access disbursement for the Quarter- 4 of financial year 2018-19 on 23rd April 2019. The applicants/STU/SLDCs were requested to verify /check the reconciliation statement & comment if any on the same by 15th May 2019. The reconciliation statement of Manipur STU/SLDC was received on 2nd May'19 and that of Rajasthan STU/SLDC was received on 3rd May'19.

C.12.2 In case of non-receipt of any communication it will be presumed that reconciliation statement stands reconciled.

C.13 Reconciliation of Outstanding STOA Delay Payment Interest:

C.13.1 As per Regulations 19(2) of Open Access Inter State Regulations 2008, the person committing default in payment shall pay simple interest @ of 0.04% for each day of default. The applicant wise the outstanding interest amount (computed till date) is :

S.No.	Applicant Name	Outstanding Interest as on 30th April'2019
1	Northern Railways (UP)	1805
2	GreenkoBudhil	1913

C.13.2 NRLDC has blocked the above Utilities for further applying for STOA applications, till clearance of all outstanding dues.

Members may like to note the same.

C.14 STATUS of AMR as on 25.05.2019

C.14.1 LOA for installation and commissioning of AMR system for Northern Region was awarded by POWERGRID to M/s Kalkitech in February 2012. The issues related to AMR are regularly being updated in every OCC Meeting and Commercial Sub-committee meeting of NRPC. As on date SAT of 254 locations has been completed covering 1504 SEM and 334 DCU.

C.14.2 However out of 254 locations (1504 SEMs), only around 210 nos. of locations (1150 SEMs) i.e. around 80 % data is being received by Tuesday from AMR system for preparation of regional energy account.

C.14.3 No of locations from where AMR data are received in totality and used for energy accounting for last 04 weeks have been given below:

S No.	Week (From-To)	Total no of locations Where SAT is completed	Total No of locations data received in totality	Total No of locations data received in totality by	Total No of locations received after Tuesday

C.14.4 There has been some improvement in meter data communication to NRLDC in time. Still there is a need for further improvement. The members may appreciate that data from all locations are required for calculation of losses and preparation of weekly regional energy account. Non-availability of data from so many stations is making it difficult for NRLDC to process the meter data for loss calculation and timely submission of data to NRPC for preparation/issuance of weekly energy accounts.

				Tuesday	
1	150419-210419	253	208	196	12
2	220419-280419	253	210	200	10
3	290419-050519	254	215	204	11
4	060519-120519	254	218	208	10

C.14.5 M/s POWERGRID may please coordinate with M/s Kalkitech and ensure that meter data from all sites are regularly provided to NRLDC by Tuesday.

C.15 Integration of AMR System with Elster Meters:

C.15.1 The issue of integration of Elster make meters with AMR system was discussed in the 41st TCC/44th NRPC meeting also. POWERGRID in the 41st TCC informed that due to poor response from M/s Kalkitech, they have identified other vendor for above purpose.

C.15.2 The issue was also discussed in the recent Commercial Sub-Committee Meeting of NRPC. POWERGRID was requested to update the status regarding integration of Elster make meters and progress of work by new Vendor identified by POWERGRID.

C.15.3 POWERGRID may please update the status on same.

C.16 AMR data through Fibre Optic Network

C.16.1 As informed by M/s Kalkitech, AMR communications through optical fibre link at 43 locations of POWERGRID have been configured till date and balance shifting work on OPGW is in progress to connect around 70 locations of POWERGRID. After switching over to fibre optic network there is an improvement in meter data communication to NRLDC.

C.16.2 In the 41st TCC Meeting, the TCC urged POWERGRID to submit the cost estimation for shifting of AMR data on OPGW for all other stations wherever feasible. In this regard, POWERGRID informed that they have not received certain information which is required for estimation of cost. The format of the same is attached with the minutes of 37th CSC meeting. All are requested to provide the data in the format at the earliest.

C.16.3 Further, POWERGRID is also requested to provide the present status and plan for the switching over of other station through OPGW link.

C.17 Status regarding procurement of DCD:

C.17.1 SEM data through AMR is sometimes not available from some sites due network issue, POWERGRID is requested to provide at least one DCD at each substation for smooth availability of SEM Data and also for time drift correction purpose. The location wise requirement of DCD and quantity of DCD to be procured was also provided to POWERGRID vide NRLDC Letter date0d 01.10.2018. POWERGRID is requested to update the status on procurement of DCD.

C.17.2 Further, NRLDC vide its letter Ref. No NRLDC/MO/Metering/10-768 dated 06.05.2019 has requested POWERGRID to provide the number of procured DCDs, availability of DCDs and SEMs in POWERGRID store, to assess the SEMs/DCDs future requirement in Northern Region.

C.17.3 POWERGRID is requested to update the status.

C.18 Ensuring Healthiness of Metering System:

C.18.1 It is requested that all entities in whose premises the meter is installed should periodically carry out the following activities for ensuring healthiness of metering system:

a. Routine check-up of PT supply to meters:
All utilities are requested to check the PT supply of all 03 phase to meters installed in their premises for ensuring healthiness of meters and proper energy recording. It may be done on monthly basis.

b. Intimation regarding faulty meters:
If a meter gets faulty, it is requested to check its PT supply and also restart the meter before intimating it to NRLDC. It has been found the some of the stations are providing the information about faulty meter without checking the meter conditions at their end.

c. Regarding delay in Meter data to NRLDC:
All utilities are requested to send the SEM data to NRLDC by Monday or latest by Tuesday. It has been observed that some of the stations are sending the data on Wednesday and Thursday. Due to this, NRLDC has limited time for validation and processing of SEM data and further submission to NRLDC. Further, it is requested to arrange a mobile 3 phase 110 V AC supply to meters in case the feeder is shut down and send the SEM data to NRLDC.

d. Healthiness of DCD:
AMR has been commissioned at most of the substation for online transmission of meter data to NRLDC. But data through AMR is not available in case of network issue and DCU failure. Therefore, all utilities are requested to monitor the healthiness of DCD by routine charging of DCD for sending of data during AMR failure.

C.19 Time drift Correction in SEMS:

C.19.1 NRLDC is regularly uploading the discrepancy report on weekly basis indicating the time drift in meters and also replacement/rectification required in special energy meters. All constituents in whose premises the meters are installed are required to take corrective action for time correction based on the weekly discrepancy report of NRLDC. Besides uploading of weekly report the many times the NRLDC metering group is also taking up the matter with concerned over telephonically and/or through e-mail also.

C.19.2 NRLDC vide its letter Ref No./NRLDC/MO/Metering/3/383-401 dated 18.02.2019 has circulated the list of SEMs where time correction is required to all the state utilities, SLDCs, POWERGRID Stations, Generation stations and have asked them to submit the reports to NRLDC after necessary time correction. But NRLDC has yet to receive the compliance report from them except POWERGRID, BBMB, NTPC, NPCL, DTL, PUNJAB, UP and NHPC. It is therefore requested that all these utilities shall ensure the time correction of the SEMs in their respective premises and submit the report to NRLDC. Summary for last two weeks' time drift status of SEMs is shown below:

S.No	Utility	Total Nos. of Meters installed	Week 06.05.19 - 12.05.19		Week 13.05.19 to 19.05.19	
			Nos. of Meters on which Time-drift has been observed	% of Time Drift Meters	Nos. of Meters on which Time-drift has been observed	% of Time Drift Meters
1	AD Hydro	4	0	0%	0	0%
2	BBMB	270	17	6%	17	6%
3	Budhil HEP	3	0	0%	0	0%
4	CHANDIGARH	5	3	60%	3	60%
5	DTL	42	11	26%	12	29%
6	HPSEB	38	6	16%	12	32%
7	HVPNL	44	21	48%	21	48%
8	J&K	32	16	50%	19	59%
9	KW-Hydro	16	0	0%	0	0%
10	Malana HEP-2	7	0	0%	0	0%
11	NHPC	135	26	19%	27	20%
12	NPCIL	50	5	10%	5	10%
13	NTPC	218	20	9%	19	9%
14	Patran	6	6	100%	6	100%
15	PGCIL	757	221	29%	231	31%
16	Phojal-HEP	4	4	100%	4	100%
17	PSPTCL	61	1	2%	1	2%
18	PTCUL	46	26	57%	28	61%
19	RAILWAYS	4	4	100%	4	100%
20	RVPNL	60	24	40%	29	48%
21	SAINJ	6	4	67%	4	67%
22	SCL	6	0	0%	0	0%
23	SJVNL	32	0	0%	0	0%
24	Sorang HEP	6	0	0%	0	0%
25	STERLITE	10	10	100%	10	100%
26	THDC	16	0	0%	0	0%

S.No	Utility	Total Nos. of Meters installed	Week 06.05.19 - 12.05.19		Week 13.05.19 to 19.05.19	
			Nos. of Meters on which Time-drift has been observed	% of Time Drift Meters	Nos. of Meters on which Time-drift has been observed	% of Time Drift Meters
27	UPPTCL	103	27	26%	31	30%
Total		**1981**	**452**	**23%**	**483**	**24%**

C.19.3 All members in whose premises the meters are installed, are requested to periodically check (at least once in a month) the time drift in meters and send the time drift/ compliance report as per following format.

C.19.4 It is requested to provide consolidate report of time drift status report in their respective control area.

Location/ Substation	Meter No.	Meter location details	Time as per S/Stn GPS	Time as per meter	Time Drift	Action Taken

C.19.5 Further, POWERGRID has placed an LOA to M/s Kalkitech for time drift correction through AMR system also. However, it is observed that time drift correction through AMR has not been carried out date till date.

POWERGRID may apprise the status of time drift correction through AMR system.

D. ITEMS FOR NRPC

D.1 Reimbursement of Expenditure of NRPC Sectt. for FY 2019-20 by the members of NRPC

D.1.1 Keeping in view the budget estimates approved by GoI for the financial year 2019-20 and expenditure likely to be incurred towards outsourcing of staff, conduct of various meetings, leasing of vehicle, petrol for vehicles, AMC of software, training etcthrough NRPC fund and balance amount available in the NRPC Fund, the per membercontribution for the year 2019-20 is proposed to be kept unchanged i.e. Rs.10.0 lakh.

D.1.2 Members may kindly approve for remitting the above annual contribution.

D.2 Reimbursement of Expenditure of NRPC Sectt. by the members of NRPC for the previous years

D.2.1 For reimbursing NRPC expenditure to GoI and meeting the expenditure for meetings at Secretariat and other expenditure as approved by Chairperson, NRPC, constituent members are to pay annual contribution as decided at NRPC meetings from time to time.

D.2.2 The contribution for previous years is still awaited from following members:

Sl. No.	Constituent Member	Amount (Rs.)
Financial Year 2018-2019		
1	Delhi Transco Ltd	10.0Lakh
2	HVPNL, HR	10.0Lakh
3	Uttar Haryana BijliVitaran Nigam Ltd.	10.0Lakh
4	Jaipur VidyutVitran Nigam Ltd.,	10.0Lakh
5	J&K Power Development Department, Srinagar	10.0Lakh
6	J & K State Power Development Corp. Ltd., Srinagar	10.0Lakh
7	Punjab State Power corp. Ltd.,	10.0Lakh
8	DakshinanchalVidyutVitran Nigam Ltd., Agra	10.0Lakh
9	Uttarakhand JalVidyut Nigam Ltd.,	10.0Lakh
10	Uttarakhand Power Corporation Ltd.,	10.0Lakh
11	Powergrid Corporation of India Ltd.,	10.0Lakh
12	Nuclear Power Corpn. of India Ltd,	10.0Lakh
13	Rosa Power Supply Company Ltd.,	10.0Lakh
14	Talwandi Sabo Power Ltd.	10.0Lakh

15	Prayagraj Power Generation Co Ltd.	10.0Lakh
16	Nabha Power Limited,	10.0Lakh
17	Manikaran Power	10.0Lakh
Sl. No.	**Constituent Member**	**Amount (Rs.)**
	Financial Year 2017-2018	
1	Dakshin Haryana BijliVitaran Nigam Ltd., Hisar	10.0Lakh
2	J&K Power Development Department, Srinagar	10.0Lakh
3	J & K State Power Development Corp. Ltd., Srinagar	10.0Lakh
4	MadhyanchalVidyutVitran Nigam Ltd., Lucknow	10.0Lakh
5	Uttarakhand Power Corporation Ltd., Dehradun	10.0Lakh
6	Rosa Power Supply Company Ltd., Shahjahanpur	10.0Lakh
7	LancoAnpara Power Ltd., Gurgaon	10.0Lakh
8	Prayagraj Power Generation Co Ltd., Allahabad	10.0Lakh
9	Lalitpur Power Generation Company Limited, Noida	10.0Lakh
	Financial Year 2016-2017	
1.	J&K PDD, Srinagar	7.0 Lakh Each
2.	PVVNL, Varanasi	
	Financial Year 2015-2016	
1	J&K State Power Development Corp. Ltd., Srinagar	11.0 Lakh Each
2	Paschimanchal VVNL, Meerut	
3	GMR Energy Trading Limited, New Delhi	
	Financial Year 2014-2015	
1	J&K State Power Development Corp. Ltd., Shrinagar	11.0 Lakh Each
2	Dakshinanchal VVNL, Agra	
3	Bajaj Energy Pvt. Ltd., Noida	
	Financial Year 2012-2013	
1	Purvanchal VVNL, Varanasi	10.0Lakh

Members are requested to expedite the contribution at the earliest.

D.3 Membership in NRPC for Rotational Members

D.3.1 Government of India, Ministry of Power under the provision of Section 2, Subsection 55 of the Electricity Act 2003 had established the Northern Regional Power Committee in place of erstwhile Northern Regional Electricity Board vide its resolution dated 25.05.2005

D.3.2 The resolution and its subsequent amendeds provide for representation by rotation for DISCOMs, Generating companies and Traders as given below:

- From each state, one of the State owned distribution companies as nominated by the State Government.
- One distribution company by alphabetical rotation out of the private distribution companies functioning in the region is to be represented in NRPC.
- A representative of the generating companies (other than central generating companies or State Government owned generating companies) having power plants in the region with installed capacity of 1000 MW or below by rotation.
- A representative of the electricity traders operating in the region by rotation.

D.3.3 During the 25th NRPC meeting held on 24.02.2012, it was decided that NRPC Sectt.should finalize the representation of State owned distribution companies by rotation based on the list of State owned distribution companies and its representation in the previous years.

D.3.4 As per the decision in the 25th NRPC meeting held on 24.02.2012 the membership of State owned distribution companies for the year 2019-20 will be as follows:

Haryana: Dakshin Haryana BijliVitaran Nigam Ltd.

Rajasthan: Ajmer VidyutVitran Nigam Ltd.

Uttar Pradesh: PaschimanchalVidyutVitaran Nigam Ltd.

D.3.5 During FY 2018-19, by rotation Uttar Haryana BijliVitaran Nigam Ltd. was supposed to be the Discom member from Haryana. Letter regarding the same was also sent to UHBVNL. However, the name of Dakshin Haryana BijliVitaran Nigam Ltd. (DHBVNL) was erroneously mentioned as the Discom member from Haryana for FY 2018-19 in the agenda and minutes of 39th TCC/42nd NRPC held on 27.06.2018.

D.3.6 In respect of private distribution companies in Northern Region, there are three major distribution companies namely BSES Rajdhani Power Ltd, BSES Yamuna Power Ltd and Tata Delhi Power Distribution Co. Ltd mainly operating in Delhi. According to the rotation followed in previous years and alphabetical order, BSES Rajdhani Power Ltd. may be considered for membership under this category during year 2019-20.

D.3.7 A representation of the generating companies (other than central generating companies or State Government owned generating companies) having power plants in the region with installed capacity of 1000 MW or below is to be made by alphabetical rotation. Based on the list of such generating companies operating in the Northern Region and alphabetical order followed in the past, this year it is the turn of Bajaj Energy Pvt. Ltd. during the year 2019-20.

D.3.8 Regarding nomination of members from Electricity Traders, nomination of Kreate Energy (I) Pvt. Ltd. (formerly known as Mittal Processors Pvt. Ltd.) has been received from CEA, the same shall be included in the membership of NRPC for year 2019-20.

D.4 Capacity Building Programme for Northern Regional Constituents (proposed to be funded through PSDF)

D.4.1 Recently, sanction by Ministry of Power, GOI for PSDF grant has been given for capacity building programme of Eastern Region for studying the power exchange of Nordic countries to assist the development of a commercially viable and vibrant power market in India. Nordic countries are running one of the most successful power exchanges in the world

D.4.2 It is proposed that a similar capacity building programme may be carried out for consituents of Northern region. It would benefit the participants from the State Transmission Utilities (STUs), Distribution Companies, State Load Despatch Centres (SLDCs), Generators (including ISGS) of Northern Region, Power System Operation Corporation (POSOCO) and Northern Regional Power Committee (NRPC) Secretariat. Participation from Central Electricity Authority (CEA) and Ministry of Power, is also envisaged.

D.4.3 The following would be covered in this capacity building programme at NORD POOL Academy:

- To understand the factors that contributed to the success of the power market liberalization in the Nordic region.
- Capacity building programme to handle trading of short term surplus power on the Power exchange
- Price discovery in NORD pool.
- Determination of transmission tariff and sharing of transmission charges and losses.
- Financial settlement of power trades, imbalances.
- Organization of forwards, futures and options market in power, their operation procedures, hedging etc.
- Retail supply market, Market clearing and settlement, Market surveillance, Imbalance settlement
- Roles and responsibilities of various stakeholders, Reporting and information sharing, Optimum power reserve estimation, Real time system operation and management
- Efficient maintenance practices of transmission grids
- Better Understanding of the regulatory and policy framework of the power market in European countries.

- Learning the best industry practices in Nordic power market

D.4.4 Members may authorize Member Secretary, NRPC to prepare the DPR, attend PSDF meetings on behalf of NRPC and do needful for getting PSDF grant for above projects.

D.5 HOSTING OF NEXT MEETINGS OF NRPC / TCC

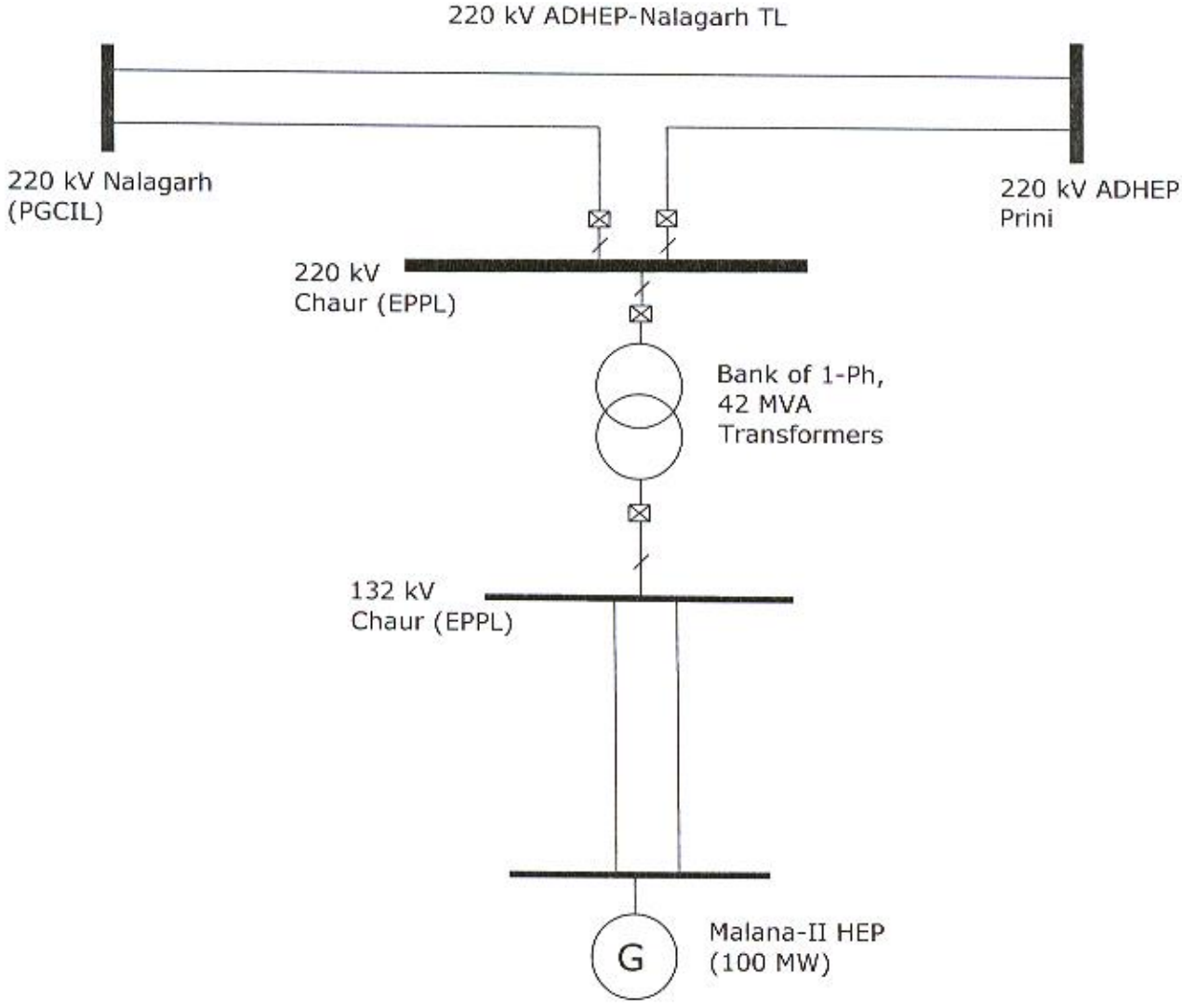
As per agreed roster for hosting of meetings, the next meetings of TCC (43rd) & NRPC (46th), which would become due in October/November, 2019 are to be hosted by Rajasthan.

Status of Reactors in NR (To be executed under RTM by POWERGRID as per MOM of Empowered Committee on Transmission)

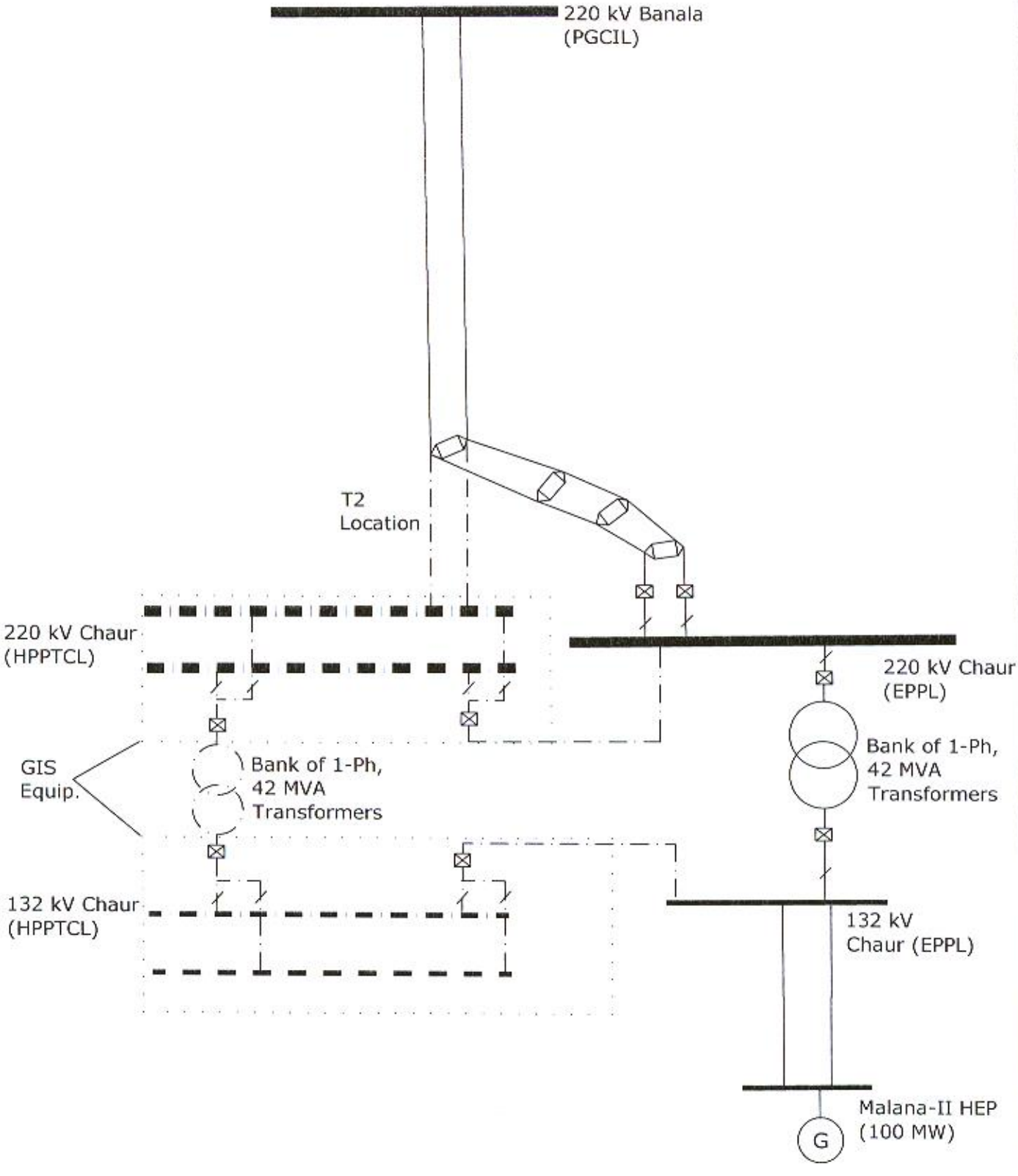
Sl. No.	Package/ Project	Status / Remarks
1.0	**400 kV Reactor Package RT-06: NRSS-XL:** • 1X125 MVAr ,400 kV Bus Reactor at Kishenpur S/s • 1X125 MVAr ,400 kV Bus Reactor at Maharanibagh (GIS) S/s • 1X125 MVAr ,400 kV Bus Reactor at Mandola S/s • 1X125 MVAr ,400 kV Bus Reactor at Hissar S/s • 1X125 MVAr ,400 kV Bus Reactor at Chamera(GIS) Pooling S/s • 1X125 MVAr ,400 kV Bus Reactor at Moga S/s • 1X125 MVAr ,400 kV Bus Reactor at Sikar S/s • 1X125 MVAr ,400 kV Bus Reactor at Allahabad S/s • 1X125 MVAr ,400 kV Bus Reactor at Meerut S/s • 1X125 MVAr ,400 kV Bus Reactor at Jallandhar S/s • 1X125 MVAr ,400 kV Bus Reactor at Patiala S/s	1.0 NIT issued and Bids opened in March'19. Bid evaluation in progress. LOA expected by June'19 subject to discussion in NRPC for Patiala & Jallandhar reactors as per observations of PSTCL.
2.0	**220 kV Reactor Package RT-07:** **NRSS-XL:** • 1X25 MVAr ,220 kV Bus Reactor at Jind S/s • 1X25 MVAr ,220 kV Bus Reactor at Fatehabad S/s • 1X25 MVAr ,220 kV Bus Reactor at Kishenpur S/s • 2X25 MVAr ,220 kV Bus Reactor at Jallandhar S/s • 1X25 MVAr ,220 kV Bus Reactor at Amritsar S/s • 1X25 MVAr ,220 kV Bus Reactor at Mandola S/s	NIT issued and Bids opened in March'19. Bid evaluation in progress. LOA expected by June'19 .

Annexure - II

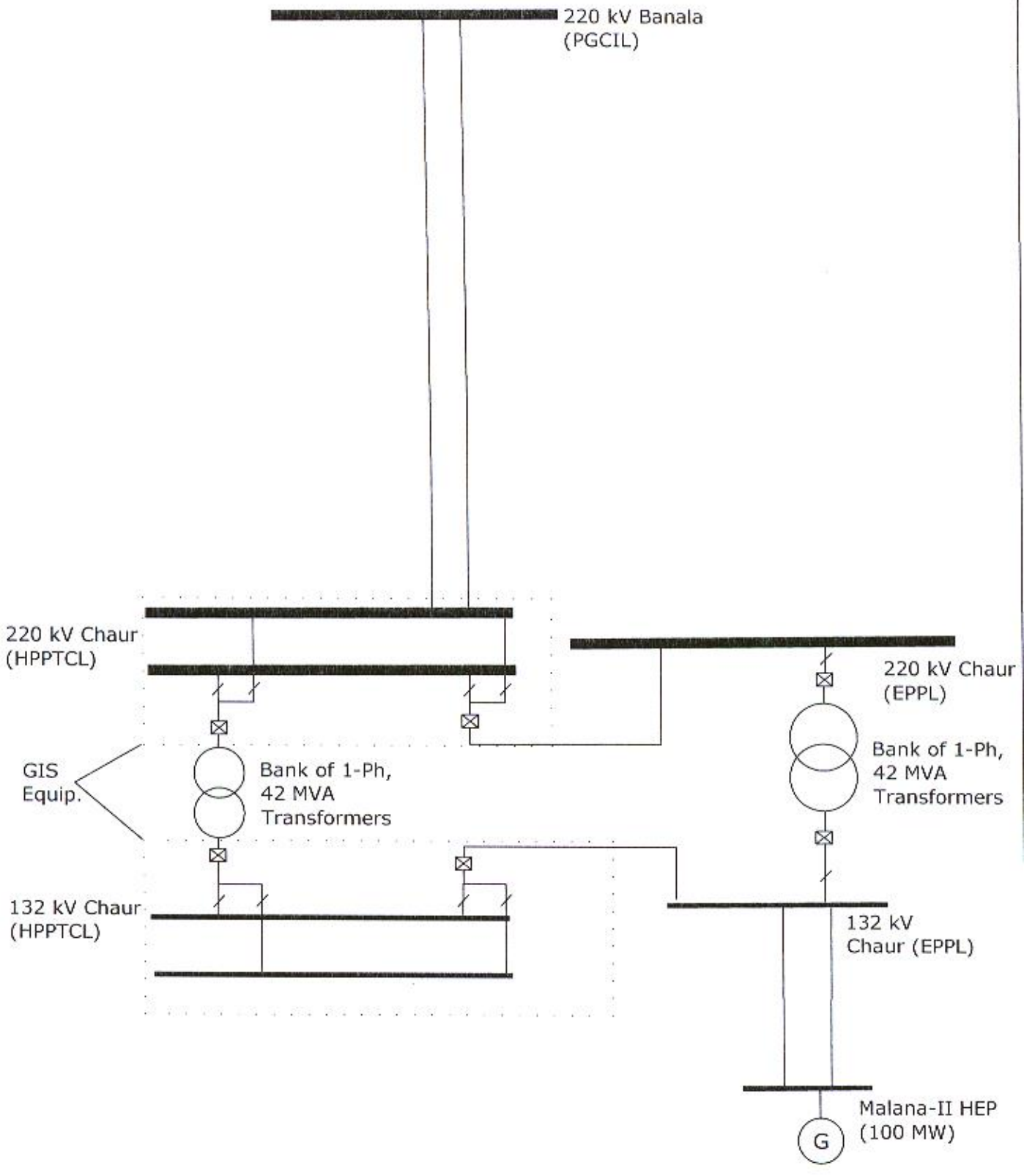
Evacuation Arrangement of Malana-II HEP - Present Case



Evacuation Arrangement of Malana-II HEP - Post Commissioning of Chaur Banala TL



Evacuation Arrangement of Malana-II HEP - Post Commissioning of Chaur SS (HPPTCL)



भाखड़ा ब्यास प्रबन्ध बोर्ड

पी एवं सी निदेशालय

एस.एल.डी.सी. कॉम्पलैक्स,66 के.वी. उप केन्द्र,इंडस्ट्रीयल एरिया फेस-I, चण्डीगढ़
दूरभाष-0172-2652054,फैक्स-0172-2652054

भाखड़ा ब्यास
राष्ट्र गौरव

प्रेषक,

निदेशक/ पी एंड सी,
बीबीएमबी, चंडीगढ़ ।

प्रेषिती,

मेम्बर सेक्रेटरी,
एनआरपीसी, नई दिल्ली ।

क्रमांक: 895-97 /डीपीसी/M-1ए दिनांक: 29/05/19

विषय: **Joint site visit of NRPC, NRLDC, PGCIL & BBMB at 400kV SubstationBBMB Bhiwani, PSTCL Rajpura, PGCIL Panchkula and BBMB Panipat for correction of phase nomenclature mismatch between BBMB and other interconnected substation.**

उपरोक्त विषय से संदर्भित पत्र आगामी कार्यवाही हेतु संलग्न है जी ।

संलग्न: उप्रोक्तानुसार

आर के चन्दन
(ई॰ आर के चंदन)
निदेशक/ पी एंड सी,
बीबीएमबी, चंडीगढ़ ।

प्रतिलिपि:-

1. मुख्य अभियन्ता/पारेषण प्रणाली, बीबीएमबी, चंडीगढ़ ।
2. अधीक्षण अभियंता /ऑपरेशन एनआरपीसी, नई दिल्ली ।

भाखड़ा ब्यास प्रबन्ध बोर्ड

पी एवं सी निदेशालय

एस.एल.डी.सी. कॉम्पलैक्स,66 के.वी. उप केन्द्र,इंडस्ट्रीयल एरिया फेस-I, चण्डीगढ
दूरभाष-0172-2652054,फैक्स-0172-2652054

भारवड़ा ब्यास
राष्ट्र गौरव

To,

Member Secretary
NRPC, New Delhi.

Memo No. 895-97 Dated- 29/05/19

Sub: **Joint site visit of NRPC, NRLDC, PGCIL & BBMB at 400kV SubstationBBMB Bhiwani, PSTCL Rajpura, PGCIL Panchkula and BBMB Panipat for correction of phase nomenclature mismatch between BBMB and other interconnected substation.**

On the subject matter, it is intimated that joint site visit of NRPC, NRLDC, PGCIL & BBMB representative was made on 27.05.19 & 28.05.19 at 400kV Substation BBMB Bhiwani, PSTCL Rajpura, PGCIL Panchkula and BBMB Panipat to check the technical suitability / material requirements for correction of phase nomenclature mismatch correction.

Work of correction of phase nomenclature mismatch for PGCIL lines at BBMB Bhiwani (PGCIL Hisar & Bhiwani), PSTCL Rajpura (BBMB Bhiwani & BBMB Dehar), PGCIL Panchkula (BBMB Panipat & BBMB Dehar) and BBMB Panipat (NTPC Dadri-1 & 2) will be executed by PGCIL. Various observations of PGCIL representatives have been raised in MOMs. Copy of MOM is here by enclosed for your reference, record and further necessary action.

In addition to the above, joint site visit of NRPC, NRLDC, PGCIL, HPSEB & BBMB representatives at 400kV Dehar Power House. and 220kV Substation HPSEB Kangoo is pending and that may be scheduled as early as possible.

DA/ As Above

(Er. R K Chandan)
Director/ P&C
BBMB, Chandigarh

CC:

1. Chief Engineer/ Transmission System, BBMB, Chandigarh.
2. SE / Operation, NRPC New Delhi.

Minutes of meeting held between BBMB, NRPC, NRLDC, PGCIL & PSTCL on 27.05.19 at 400kV Substation PSTCL Rajpura.

On 27.05.19, NRPC, NRLDC, PGCIL and BBMB representative visited PSTCL Rajpura to check the technical suitability / material requirements for correction of phase nomenclature mismatch at 400kV Substation PSTCL Rajpura for 400kV Rajpura-Bhiwani & 400kV Rajpura – Dehar Lines at Rajpura end.

On checking at site, it has been observed that:-

1. 400kV BBMB Bhiwani – Rajpura Line & 400kV BBMB Dehar - Rajpura Line existing conductor arrangement from PGCIL dead end tower (R, Y, B) to PSTCL Rajpura gantry (Y, B, R) can be re-connected to R, Y, B at PSTCL Rajpura gantry of 400kV Rajpura – Bhiwani bay and 400kV Rajpura – Dehar bay.
2. Wave trap installed on 400kV BBMB Bhiwani – Rajpura Line & 400kV BBMB Dehar - Rajpura Line is on R & B phase at BBMB Bhiwani & Dehar end. Whereas at PSTCL Rajpura end, wave trap is installed on Y & B phase on both the lines. Accordingly, while correcting phase mis-match nomenclature wave trap at PSTCL Rajpura end installed on Y phase will be shifted on R phase on both the circuits at Rajpura end. Foundation for wave trap of R phase already exists on both the circuits.
3. For execution of the above, new conductor along with hardware accessories need to be procured for installation along with mobilization of adequate stringing gangs with T&P by PGCIL at PSTCL Rajpura. The dead end tower is plus 25 mtr height with overhead crossing with 400 kV Rajpura Thermal D/C and the distance between dead end tower and gantry is around 150 mtrs. The shifting of conductors needs very specialized gang. Contract award has to be done for shifting of conductor from dead end tower to gantry.
4. Moreover, vertical phase to phase clearance has to be seen as it can be less than the minimum required when the conductors will cross each other while reconnecting. There may be a chance of equipment and conductor misalignment also. All these factors need to be seen before carrying out the work. The equipments needs to be dismantled in order to avoid any damage as conductors are terminating at some angle on the gantry tower. It shall be a challenging task keeping in view the phase to phase clearance, the small quantity of work and mobilization of gangs at both lines. PLCC engineers need to be mobilized at BBMB Bhiwani & BBMB Dehar and Rajpura for tuning after conductor shifting at PSTCL Rajpura.
5. PGCIL shall take up the phase clearance issue with its engineering department to cross check the adequate clearance.

27/5/2019

Minutes of meeting held between BBMB, NRPC, NRLDC, PGCIL & PSTCL on 27.05.19 at 400kV Substation PSTCL Rajpura.

6. Shutdown for the above work will be required on both circuits for four days and two times separately which is to be planned with coordination of PGCIL, PSTCL and BBMB.

27/5/2019
(Er. R.K. Chandan)
Director/P&C
BBMB Chandigarh

27/5
(Er. J.P.Singh)
A.E.E./Maintenance
PSTCL, Rajpura

27/5/19
(Er. Nitin Yadav)
Manager, NRLDC
Delhi

27/5/19
(Er. Parveen Kumar)
Dy. General Manager
NR-II, PGCIL Jammu

27/05/19
(Shrey Kumar)
Asst. Executive Engineer
NRPC, Delhi

Minutes of meeting held between BBMB, NRPC, NRLDC & PGCIL on 28.05.19 at 400kV Substation PGCIL Panchkula.

On 28.05.19, NRPC, NRLDC, PGCIL and BBMB representative visited PGCIL Panchkula to check the technical suitability / material requirements for correction of phase nomenclature mismatch at 400kV Substation PGCIL Panchkula for 400kV PGCIL Panchkula – BBMB Panipat & & 400kV PGCIL Panchkula – BBMB Dehar.

On checking at site, it has been observed that:-

1. 400kV BBMB Panipat – Panchkula Line & 400kV BBMB Dehar – Panchkula Line existing conductor arrangement from PGCIL Gantry span of both the lines (R, Y, B) to Bay span of both the lines (Y, B, R) through droppers can be re-connected to R, Y, B at Bay spans of both the lines by changing droppers of both the lines.

2. Wave trap installed on 400kV BBMB Panipat – Panchkula Line & 400kV BBMB Dehar - Panchkula Line is on R & B phase at BBMB Panipat & Dehar end. Whereas at PGCIL Panchkula end, wave trap is installed on R & Y phase on both the lines. Accordingly, while correcting phase mis-match nomenclature wave trap at PGCIL Panchkula end installed on Y phase will be shifted on B phase on both the circuits at Panchkula end. Foundation for wave trap of B phase already exists on both the circuits.

3. Work of correction of phase mis-match at PGCIL Panchkula for both the lines shall be done by PGCIL. Work of 400kV Panchkula – Panipat line & 400kV Panchkula – Dehar Line will be done in two steps along with the work plan of Panipat substation and Dehar P.H. simultaneously.

4. Shutdown for the above work will be planned according to shutdown required for Panipat & Dehar P.H. work for phase mis-match correction in coordination of PGCIL and BBMB.

28/5/19
(Er. R.K. Chandan)
Director/P&C
BBMB Chandigarh

28/5/19
(Er. Parveen Kumar)
Dy. General Manager
NR-II, PGCIL Jammu

(Er. G.K.Verma)
General Manager
PGCIL Panchkula

28/05/19
(Er. Nitin Yadav)
Manager, NRLDC
Delhi

28/05/19
(Shrey Kumar)
Asst. Executive Engineer
NRPC, Delhi

Minutes of meeting held between BBMB, NRPC, NRLDC and PGCIL on 27.05.19 at 400kV Substation BBMB Bhiwani

On 27.05.19, NRPC, NRLDC, PGCIL representative visited BBMB Bhiwani to check the technical suitability / material requirements for correction of phase nomenclature mismatch at 400kV Substation BBMB Bhiwani.

On checking at site, it has been observed that:-

1. 400kV PGCIL Hisar – BBMB Bhiwani & 400kV PGCIL Bhiwani – BBMB Bhiwani existing conductor arrangement from PGCIL dead end tower (R, Y, B) to BBMB Bhiwani gantry (B, R, Y) can be re-connected to R, Y, B at PGCIL dead end tower with R, Y, B at BBMB Bhiwani gantry.
2. Wave trap installed on 400kV BBMB Bhiwani – PGCIL Hisar Line & 400kV BBMB Bhiwani – PGCIL Bhiwani Line is on R & B phase at BBMB Bhiwani end. Whereas at PGCIL Hisar end & PGCIL Bhiwani end, wave trap is installed on R & Y phase. Accordingly, while correcting phase mis-match nomenclature wave trap at BBMB Bhiwani end installed on B phase will be shifted on Y phase on both the circuits. Foundation for wave trap of Y phase already exists on both the circuits.
3. For execution of the above, new conductor along with hardware accessories need to be procured for installation along with mobilization of adequate stringing gangs with T&P by PGCIL at Bhiwani (BBMB) and PSTCL Rajpura. Contract award has to be done for shifting of conductor from dead end tower to gantry. This shall be challenge task keeping in view the small quantity of work and mobilization of gangs at both locations simultaneously. PLCC engineers need to be mobilized at both ends for all lines for tuning after conductor shifting at PG & BBMB Bhiwani, Hisar and Rajpura.
4. R, Y, B phase output (220kV) from 400/220kV, 500MVA ICT Bank has been connected on common points of 220kV Bus-1 & 2 isolators of ICT Bank as incoming supply. R, Y, B phase output from 220kV Bus-1 & 2 isolators of ICT Bank shall be reconnected with R, Y, B phases of 220kV system bus-1 & 2 by BBMB.
5. CT secondary of 400/220kV, 500MVA ICT Bank shall also be rewired as per corrected phase nomenclature by BBMB.
6. Shutdown for the above work will be required for 2 days and to be planned with coordination of PGCIL, PSTCL and BBMB.

27/5/2019
(Er. R.K. Chandan)
Director/P&C
BBMB Chandigarh

27.5.19
(Er. Arun Kumar)
Dy. C.E. O&M Circle
BBMB Bhiwani

27/5/19
(Er. Parveen Kumar)
Dy. General Manager
NR-II, PGCIL Jammu

27/5/19
(Er. Sanjay Sinha)
General Manager
NR-I, PGCIL Bhiwani

(Er. Nitin Yadav)
Manager, NRLDC
Delhi

27.05.19
(SHREY KUMAR)
Asst. Executive Engg.
NRPC, Delhi

Minutes of meeting held between BBMB, NRPC, NRLDC and PGCIL on 28.05.19 at 400kV Substation BBMB Panipat.

On 28.05.19, NRPC, NRLDC, PGCIL representative visited BBMB Panipat to check the technical suitability / material requirements for correction of phase nomenclature mismatch at 400kV Substation BBMB Panipat. On checking at site, it has been observed that:-

1. 400kV NTPC Dadri - BBMB Panipat-1 & 400kV NTPC Dadri - BBMB Panipat-2 existing conductor arrangement from PGCIL dead end tower (R, Y, B) to BBMB Panipat gantry (B, R, Y) can be re-connected to R, Y, B at PGCIL dead end tower with R, Y, B at BBMB Panipat gantry of 400kV BBMB Panipat – NTPC Dadri-1 & 2 bay.
2. Wave trap installed on 400kV BBMB Panipat – NTPC Dadri -1 & 2 is on R & Y phase at Panipat. Whereas at Dadri end, wave trap is installed on R & Y phase on 400kV NTPC Dadri – BBMB Panipat – 2 and on Y & B phase on 400kV NTPC Dadri – BBMB Panipat – 1. Accordingly, while correcting phase mis-match nomenclature wave trap at Panipat end installed on R phase will be shifted on B phase on 400kV Dadri-1. Foundation for wave trap of Blue phase already exists. In case of 400kV Panipat - Dadri-2 line, wave trap is installed on R & Y phase at both ends and there will be no change in the position of wave trap.
3. For execution of the above, new conductor along with hardware accessories need to be procured for installation along with mobilization of adequate stringing gangs with T&P by PGCIL at BBMB Panipat for Dadri-1 & 2 lines and at Panchkula end for Panipat-Panchkula line. Contract award has to be done for shifting of conductor from dead end tower to gantry. This shall be challenge task keeping in view the small quantity of work and mobilization of gangs at both locations simultaneously. PLCC engineers need to be mobilized at both ends (NTPC Dadri, PGCIL Panchkula & BBMB Panipat) for all lines for tuning after conductor shifting.
4. R, Y, B phase output (220kV) from ICT Bank -1 & 2 has been connected on Y, B, R at common points of 220kV Bus-1 & 2 isolators of ICT Bank-1 & 2 as incoming supply. R, Y, B phase output (220kV) from ICT Bank -1 & 2 will be re-connected with R, Y, B at common points of 220kV Bus-1 & 2 isolators of ICT Bank-1 & 2. Also, CT secondary of 220kV ICT Bank-1 & 2 shall also be rewired as per corrected phase nomenclature. This work will be done by BBMB.
5. Shutdown for the above work will be required for 2 days and to be planned with coordination of PGCIL, NTPC and BBMB.

28/5/19
(Er. R.K. Chandan)
Director/P&C
BBMB Chandigarh

(Er. P.K. Kochar)
S.E.O&M Circle
BBMB Panipat

28/5/19
(Er. Parveen Kumar)
Dy. General Manager
NR-II, PGCIL Jammu

28/5/19
(Er. Sanjay Sinha)
General Manager
NR-I, PGCIL Bhiwani

28/05/19
(Er. Nitin Yadav)
Manager, NRLDC
Delhi

28/05/19
(SHREY KUMAR)
Asst. Executive Engineer
NRPC, Delhi

Re: Regarding payment for shifting/restringing of OPGW

Annexure - IV

From: SrXEN TLSS Mohali (srxen-tlss-moh@pstcl.org)

To: gurdeepsingh@powergridindia.com

Cc: ase-ts8@pstcl.org; ase.coc.ldh@gmail.com; srxen-pm-coc-ldh@pstcl.org

Date: Thursday, April 25, 2019, 12:44 PM GMT+5:30

Sir

It is intimated that as per the bank details attached in the trailing mail the cheque no.854546 dt.25.4.19 for the said amount has been deposited with the bank for RTGS.So kindly expedite the OPGW work of 220 KV Sahnewal-Lalton Kalan section as the loose OPGW is causing tripping of the said line.

Matter most urgent

Regards

On Wednesday, 24 April, 2019, 10:54:23 am IST, ASE TSVIII <ase-ts8@pstcl.org> wrote:

For your information and necessary action please.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 12:08:32 PM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Dear Sir,
A copy of statement of bank account of POWERGRID, Kartarpur is attached herewith for your ready reference, please. Bank Account, Branch Code, IFSC Code etc. are available in the report.
This is for your kind information, please

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

From: ASE TSVIII [ase-ts8@pstcl.org]
Sent: Tuesday, April 23, 2019 11:28 AM
To: Gurdeep Singh {गुरदीप सिंह}
Cc: SrXEN TLSS Mohali
Subject: Fw: Regarding payment for shifting/restringing of OPGW

Sir,

Concerned office is unable to retrieve the bank details so please send the furnish the bank account/IFSC code details again.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 9:31:12 AM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Sir
Bank details stands submitted to concerned officials through mail.

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

From: ASE TSVIII [ase-ts8@pstcl.org]
Sent: Monday, April 22, 2019 5:00 PM
To: Gurdeep Singh {गुरदीप सिंह}
Cc: Ram Veer Singh Kushwaha {आर.वी.एस. कुशवाहा}; Pranav Malhotra {प्रणव मल्होत्रा}; SrXEN TLSS Mohali; Srxen Ludhiana
Subject: Fw: Regarding payment for shifting/restringing of OPGW

Sir,

Please recall our discussion on 18.04.2019 and 22.04.2019, it is requested to apprise account no./IFSC code of bank of PGCIL, so that requisite amount of Rs 5,82,437/- for restringing of OPGW of subject cited line may be deposited and said work may be accomplished at the earliest.

The letter from the concerned field office is attached herewith citing its email Id while contact no. of the concerned officer is 96461-17811.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: SrXEN TLSS Mohali <srxen-tlss-moh@pstcl.org>
To: ASE TSVIII <ase-ts8@pstcl.org>
Cc: gurdeepsingh@powergridindia.com <gurdeepsingh@powergridindia.com>
Sent: Thursday, April 18, 2019, 4:48:31 PM GMT+5:30
Subject: Regarding payment for shifting/restringing of OPGW

Sir
Please find the attached file for further necessary action.

Regards

दावात्याग: यह ईमेल पावरग्रिड के दावात्याग नियम व शर्तों द्वारा शासित है जिसे http://apps.powergridindia.com/Disclaimer.htm पर देखा जा सकता है।
Disclaimer: This e-mail is governed by the Disclaimer Terms & Conditions of POWERGRID which may be viewed at http://apps.powergridindia.com/Disclaimer.htm

ANNEXURE -B

1/3

PUNJAB STATE TRANSMISSION CORPORATION LIMITED,
(Punjab Govt. Undertaking)
Regd Office: PSEB Head Office, The Mall, Patiala-147001.
O/O SE Plg. &Comm., 5th Floor,
Head office, The Mall, Patiala-147001.
email: se-planning@pstcl.org
Website : www.pstcl.org

To

Sh. Pranav Malhotra, AGM,
PGCIL, Jammu.

Memo No. 391 Dated 08.05.19

Subject:--Re-stringing of Sahnewal-Lalton Kalan line

Please refer to this office e-mails dated 22-4-2019 and 1-5-2019; it is brought to your kind notice that re-stringing on subject cited line is still pending inspite of the fact that requisite deposit-work amount of Rs. 5,82,000/- has already been deposited in PGCIL account on dated 25-4-19.

Kindly ensure timely stringing of OPGW on this line as 5-6 trippings on this line have occurred recently due to touching of OPGW with the conductors during heavy storms/winds . Onus will be on PGCIL in case any loss arises on account of low/loose sag of OPGW.

This matter brooks no further delay.

Addl.S.E/Comm(Design)
PSTCL, Patiala

398-93
8-5-19

CC:-- 1. Addl.S.E/CO&C Divn, Ludhiana
2. Sr. XEN/TLSC Divn, Mohali

2/3

Fw: Regarding payment for shifting/restringing of OPGW

From: ASE TSVIII (ase-ts8@pstcl.org)

To: gurdeepsingh@powergridindia.com; pranavmalhotra@powergridindia.com; abid@powergridindia.com; r.v.s.kushwaha@powergridindia.com

Cc: se-planning@pstcl.org; ce-tl@pstcl.org; srxen-pm-coc-ldh@pstcl.org; srxen-tlss-moh@pstcl.org

Date: Wednesday, May 1, 2019, 12:45 PM GMT+5:30

Sir,

Please refer to the trailing mail dated 29.04.2019 vide which it was intimated that the amount regarding shifting/restringing of OPGW work of 220kV Sahnewal-Lalton Kalan section has already been deposited to PGCIL bank a/c through RTGS on dated 25.04.2019. **But still there is an inordinate delay from your office to execute subject cited work.** Further 4-5 tripping on said line have been reported which are attributed to loose OPGW touching the conductors. If any untoward incident occurs or any damage to property of PSTCL due to delay in stringing of OPGW then onus will be on PGCIL. It is reiterated to do the needful.

Matter is most urgent please.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: ASE, CO&C Divn., Ludhiana <srxen-pm-coc-ldh@pstcl.org>
To: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
Cc: SrXEN TLSS Mohali <srxen-tlss-moh@pstcl.org>; ASE TSVIII <ase-ts8@pstcl.org>; AEE Ludhiana <aee-coc-ldh@pstcl.org>
Sent: Monday, April 29, 2019, 10:43:16 AM GMT+5:30
Subject: Fw: Regarding payment for shifting/restringing of OPGW

As per the trailing mail, you requested to please expedite the requisite action for shifting of OPGW on the line section in discussion.

Regards,

Additional Superintending Engineer,
CO&C Division, PSTCL,
Ludhiana.

----- Forwarded Message -----
From: SrXEN TLSS Mohali <srxen-tlss-moh@pstcl.org>
To: gurdeepsingh@powergridindia.com <gurdeepsingh@powergridindia.com>
Cc: ASE TSVIII <ase-ts8@pstcl.org>; ase.coc.ldh@gmail.com <ase.coc.ldh@gmail.com>; Srxen Ludhiana <srxen-pm-coc-ldh@pstcl.org>
Sent: Thursday, April 25, 2019, 12:44:52 PM GMT+5:30
Subject: Re: Regarding payment for shifting/restringing of OPGW

Sir

It is intimated that as per the bank details attached in the trailing mail the cheque no.854546 dt.25.4.19 for the said amount has been deposited with the bank for RTGS.So kindly expedite the OPGW work of 220 KV Sahnewal-Lalton Kalan section as the loose OPGW is causing tripping of the said line.

Matter most urgent

Regards

On Wednesday, 24 April, 2019, 10:54:23 am IST, ASE TSVIII <ase-ts8@pstcl.org> wrote:

For your information and necessary action please.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 12:08:32 PM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Dear Sir,
A copy of statement of bank account of POWERGRID, Kartarpur is attached herewith for your ready reference, please. Bank Account, Branch Code, IFSC Code etc. are available in the report.
This is for your kind information, please

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

From: ASE TSVIII [ase-ts8@pstcl.org]
Sent: Tuesday, April 23, 2019 11:28 AM
To: Gurdeep Singh {गुरदीप सिंह}
Cc: SrXEN TLSS Mohali
Subject: Fw: Regarding payment for shifting/restringing of OPGW

Sir,

Concerned office is unable to retrieve the bank details so please send the furnish the bank account/IFSC code details again.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 9:31:12 AM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Sir
Bank details stands submitted to concerned officials through mail.

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

3/3

Fw: Regarding payment for shifting/restringing of OPGW

From: ASE, CO&C Divn., Ludhiana (srxen-pm-coc-ldh@pstcl.org)

To: gurdeepsingh@powergridindia.com

Cc: srxen-tlss-moh@pstcl.org; ase-ts8@pstcl.org; aee-coc-ldh@pstcl.org

Date: Monday, April 29, 2019, 10:43 AM GMT+5:30

As per the trailing mail, you requested to please expedite the requisite action for shifting of OPGW on the line section in discussion.

Regards,

Additional Superintending Engineer,
CO&C Division, PSTCL,
Ludhiana.

----- Forwarded Message -----
From: SrXEN TLSS Mohali <srxen-tlss-moh@pstcl.org>
To: gurdeepsingh@powergridindia.com <gurdeepsingh@powergridindia.com>
Cc: ASE TSVIII <ase-ts8@pstcl.org>; ase.coc.ldh@gmail.com <ase.coc.ldh@gmail.com>; Srxen Ludhiana <srxen-pm-coc-ldh@pstcl.org>
Sent: Thursday, April 25, 2019, 12:44:52 PM GMT+5:30
Subject: Re: Regarding payment for shifting/restringing of OPGW

Sir

It is intimated that as per the bank details attached in the trailing mail the cheque no.854546 dt.25.4.19 for the said amount has been deposited with the bank for RTGS.So kindly expedite the OPGW work of 220 KV Sahnewal-Lalton Kalan section as the loose OPGW is causing tripping of the said line.

Matter most urgent

Regards

On Wednesday, 24 April, 2019, 10:54:23 am IST, ASE TSVIII <ase-ts8@pstcl.org> wrote:

For your information and necessary action please.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 12:08:32 PM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Dear Sir,
A copy of statement of bank account of POWERGRID, Kartarpur is attached herewith for your ready reference, please. Bank Account, Branch Code, IFSC Code etc. are available in the report.
This is for your kind information, please

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

From: ASE TSVIII [ase-ts8@pstcl.org]
Sent: Tuesday, April 23, 2019 11:28 AM
To: Gurdeep Singh {गुरदीप सिंह}
Cc: SrXEN TLSS Mohali
Subject: Fw: Regarding payment for shifting/restringing of OPGW

Sir,

Concerned office is unable to retrieve the bank details so please send the furnish the bank account/IFSC code details again.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: Gurdeep Singh {गुरदीप सिंह} <gurdeepsingh@powergridindia.com>
To: ASE TSVIII <ase-ts8@pstcl.org>
Sent: Tuesday, April 23, 2019, 9:31:12 AM GMT+5:30
Subject: RE: Regarding payment for shifting/restringing of OPGW

Sir
Bank details stands submitted to concerned officials through mail.

With Regards

Gurdeep Singh
Manager (TL)
Mobile: 9815264219
Kartarpur, Jalandhar

From: ASE TSVIII [ase-ts8@pstcl.org]
Sent: Monday, April 22, 2019 5:00 PM
To: Gurdeep Singh {गुरदीप सिंह}
Cc: Ram Veer Singh Kushwaha {आर.वी.एस. कुशवाहा}; Pranav Malhotra {प्रणव मल्होत्रा}; SrXEN TLSS Mohali; Srxen Ludhiana
Subject: Fw: Regarding payment for shifting/restringing of OPGW

Sir,

Please recall our discussion on 18.04.2019 and 22.04.2019, it is requested to apprise account no./IFSC code of bank of PGCIL, so that requisite amount of Rs 5,82,437/- for restringing of OPGW of subject cited line may be deposited and said work may be accomplished at the earliest.

The letter from the concerned field office is attached herewith citing its email Id while contact no. of the concerned officer is 96461-17811.

Regards
Addl. SE/Comm(Design)
PSTCL,Patiala

----- Forwarded Message -----
From: SrXEN TLSS Mohali <srxen-tlss-moh@pstcl.org>

NR-1 and NR-3

STATION	TEMP °C	HUMD %	RATIO HUMID/TEMP
AGRA	s 19	s 60	s 3
ALLAHABAD	31	14	0
ANTA	32	10	0
AURIYA	15	s 0	s 0
BADARPUR	14	82	6
BALIA	41	14	0
BALLABGARH	s 25	s 102	s 4
BASSI	31	4	0
BHIWADI	42	31	1
DADRI HVDC	-27	13	-0
GORAKHPUR	40	24	1
KANPUR	42	9	0
LUCKNOW_PG	s 75	46	s 1
MAINPURI	8	17	2
MANDOLA	43	16	0
M'BAGH	25	51	2
MEERUT	41	17	0
RAIBAREILLY	34	s 0	s 0
RIHAND (HVDC)	32	15	0
RIHAND_NT	31	12	0
SINGRAULI	31	12	0
VINDHYACHAL	30	17	1

NR-2

STATION	TEMP °C	HUMD %	RATIO HUMID/TEMP
ABDULLAPUR	43	12	0
AMRITSAR	29	15	1
BAHADURGARH	39	0	0
FATEHABAD	48	128	3
HISSAR	s 50	12	s 0
JALLANDHAR	s 50	s 102	s 2
KAITHAL	30	15	1
KISHENPUR	33	6	0
MALERKOTLA	s 0	14	0
MOGA	29	18	1
NALAGARH	s 19	s 42	s 2
PATIALA_PG	34	13	0
WAGOORA	s 0	s 0	0
SONIPAT	45	10	

STATES

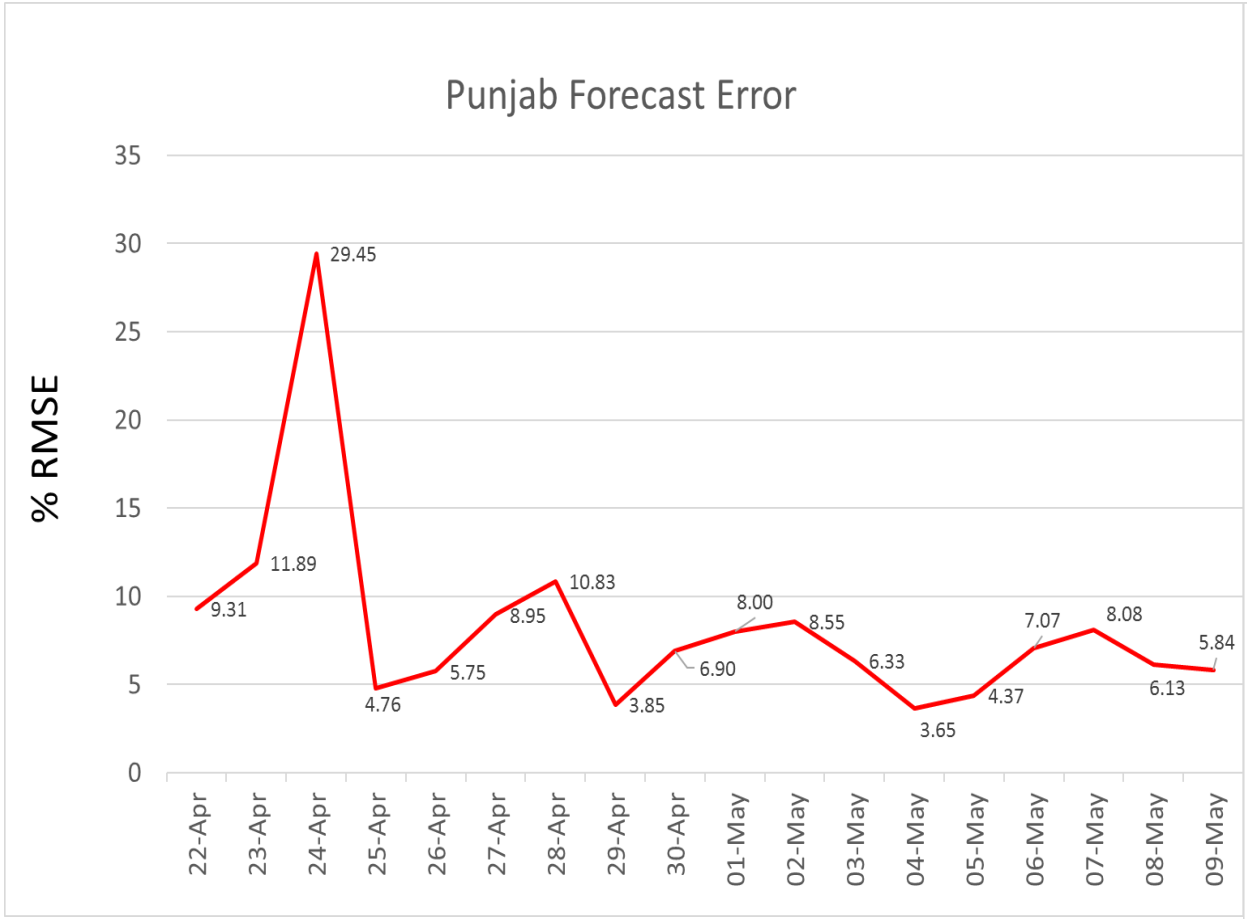
STATION	TEMP °C	HUMD %	RATIO HUMID/TEMP
ABLOWEL	s 42	s 4	
BADDI	R 33	R 0	
BHIWANI	s 5	s 10	
BWANA	s -30	s 8	s -0
DADRI	45	s ***	
GLADNI	s 0	s 0	
HEERAPURA	s 26	s 27	
JUTOGH	19	s 0	
LUCKNOW	s 0	s 7	0
MINTOROAD	43	11	
MORADABAD	0	R 70	
NARWANA	s 33	s 0	
PANIPAT	44	15	
RATANGARH	s 11	s 0	
PANIPAT - BB	25	s 99	

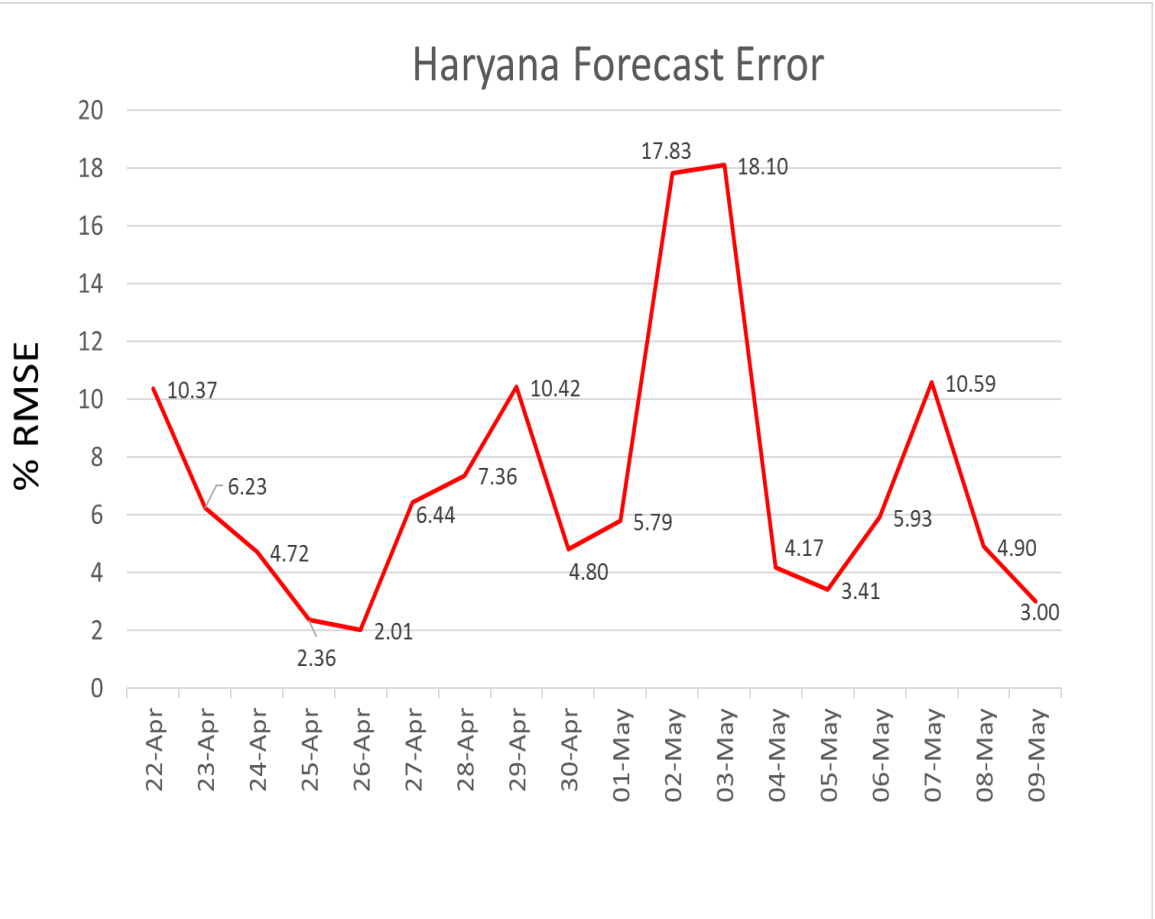
State Forecast – File Status April -2019

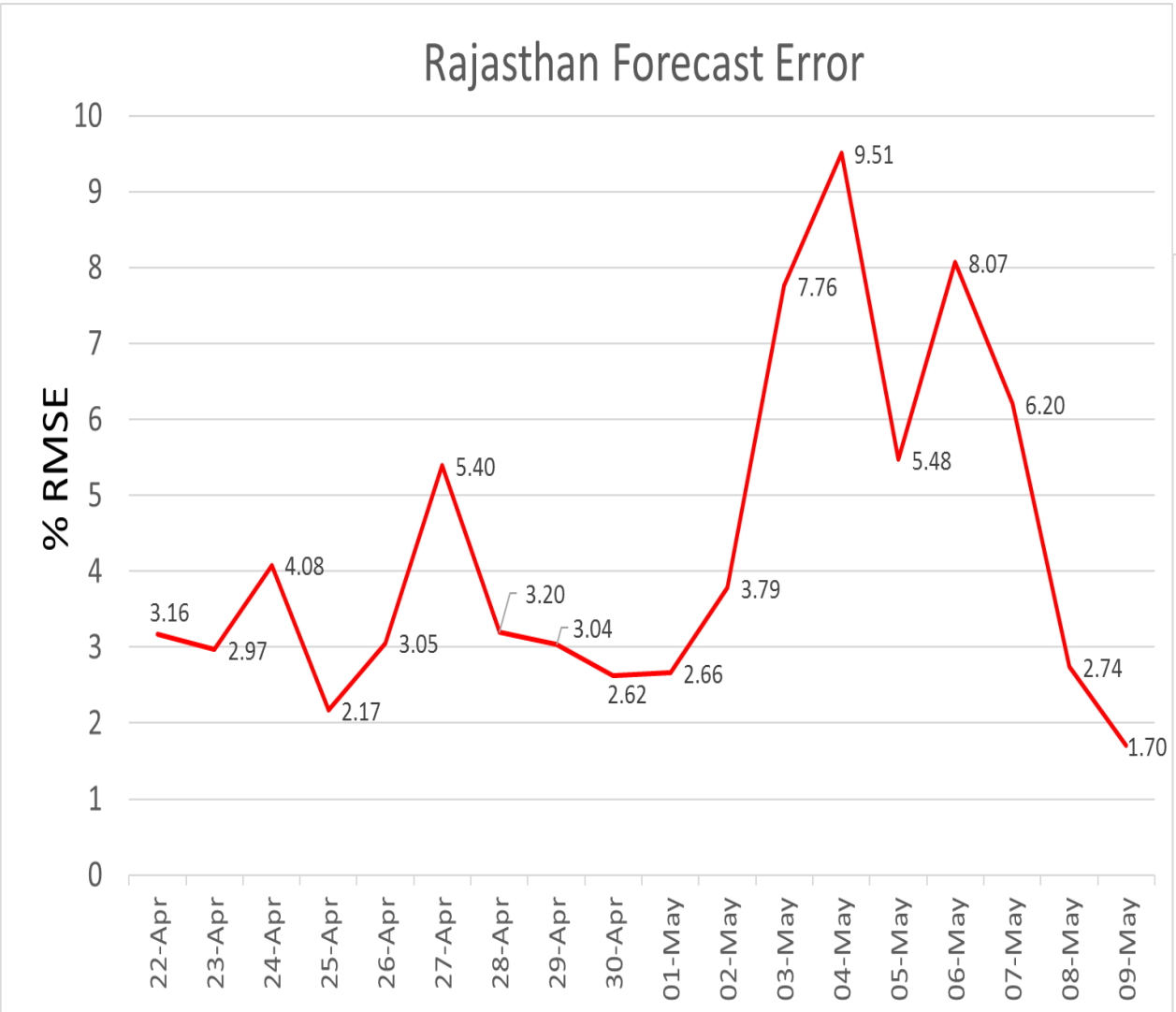
संख्या	राज्य	Forecast File	
		Received	Not Received/ Remarks
1	पंजाब	Yes	5& 6th April
2	हरियाणा	Yes	During weekend it was uploaded on Monday
3	राजस्थान	Yes	-
4	दिल्ली	Yes	File Received on same day and During weekend it was uploaded on Monday
5	उत्तर प्रदेश	Yes	
6	उत्तराखंड	Not regular	01,05,07,08,12,14,15,18,19, 20,21 & 22 April
7	हिमाचल प्रदेश	Not regular	06,10,17,20 & 22 April(During weekend it was uploaded on Monday)
8	जम्मू और कश्मीर	Yes	
9	चंडीगढ़	Yes	

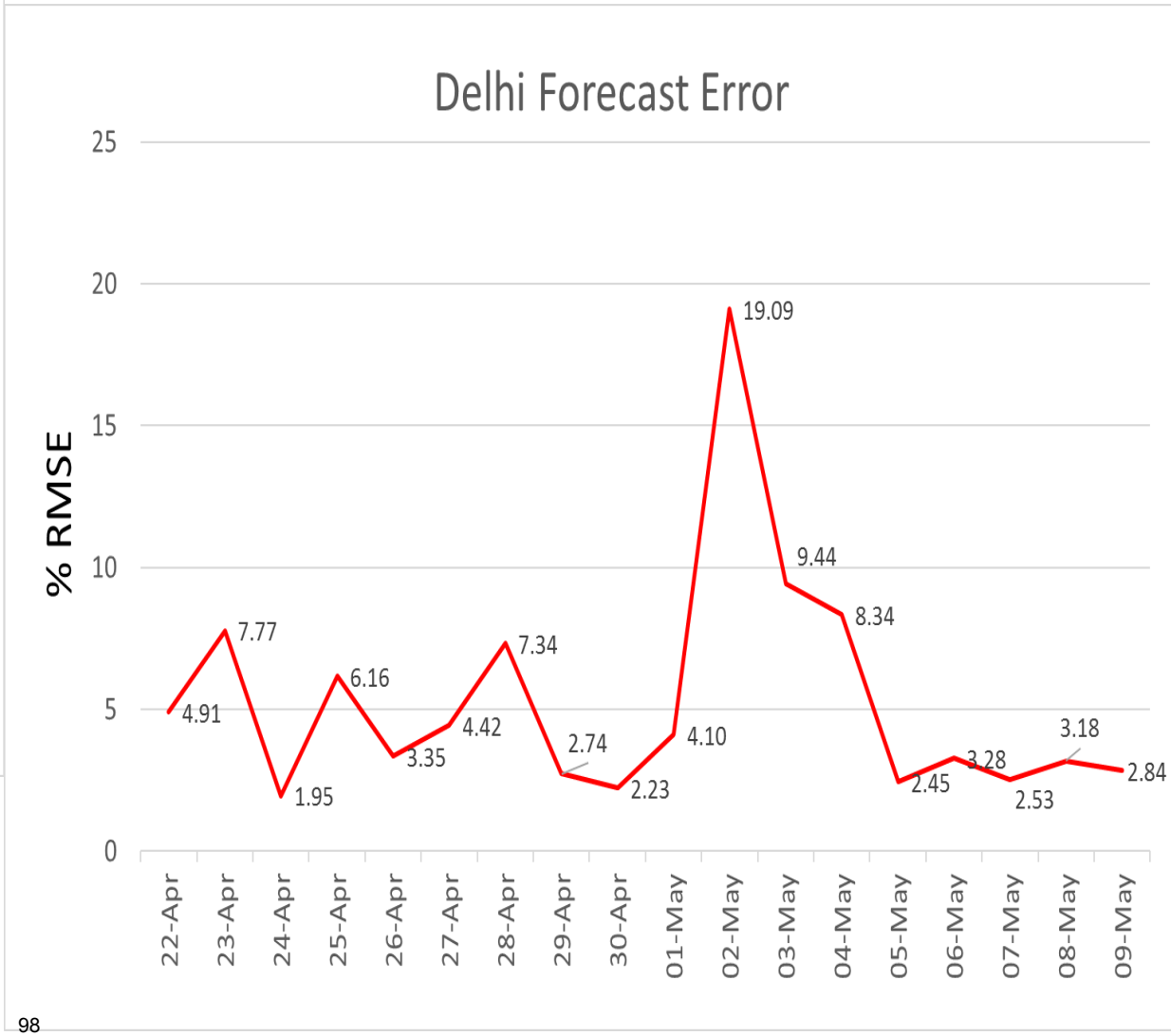
All SLDC has to upload day ahead load Forecast File by 5:00 pm

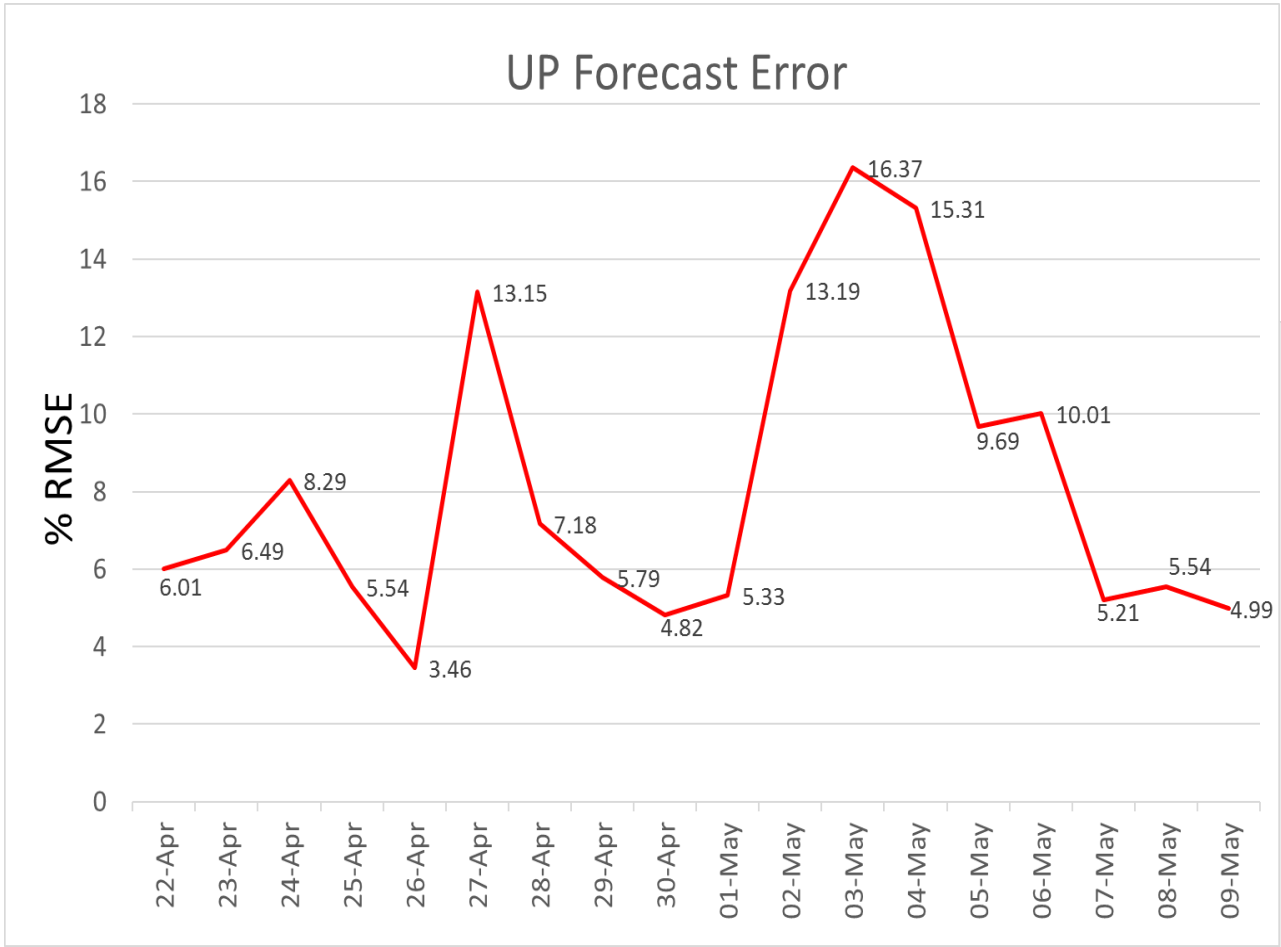
Load Forecast Error






Rajasthan Forecast Error
% RMSE
0
1
2
3
4
5
6
7
8
9
10
3.16
2.97
4.08
2.17
3.05
5.40
3.20
3.04
2.62
2.66
3.79
7.76
9.51
5.48
8.07
6.20
2.74
1.70
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May


Delhi Forecast Error
% RMSE
0
5
10
15
20
25
4.91
7.77
1.95
6.16
3.35
4.42
7.34
2.74
2.23
4.10
19.09
9.44
8.34
2.45
3.28
2.53
3.18
2.84
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May


UP Forecast Error
% RMSE
18
16
14
12
10
8
6
4
2
0
6.01
6.49
8.29
5.54
3.46
13.15
7.18
5.79
4.82
5.33
13.19
16.37
15.31
9.69
10.01
5.21
5.54
4.99
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
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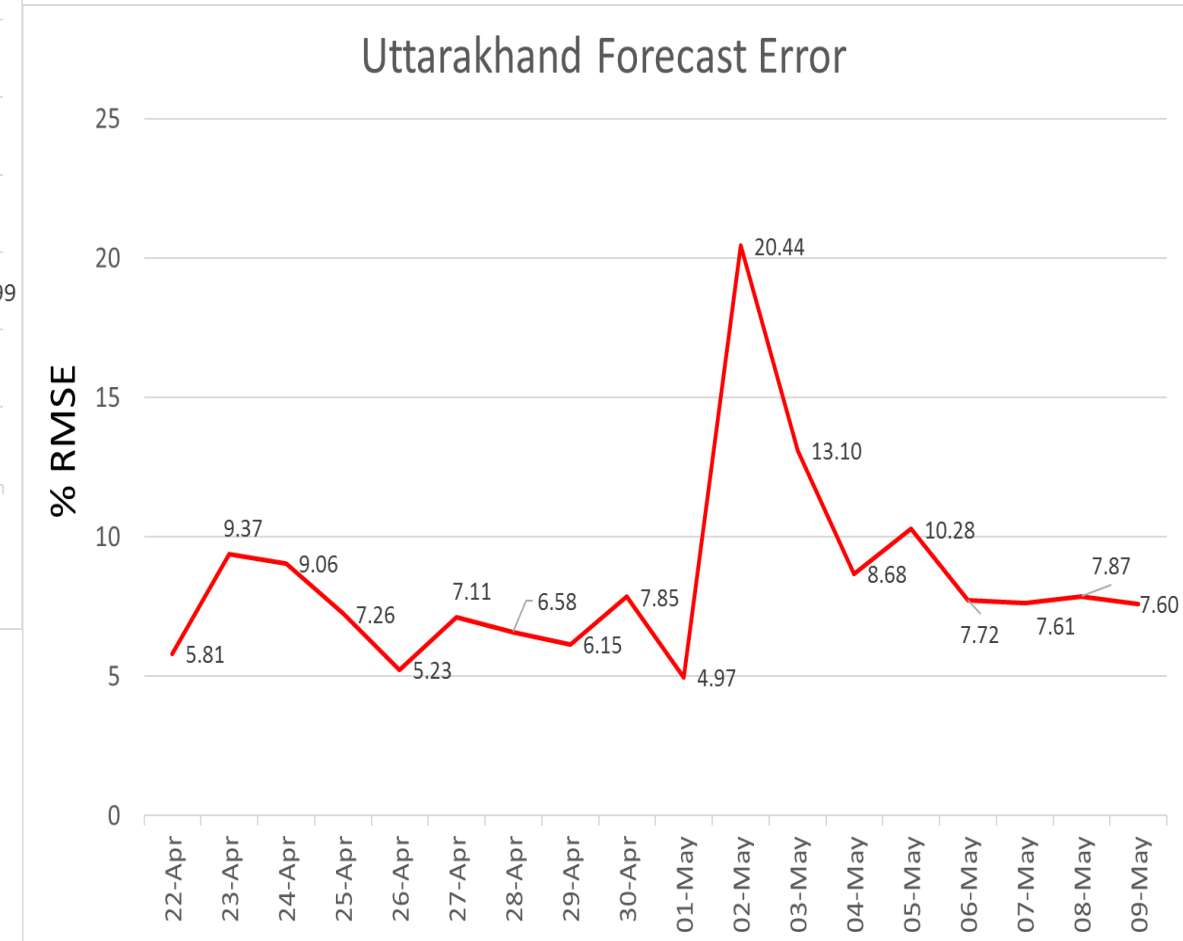
04-May
05-May
06-May
07-May
08-May
09-May


Uttarakhand Forecast Error
% RMSE
25
20
15
10
5
0
5.81
9.37
9.06
7.26
5.23
7.11
6.58
6.15
7.85
4.97
20.44
13.10
8.68
10.28
7.72
7.61
7.87
7.60
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
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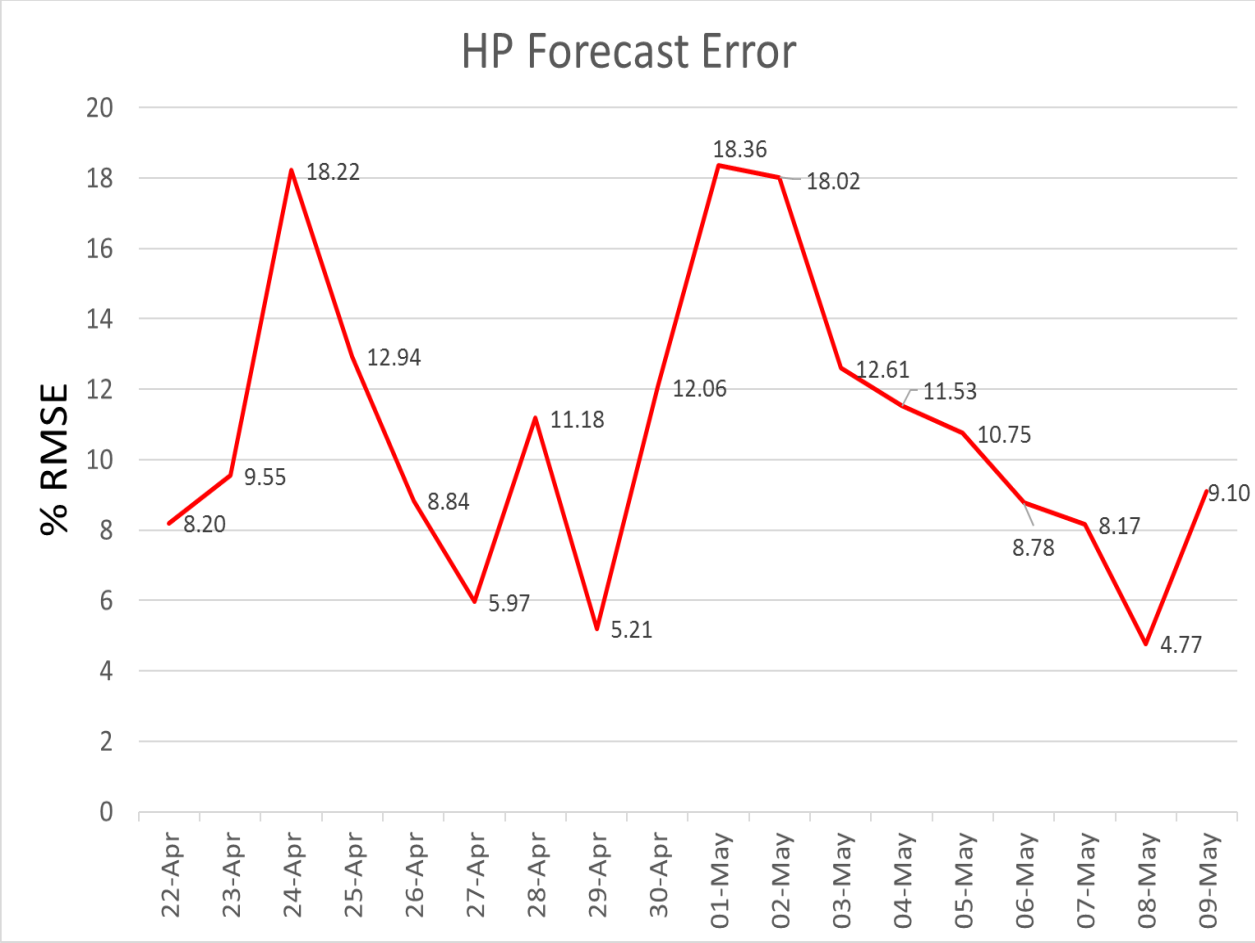
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May


HP Forecast Error
% RMSE
20
18
16
14
12
10
8
6
4
2
0
8.20
9.55
18.22
12.94
8.84
5.97
11.18
5.21
12.06
18.36
18.02
12.61
11.53
10.75
8.78
8.17
4.77
9.10
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
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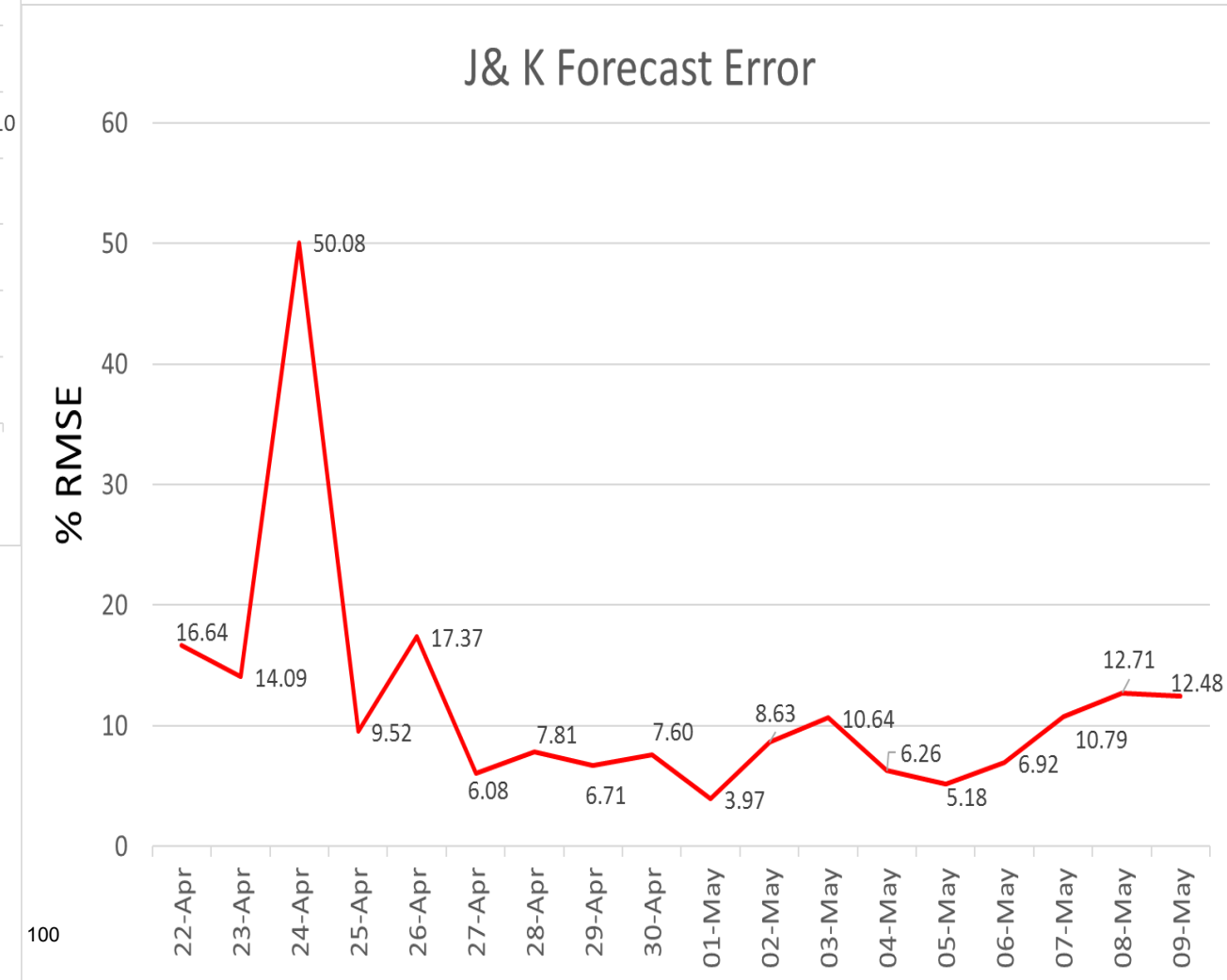
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May


J& K Forecast Error
% RMSE
60
50
40
30
20
10
0
16.64
14.09
50.08
9.52
17.37
6.08
7.81
6.71
7.60
3.97
8.63
10.64
6.26
5.18
6.92
10.79
12.71
12.48
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
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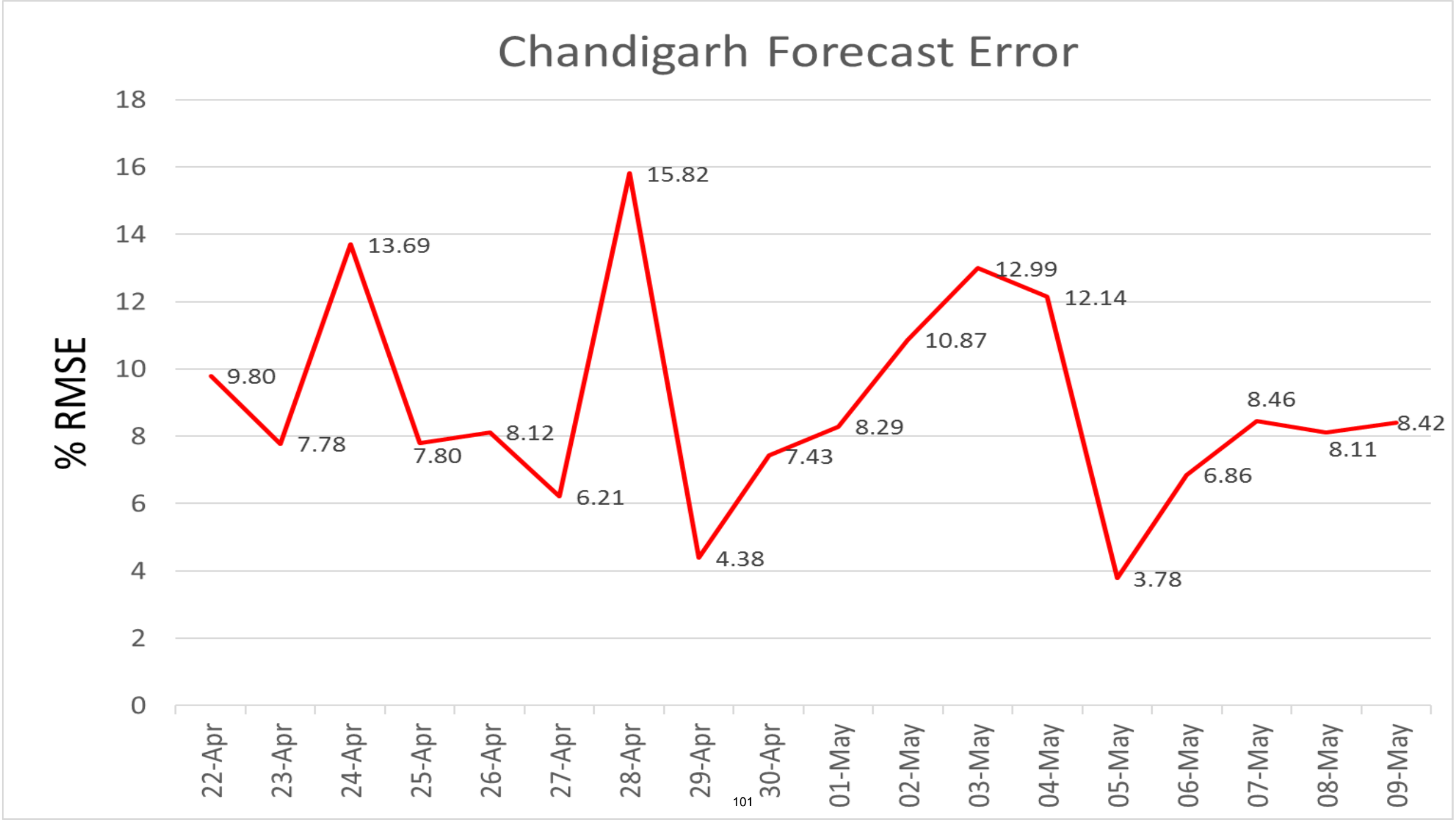
03-May
04-May
05-May
06-May
07-May
08-May
09-May


Chandigarh Forecast Error
% RMSE
18
16
14
12
10
8
6
4
2
0
9.80
7.78
13.69
7.80
8.12
6.21
15.82
4.38
7.43
8.29
10.87
12.99
12.14
3.78
6.86
8.46
8.11
8.42
22-Apr
23-Apr
24-Apr
25-Apr
26-Apr
27-Apr
28-Apr
29-Apr
30-Apr
01-May
02-May
03-May
04-May
05-May
06-May
07-May
08-May
09-May

Annex-III

SCADA Data telemetry of RGMO/ FGMO Status

Plant	Total No. of Plants	RGMO status available from plant		RGMO status not available from Plant	List of the plant (RGMO status not available from Plant)	List of the plant (RGMO status partially available from Plant)
		Complete	Partial			
ISGS	39	15	4	20	Unchahar-IV, Bairasuil (RoR), Chamera-II (RoR), Dulhasti (RoR), Narora, Parbati-II, Parbati-III, RAPP-A,B,C, Sainj, Salal, Tanakpur RoR), Uri-1&2 (RoR), AD Hydro, Budhil, Malana-II, Karcham, Sh. Cement	Anta, Auraiya, Dadri (Gas), Rihand
Uttar Pradesh	17	17	0	0	Nil	
Punjab	8	6	0	2	Anandpur Sahib and Jogindernagar/ Shanan	
Haryana	4	2	0	2	Panipat TPS and RGTPS-Khedar	
HP	5	0	0	5	Larji, Bhabha, Giri, Baspa & Malana	
Rajasthan	16	4	1	12	Suratgarh TPS, Ramgarh, Dholpur, Giral, Barsinghsar, RAPS-A, Rajwest, VSLP, Mahi, Rana Pratap Sagar, Jawahar Sagar, Gandhi Sagar	Kota TPS
Uttarakhand	8	0	0	8	Ramganga, Chibro, Khodri, Chilla, Maneri Bhali, Tiloth, Gama Infra & Shravanti	
J&K	4	0	0	4	Baghlihar, Lower Jhelam, Uppar Sindh & Papore GT	

~~Annex-IV~~ -

Status of SCADA mapping of UFR and df/dt

States	UFR	df/dt	Improvement after discussion in OCC meeting	Remarks	Data Availability
J&K	No	No			
UP	Yes	Yes	Following are provided since last status: • Feeder wise planned load relief in df/dt. • Alternate feeder details in UFR display. • Total planned relief in df/dt display.	Following yet to be provided: • Feeder-wise planned load relief of UFR. • Telemetry of feeders (Partial details available). • Alternate feeder details in df/dt display (Partial details available for UFR). • Total planned relief in UFR display. (Stage wise) • Total actual relief. (Stage Wise)	Very Poor
Haryana	Yes	Yes	Following are provided since last status: • Stage-2, 3 of df/dt included in display. • Feeder wise planned load relief. • Alternate feeder details. • Total actual relief in UFR.	Following yet to be provided: • Telemetry of feeders (Partial details available). • Telemetry of alternate feeders not available. • Calculation of total actual relief in df/dt seems incorrect.	Poor
Delhi	Yes	Yes		Following yet to be provided: • Total of actual analog data of MW and alternate feeders. • Data suspected for most of the digital and Analog value at NRLDC display but available at SLDC display.	Poor
HP	Yes	Yes	Following are provided since last status: • Segregation of stage wise load. • Alternate feeder details include for most of the feeders. • Partial telemetry of feeders.	Following yet to be provided: • Telemetry of feeders (Partial data available). • Alternate feeder details in UFR (a few not available).	Poor
Uttarakhand	No	No			
Punjab	Yes	Yes		Following yet to be provided: • Complete telemetry of feeders. • Alternate feeders details. • Digital Status of all the feeders.	Poor
Rajasthan	Yes	Yes	Following are provided since last status: • UFR display provided.	Following yet to be provided: • Analog value and digital data not available in UFR display (only alternate feeder details provided)	Very Poor

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Govt. of India Enterprise)

उत्तरी क्षेत्रीय भार प्रेशण केन्द्र / NORTHERN REGIONAL LOAD DESPATCH CENTRE
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली- 110016
OFFICE : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi- 110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.org, www.nrldc.in, Tel.: 011- 26519406, 26523869, Fax : 011- 26852747

संदर्भ: उक्षेभाप्रेके/संचालनप्रणाली-II/TS-16/ दिनांक: 09 मई 2019

सेवा में,

वितरण सूची के अनुसार

विषय: Report on the mock testing of 765 kV Agra-Gwalior SPS with revised logic at Agra (PG)
संदर्भ: NRPC letter No.-NRPC/ OPR/107/03/2019/4040-4049 dt 26.04.19

महोदय,

The mock testing of 765 kV Agra-Gwalior System Protection Scheme (SPS) was conducted on 01st May 2019 in line with the decision of Operation Coordination Committee (OCC) of Northern Region and above referred letter from NRPC. Before the testing as well during the testing a high level of support and coordination was extended by all the stakeholders. The testing of the scheme was by and large OK with few observations. A brief report on the SPS testing is attached as **Annex-I**.

धन्यवाद,

भवदीय

(राजीव पोरवाल)
महाप्रबंधक (प्रणाली प्रचालन) 09/05/19

प्रतिलिपि विनम्र सूचनार्थ:

1. सदस्य सचिव, उत्तर क्षेत्रीय विद्युत समिति, 18ए, कुतब इंस्टीट्यूशनल एरिया, नई दिल्ली- 110 016
2. निदेशक (SO), पोसोको, बी-9, कुतुब इन्स्टीट्यूशनल एरिया, नई दिल्ली -110 016
3. कार्यकारी निदेशक, पश्चिमी क्षेत्रीय भार प्रेषण केंद्र, F-3, सेंट्रल रोड, एमआईडीसी एरिया, मरोल, अंधेरी (ईस्ट), मुंबई- 400 093

वितरण सूची:

1. निदेशक (प्रचालन), सौदामनी, प्लॉट नंबर-2, सैक्टर-29, ईफको चौक के पास, गुड़गाँव (हरियाणा) - 122 001
2. प्रबंधक निदेशक (NR-1), पावर ग्रिड, बी-9, कुतुब इन्स्टीट्यूशनल एरिया, नई दिल्ली -110 016
3. प्रबंधक निदेशक (NR-2), पावर ग्रिड, ग्रिड भवन, रेल हैड कॉम्प्लेक्स, जम्मू- 180 012
4. प्रबंधक निदेशक (NR-3), पावर ग्रिड, 12, महाराणा प्रताप मार्ग, सिकंदर बाग चौराहा के पास, लखनऊ- 226 001
5. अध्यक्ष एवं प्रबंध निदेशक, पंजाब स्टेट ट्रांसमिशन कार्पोरेशन लिमिटेड, द मॉल, पटियाला (पंजाब)- 147 001
6. मुख्य अभियंता (SLDC), SLDC बिल्डिंग, 220 kV ग्रिड स्टेशन के पास, पंजाब स्टेट ट्रांसमिशन कार्पोरेशन लिमिटेड, अबलोवल, पटियाला- 147 001
7. प्रबंधक निदेशक, DTL, शक्ति सदन बिल्डिंग, कोटला रोड, नई दिल्ली-110002
8. महाप्रबंधक (SLDC), DTL, SLDC बिल्डिंग, 33 केवी सब-स्टेशन बिल्डिंग, मिन्टो रोड, नई दिल्ली-110002
9. प्रबंधक एवं अध्यक्ष निदेशक, RRVPNL (राजस्थान राज्य विद्युत प्रषारण निगम लिमिटेड), विद्युत भवन, जनपथ, जयपुर-302005
10. मुख्य अभियंता (LD), SLDC, RRVPNL (राजस्थान राज्य विद्युत प्रषारण निगम लिमिटेड), अजमेर रोड, हीरापुरा, जयपुर-302024
11. प्रबंधक एवं अध्यक्ष निदेशक, HVPNL, शक्ति भवन, सैक्टर-6, पंचकुला, अम्बाला-134109
12. मुख्य अभियंता (SO & SLDC), HVPNL, शक्ति भवन, सैक्टर6-, पंचकुला, अम्बाला-134109
13. प्रबंधक एवं अध्यक्ष निदेशक, UPPTCL, शक्ति भवन, 14-अशोक मार्ग, लखनऊ-226001
14. निदेशक (SLDC), विभूति खण्ड, फेज-2, गोमती नगर, लखनऊ-226010, उत्तर प्रदेश
15. मुख्य अभियंता (पावर सिस्टम), 5th फ्लोर, UPPTCL, शक्ति भवन, 14-अशोक मार्ग, लखनऊ- 226001, उत्तर प्रदेश

Annex-I

NRLDC report on mock testing of Agra-Gwalior SPS held on 01st May 2019

As per letter No. NRPC/OPR/107/03/2019/4040-4049 dt 26.04.2019 from SE (O) NRPC, a mock testing of SPS for 765 kV Agra-Gwalior was proposed on 30th Apr 2019. However, it was postponed to 01st May 2019 in view of requirement of shutdown of 765 kV Gwalior bays at Agra end by POWERGRID for affecting changes in the logic (CT input to PLC controller were required to be changed) as per revised scheme.

The logic of the revised scheme tested is enclosed as **Annex-A**. The utility wise detailed observations are enclosed as **Annex-B.** The observations for generation backing down in WR generating units as informed by WRLDC is enclosed as **Annex-C**.

Mock testing of 765 kV Agra-Gwalior SPS was conducted for all four condition and signal was sent to all the location except 220 kV Nara (UP). Consolidated detail is tabulated below:

Condition	Time of mock testing	Logic	Action in revised SPS	Outcome after SPS testing
1	**13:07hrs**	When both ckts are in service and total steady state flow on 765 kV Gwalior to Agra is more than 4000 MW for a period of 10 seconds	Shed loads in load group C&D	Signal sent to all the location comes under load group C&D
2	**13:38hrs**	When only one ckt is in service and flow on 765 kV Gwalior to Agra is more than 3000MW for a period of 5 seconds	Shed loads in load group C&D	Signal sent to all the location comes under load group C&D
3	**14:20hrs**	Steady state voltage at 400kV Agra less than 380 kV & more than 50kV for a period of 10secondsdirection of power flows is WR to NR)	Shed loads in load group C&D	Signal sent to all the location comes under load group C&D

5	**15:30hrs**	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-1 & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 1000 MW (in H,I,J&K load group). Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.	Signal sent to all the location except for 220 kV Nara (UP) due to communication problem, however issue has been resolved on the same date at 16:07hrs. SPS signal also sent to generators in Western Region

Mock testing report has been received from most of the utilities except from some location like Bhiwani (BBMB), Charkhi Dadri (BBMB) and Hisar (PG) etc.

Following are the observations based on input reports from the different utilities:

- Actions to be taken by POWERGRID:
  - Communication issue resulting in major DTPC alarm at Nara. (However, communication issue was reportedly resolved in the evening of the same day at 1607hrs).
  - Counter at 220 kV Nara (UP), Narwana (Haryana) and Jamsher (Punjab) did not increase and therefore to be checked and corrected.
  - 66 kV Sarinh feeder is yet to be wired (Cable is yet to be laid for 66 kV feeder at 220 kV Laltokalan station).
  - Two DTPC are installed at Beawar (Rajasthan) station but one DTPC did not receive the signal, therefore 132 kV GSS Ber Jaitaran and 132 KV GSS Asind feeders connected to this DTPC would not trip. (DTPC is to be wired for input signal)
  - 220/132 kV Ratangarh (Sardar Sahar ckt): It's mapped for load Group-B but DTPC is not found at Ratangarh site. DTPC location to be checked and reported.

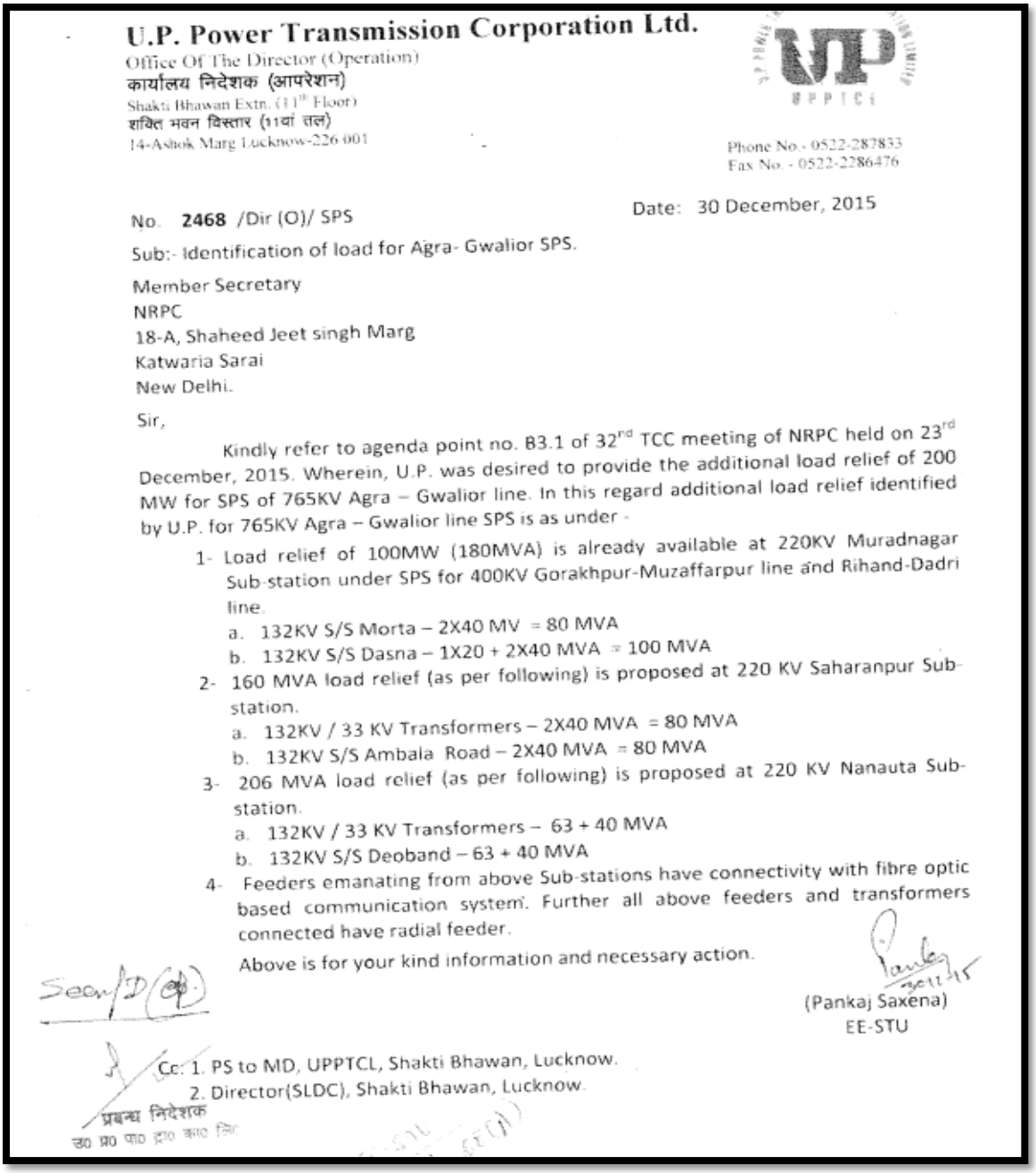
- Punjab:
  - At 220 kV Dhandhari-2: Failure of DC supply at 220 kV Dhandhari-2 before the testing resulted into DTPC major alarm, however DC supply to DTPC was restored before testing of condition-5 in which signal extended to Dhandhari-2
  - At 220 kV Jamsher:
    - 66 kV Nakodar ckt-1 & 2 was non-radial feeder
    - At the time of mock testing, load on 66kV Nakodar ckt-1 & 2 was nil against planned load relief of 100MW (minimum).
    - Display of DTPC Counter was faulty.
  - At 220 kV Ablowal: At the time of mock testing, load on 66 kV Barn, Passiana-1 was nil against planned load relief of 18MW (minimum).
  - At 220 kV Bahadurgarh (Bhateri):
    - 66 kV Ghanour feeder was non-radial feeder.

        - 66kV Patiala feeders was not wired for tripping.
        - At the time of mock testing, total load wired under SPS scheme at Bahadurgarh station was ~43MW against planned load relief of 135MW (minimum).
    - At Mandi Gobindgarh2:
        - 66kV Grain market feeder was not wired for tripping.
        - At the time of mock testing, total load on the feeders wired under SPS scheme at Mandi Gobindgarh 2 station was ~61MW against planned load relief of 90MW (minimum).
    - At Mandi Gobindgarh1: Is 66kV Chourwala ckt-2 and Focal Point ckt is wired in old SPS scheme of Agra-Gwalior?
    - At Mohali-I:
        - Clarity require from Punjab for feeders connected at Mohali-I in old scheme and new scheme.
        - Feeders connected on DTPC under DIP-5000 scheme are non-radial in nature.
    - Planned load relief of Ajitwal station is still pending (at the time of mock testing load was around 15MW)

- Haryana:
    - Details pending from BBMB (except Samaypur) and POWERGRID station (Hisar). It's responsibility of Haryana to collect the information and share the details with NRLDC/ NRPC.
    - 220 kV Fatehabad (PG): 220 kV Fatehabad (PG)-Fatehabad (HVPNL) ckt-1 &2 were non-radial in nature.
    - 132 kV PTPS: Feeders were non-radial in nature.
    - Narwana: Display of DTPC Counter was faulty.
    - What is the status of feeders & ICTs (132kV Dadri city, 132kV Matenhail, 132kV Kalanaur, 132kV Bahu, 132/33kV T/F 20/25MVA, 132/133V T/F 16/20 MVA) from Charkhi Dadri connected in load Group-G, which is used in Balia-Bhiwadi SPS scheme?

- Rajasthan:
    - Total 362 MW load shedding is planned under Agra-Gwalior SPS scheme against target of 550MW. It seems Rajasthan has taken lower load relief in planning itself than how target load relief will be achieved.
    - 220/132 kV Ratangarh (Sardar Sahar ckt):
        - It's mapped for load Group-B but DTPC is not found at Ratangarh site.
        - 132 kV sardar Sahar ckt was non-radial in nature.
    - 220kV Ratangarh: 132 kV Fatehpur ckt was non-radial in nature.
    - 220 kV Merta: 132 kV Lamba+Gotan and Kuchera needs to be wired from DTPC NSD-70D at Merta, so that these feeders will also be tripped in case of tripping operation of load group C&D.
    - 220 kV Alwar: 132 kV Bansur feeder was non-radial in nature.
    - 220 kV Debari: 132kV Bhatewar feeder was non-radial in nature (132kV Bhatewar fed from 220 kV GSS Nimbahera due to system constraints).

- Uttar Pradesh:
    - 220 kV Modipuram:
        - 132kV Kankankhera feeder was non-radial in nature.
        - Lower load relief during actual operation on 25th Mar 2019.
    - 220 kV Mainpuri: At the time of mock testing, total load on the feeders wired under SPS scheme at Mainpuri (UP) station was ~33MW against planned load relief of 50MW (minimum).
    - 220 kV Nara:
        - Communication issue resulting in major DTPC alarm at Nara. (This issue related to POWERGRID)
        - Display of DTPC Counter was faulty
    - 220 kV Nanauta:
        - 132kV Deoband line was non-radial in nature.
        - At the time of mock testing, total load on the feeders wired under SPS scheme at Nanauta (UP) station was ~60MW against planned load relief of 195MW (minimum).
    - 220 kV Saharanpur:
        - 132kV Ambala Road was non-radial in nature.
        - At the time of mock testing, total load on the feeders wired under SPS scheme at Saharanpur (UP) station was ~86MW against planned load relief of 152MW (minimum).
    - Feeders name from 220/132 kV Muradnagar old station to be informed to NRLDC/ NRPC.
    - As per UPPTCL details of additional load shedding of 200MW, load relief figure was calculated on the basis of summation of ICT MVA capacity but actual load flow on these feeders/ ICTs are well below these values. UPPTCL shall provide feeder/ICT wise details of minimum load on the feeders or ICT mapped in SPS scheme. UPPTCL letter submitted to NRPC is as below:



U.P. Power Transmission Corporation Ltd.

Office Of The Director (Operation)
कार्यालय निदेशक (आपरेशन)
Shakti Bhawan Extn. (11th Floor)
शक्ति भवन विस्तार (११वां तल)
14-Ashok Marg Lucknow-226 001

UPPTCL

Phone No.- 0522-287833
Fax No. - 0522-2286476

No. **2468** /Dir (O)/ SPS

Date: 30 December, 2015

Sub:- Identification of load for Agra- Gwalior SPS.

Member Secretary
NRPC
18-A, Shaheed Jeet singh Marg
Katwaria Sarai
New Delhi.

Sir,

Kindly refer to agenda point no. B3.1 of 32rd TCC meeting of NRPC held on 23rd December, 2015. Wherein, U.P. was desired to provide the additional load relief of 200 MW for SPS of 765KV Agra – Gwalior line. In this regard additional load relief identified by U.P. for 765KV Agra – Gwalior line SPS is as under -

1- Load relief of 100MW (180MVA) is already available at 220KV Muradnagar Sub-station under SPS for 400KV Gorakhpur-Muzaffarpur line and Rihand-Dadri line.
   a. 132KV S/S Morta – 2X40 MV = 80 MVA
   b. 132KV S/S Dasna – 1X20 + 2X40 MVA = 100 MVA
2- 160 MVA load relief (as per following) is proposed at 220 KV Saharanpur Sub-station.
   a. 132KV / 33 KV Transformers – 2X40 MVA = 80 MVA
   b. 132KV S/S Ambala Road – 2X40 MVA = 80 MVA
3- 206 MVA load relief (as per following) is proposed at 220 KV Nanauta Sub-station.
   a. 132KV / 33 KV Transformers – 63 + 40 MVA
   b. 132KV S/S Deoband – 63 + 40 MVA
4- Feeders emanating from above Sub-stations have connectivity with fibre optic based communication system. Further all above feeders and transformers connected have radial feeder.

Above is for your kind information and necessary action.

(Pankaj Saxena)
EE-STU

Cc: 1. PS to MD, UPPTCL, Shakti Bhawan, Lucknow.
2. Director(SLDC), Shakti Bhawan, Lucknow.

प्रबन्ध निदेशक
उ0 प्र0 पा0 ट्रा0 कार्प लि0

- Delhi:
  - Bamnauli (DTL): 220 kV Bamnauli-Pappankalan ckt-1 & 2 were non-radial in nature.

The aforesaid points need to be deliberated in next OCC meeting and SPS load groups also to be finalized with the input of all the concerned utilities.

Annex-A

Revised Logic of SPS for 765 kV Agra-Gwalior (As approved in 32nd TCC/36th NRPC meetings)

Sr. No	Revised Logic	Action in revised SPS
1	When both ckts are in service and total steady state flow on 765 kV Gwalior to Agra is more than 4000 MW for a period of 10 seconds	Shed loads in Group C, D.
2	When only one ckt is in service and flow on 765 kV Gwalior to Agra is more than 3000MW for a period of 5 seconds	Shed loads in Group C, D.
3	Steady state voltage at 400kV Agra less than 380 kV & more than 50kV for a period of 10secondsdirection of power flows is WR to NR)	Shed loads in Group C, D.
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-1 & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

Annex-II

Format for submission of Information regarding load shedding (POWERGRID)

Name of Sub-station: AGRA
Name of the Utility: POWERGRID

Name of the Feeder	Whether Feeder is radial or not(Y/N)	Initial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
–	–	0						
–	–							
–	–							

attached separately

Revised Logic of SPS for 765 kV Agra-Gwalior

Sr. No	Revised Logic	Action in revised SPS
1	When both ckts are in service and total steady state flow on 765 kV Gwalior to Agra is more than 4000 MW for a period of 10 seconds	Shed loads in Group C, D.
2	When only one ckt is in service and flow on 765 kV Gwalior to Agra is more than 3000MW for a period of 5 seconds	Shed loads in Group C, D.
3	Steady state voltage at 400kV Agra less than 380 kV & more than 50kV for a period of 10secondsdirection of power flows is WR to NR)	Shed loads in Group C, D.
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-1 & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW in Group H, I, J and K. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

(Signature of sub-station officer/in-charge with Name, Designation and Mobile No)

S.SRINIVAS
DGM- AGRA S/S

Counter Increment at Agra POWERGRID during Mock Testing of Agra Gwalior SPS dated 01.05.2019

	ABB DTPC-1 (To Dadri) -				ABB DTPC-2 (To Sasan)	Alstom DTPC-1 (To Dadri)		Alstom DTPC (To Mundra/Vindhyanagar/Korba)	
	Code A (Case-1)	Code B (Case 2)	Code D (Case-2)	Code E (Case-2)	Code B (Case-2)	Code 1 (Case-1)	Code 2 (Case-2)	Code 1 (Case-2)	Code 1 (Case-2)
Initial counter reading	0	0	0	0	0	0	0	0	0
Counter reading after Condition 1	1	0	0	0	0	1	0	0	0
Counter reading after Condition 2	2	0	0	0	0	2	0	0	0
Counter reading after Condition 3	3	0	0	0	0	3	0	0	0
Counter reading after Condition 4	3	1	1	1	1	3	1	1	1

(Signature of sub-station officer/in-charge with Name, Designation and Mobile No.

SRINIVAS SUROJ
DGM- AGRA S/S

Annex-B

Format for submission regarding load shedding (Punjab)

Name of Sub-Station : **220 kV S/S Lalton kalan**

Name of Utility : **PSTCL**

Name of feeder	Whether Feeder is radial or not (YN)	Intail counter reading	Counter reading after condition:1	Counter reading after condition:2	Counter reading after condition:3	Counter reading after condition:4	Counter reading after condition:5	Flow on the feeder at the time of receipt of signal (M/W)
66 kV Gill road CKT:1	Y	12	13	14	15	18	20	44.92
66 kV Gill road CKT:2	Y	12	13	14	15	18	20	39.6
66 kV Dugri	Y	12	13	14	15	18	20	13.91

Note: The cable has not been laid for 66 kV Sarinh Ckt by PGCIL

2) Relays were unblocked before condition 5 as desired by NRLDC and all 3 66kV Circuits were tripped on command for Mock Testing.

Sr Xen/ P&M Divn.
PSTCL, Lalton Kalan

Nameof Sub-station: **220 kV Mandi GOBINDGARH-1**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66KV Focal Point	Y	**81**	**82**	**84**	**87**	**89**	**94**	**20.58**
66KV Talwara-1	Y	**35**	**36**	**38**	**41**	**43**	**48**	**22.86**
66KV Talwara-2	Y	**35**	**36**	**38**	**41**	**43**	**48**	**22.86**
66KV Chaurwala 1 1	Y	**57**	**58**	**60**	**63**	**65**	**70**	**2.29**
66KV Chaurwala 2 2	Y	**81**	**82**	**84**	**87**	**89**	**94**	**3.43**

Nameof Sub-station: **220 kV Ablowal**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Baran	Y	**2**	**NA**	**NA**	**NA**	**NA**	**3**	**Nil**
66 kV Passiana	Y	**2**	**NA**	**NA**	**NA**	**NA**	**3**	**Nil**

Nameof Sub-station: **220 kV Ajitwal**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Chogawan 1	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**2.93**
66 kV Passiana	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**3.16**
66 kV Galib Kalan	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**2.82**
66 kV Daudhar	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**6.32**

Nameof Sub-station: **220 kV Bahadurgarh (Bhateri)**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Bahadurgarh-1	Y	**3**	**NA**	**NA**	**NA**	**NA**	**4**	**7.20**
66 kV Ghanour	N	**2**	**NA**	**NA**	**NA**	**NA**	**3**	**3.49**
66 kV Barn-1	Y	**3**	**NA**	**NA**	**NA**	**NA**	**4**	**16.20**
66 kV Barn-2	Y	**2**	**NA**	**NA**	**NA**	**NA**	**3**	**16.20**

Nameof Sub-station: **220 kV Dhandhari Kalan-2**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66/11 kV 20MVA Transformer-2	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**9.73**
66/11 kV 20MVA Transformer-4	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**11.31**
66 kV Dhandhari-Sherpur ckt-1	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**44.13**
66 kV Dhandhari-Sherpur ckt-1	Y	**0**	**NA**	**NA**	**NA**	**NA**	**1**	**44.13**

There was DC supply problem wih DC supply to DTPC and Fibre Home. Supply to these was restored at 14:40 hrs before start of Condition-5

Annex-B

Format for submission regarding load shedding (Punjab)

Nameof Sub-station: **220 kV Mandi Gobindgarh-2**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Bhari line	Y	3	NA	NA	NA	NA	4	0.00
66/11 kV 20MVA Transformer-4	Y	3	NA	NA	NA	NA	4	1.37
66 kV Central S/S	Y	3	NA	NA	NA	NA	4	11.45
66/11 kV 20MVA Transformer-2	Y	3	NA	NA	NA	NA	4	8.01
66 kV Khanna-1	Y	3	NA	NA	NA	NA	4	10.50
66 kV Khanna-2	Y	3	NA	NA	NA	NA	4	10.50
66 kV Badeenpur	Y	3	NA	NA	NA	NA	4	13.74
66/11 kV 20MVA Transformer-6	Y	3	NA	NA	NA	NA	4	5.04

66 kV Bhari ckt was on standby during mock testing, so there was no load shedding

Nameof Sub-station: **220 kV Jamsher**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Nakodar-1	N	--	NA	NA	NA	NA	Counter Defective	Nil
66 kV Nakodar-2	N	--	NA	NA	NA	NA	Counter Defective	Nil

Nameof Sub-station: **220 kV Mohali-1 (NSD-570)**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Incomer C-1	Y	0	NA	NA	NA	NA	1	90.53
66 kV Incomer C-2	Y	0	NA	NA	NA	NA	1	53.10
66 kV Incomer C-3	Y	0	NA	NA	NA	NA	1	56.94
66 kV Chandigarh ckt-1	Y	0	NA	NA	NA	NA	1	36.46
66 kV Chandigarh ckt-2	Y	0	NA	NA	NA	NA	1	21.49
66 kV Chandigarh ckt-3	Y	0	NA	NA	NA	NA	1	22.72
66 kV Chandigarh ckt-4	Y	0	NA	NA	NA	NA	1	22.74

Note : Load on 66 kV Chandigarh ckts included in the load on 66 kV Incomers so net load shedding is 220.57MW

Nameof Sub-station: **220 kV Mohali-1 (DIP-5000)**

Nameof the Feeder	Whether Feederis radialor not(Y/N)	Initial Counter Reading	Counter Reading after Condition1	CounteReadingafterCondition2	Counter ReadingafterCondition3	Counter Reading after Condition4	Counter Reading after Condition5	Flowonthefeederatthetimeofreceiptofsignal(MW)
66 kV Incomer C-1	Y	0	NA	NA	NA	NA	1	90.53
66 kV Incomer C-2	Y	0	NA	NA	NA	NA	1	53.10
66 kV Incomer C-3	Y	0	NA	NA	NA	NA	1	56.94
66 kV Chandigarh ckt-1	Y	0	NA	NA	NA	NA	1	36.46

Annex-B

Submission of informatiion regarding mock testing for 765kV Agra Gwalior on 01.05.2019

Name of Utility **HVPNL (Haryana)**

Name of Substation	Whether feeder is Radial or not (Y/N)	**Initial Counter Reading**	**Counter reading after Condition 1**	**Counter reading after Condition 2**	**Counter reading after Condition 3**	**Counter reading after Condition 5**	**Flow on the feeder at the time of receipt of signal (MW)**
1 X 100 MVA, 220/132 kV TlF at 400 kV Dhanonda 220 kV Dhanonda-Lula Ahir ckt 1&2	Not reported	counter 0	First try 6 Second try 7	8	9	11	197
2 X 100 MVA 220/132 kV T/F- T-2 & T-3 at 220kV N/Majra	Not reported	counter 7	7	7	7	8	76
2 X 100 MVA 220/132 kV T/F at 132 kV Safidon	Not reported	counter 0	0	0	0	1	62
132kV Garhi,Tohana,Ukalana,Dhamtansahib, 132/33 20MVA,132/11 8MVA at 220kV Narwana	Not reported	counter 8	8	8	8	8	41
220kV PTPS 132kV PTPS- 132kV Chandauli &132kV Munak	Not reported	counter 0	0	0	0	1	36
TOTAL							**412**

Name of Substation:220 KV Samaypur
Name of Utility:BBMB

Name of the Feeder	Whether feeder is Radial or not (Y/N)	Initial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5
220 KV Palwal I&II	Radial	71	80 13:12Hrs	81 13:40Hrs	82 14:20Hrs	83 14:42Hrs	84 15:32Hrs
Flow on the feeder at the time of receipt of signal (MW)-Palwal 1		79.31	96.55	110.34	106.89	103.44	113.79
Flow on the feeder at the time of receipt of signal (MW)-Palwal 2		103.44	127.58	96.55	93.1	96.55	117.24

Annex-B

Detail report of One to One testing of SPS on 765KV Agra- Gwalior Line on dated 01.05.2019 (Rajsthan details)

Name of GSS	Name of the Feeder	Whether Feeder is radial or not(Y/N)	Initial counter Reading	Counter reading after condition 1	Counter reading after condition 2	Counter reading after condition 3	Counter reading after condition 4	Counter reading after condition 5	Flow on the feeder at time of receipt of Signal (MW)
220 KV GSS Chittorgarh	133/33kV 40/50 MVA TR	Y	1	1	1	1		2	Cond. 5 - 10.5 MW
	133/33kV 20/25 MVA TR	Y	1	1	1	1		2	Cond. 5 - 17.4 MW
	132/11kV 6.3/8 MVA TR	Y	1	1	1	1		2	Cond. 5 - 0
	132kV Ajoliya Ka Khera + Bassi Line	Y	1	1	1	1		2	Cond. 5 - 34.2 MW
220 KV GSS Alwar	132 kv Alwar - Bansur	Y	16	17	18	19 & 20		21	132 kV Bansur fed from 220 kV GSS Bansur due to system constraints
	132 KV Alwar - Malakhera	Y	10	11	12	13 & 14		**15**	Cond.1 - 22 MW Cond.2- 20 MW Cond. 3 - 18 MW Cond. 5- 10 MW
	132 KV Alwar local	Y	68	68	68	68		69	Cond. 5- 84 MW
220 KV GSS Ratangarh	132 Kv Momasar + Patlisar	Y	1	1	1	1		2	Cond. 5- 37 MW
	132 Kv Fatehpur	Y	1	1	1	1		2	132 kV Fatehpur fed from 220 kV Laxmangarh due to system constraints
220 KV GSS Beawer	132 KV Masuda	Y	1	1	1	1		2	Cond 5 - 5 MW
	Local Load	Y	1	1	1	1		2	Cond 5- 63 MW
400 KV GSS Merta	132 Kv Merta City	N	36	44	46	48		49	Cond. 1 - 52 MW Cond. 2 - 54 MW Cond. 3 - 54 MW Cond. 5- 50 MW
	132 Kv Roon	Y							Cond. 1 - 8 MW Cond. 2 - 8 MW Cond. 3 - 4 MW Cond. 5 - 6 MW
220 KV GSS Kota	132 KV Nanta	Y	9	10	11	12 &13		14	Cond.1- 10.4 MW Cond.2- 10.05 MW Cond 3- 11.4 MW Cond 5- 11.35 MW
	132/33 Kv 40/50 MVA T/F	Y	2	3	4	5 & 6		7	Cond.1- 20.6 MW Cond.2- 21.5 MW Cond 3- 123.4 MW Cond 5- 123.1 MW
220 KV GSS Debari	132 KV Bhatewar	Y	35	0	0	0		36	132kV Bhatewar fed from 220 kV GSS Nimbahera due to system constraints
	132 KV Mavli	Y	26	0	0	0		27	Cond 5- 18 MW
220 kv gss Bhilwara	132 Kv GSS Danta	Y	0	0	0	0	0	1	Cond. 5 - 35 MW
	132 KV GSS Karera	Y	0	0	0	0	0	1	Cond. 5 - 33 MW
	132 KV GSS Gangapur	Y	0	0	0	0	0	1	Cond. 5 - 39 MW
	Local Load	Y	0	0	0	0	0	1	Cond. 5 - 50 MW

Annex-B

Format for submisssion of information regarding load shedding (UPPTCL)

Name of Sub-station : **220 KV Sub-station Saharanpur.** Name of Sub Station Incharge/ Mob No- Abhinav Garg/9412756282
Name of Utility : UPPTCL

Name of the Feeder	Whether Feeder is radial (Y/N)	Intial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
40 MVA-I T/F	-	3	3	3	3	3	4	16.9 MW
63 MVA-II T/F	-	3	3	3	3	3	4	23.9 MW
132 KV Ambala Road line	N	3	3	3	3	3	4	45.3 MW

Name of Sub-station : **220 KV Sub-station Nanauta.** Name of Sub Station Incharge/ Mob No- Peetam Singh/9412756285
Name of Utility : UPPTCL

Name of the Feeder	Whether Feeder is radial (Y/N)	Intial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
63 MVA-I	-	4	4	4	4	4	5	10.70 MW
63 MVA-II T/F	-	4	4	4	4	4	5	08.70 MW
132 KV Deoband line	N	4	4	4	4	4	5	42.01 MW

Name of Sub-station : **220 KV Sub-station Mainpuri** Name of Sub Station Incharge/ Mob No- P.R. Singh/9458096486
Name of Utility : UPPTCL

Name of the Feeder	Whether Feeder is radial (Y/N)	Intial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
63 MVA-I	-	16	16	16	16	16	17	24 MW
63 MVA-II T/F	-	16	16	16	16	16	17	9 MW

Name of Sub-station : **220 KV Sub-station Nara** Name of Sub Station Incharge/ Mob No- Anurag Singh/9412749863
Name of Utility : UPPTCL

Name of the Feeder	Whether Feeder is radial (Y/N)	Intial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
63 MVA-I	-	-	Counter Display defective at 220 KV Nara S/S since 07.01.16					29.22 MW
63 MVA-II T/F	-	-						25.10 MW
40 MVA T/F	-	-						Shut Down

Note :- DTPC major alarm problem at 220 KV Nara Substation was rectified by PGCIL on dated 29.04.19 but it was again occurred on dated 01.05.19. Major alarm problem was resolved by PGCIL engineer after mock testing at 16:10 hrs on dated 01.05.19.

Annex-B

Format for submisssion of information regarding load shedding (UPPTCL)

Name of Sub-station : **220 KV Sub-station Modipuram.** Name of Sub Station Incharge/ Mob No- Ravindra Dholka/9412749810

Name of Utility : UPPTCL

Name of the Feeder	Feeder is radial (Y/N)	Intial Counter Reading	Counter Reading after Condition 1		Counter Reading after Condition 2		Counter Reading after Condition 3		Counter Reading after Condition 4		Counter Reading after Condition 5	
			counter	Load	counter	Load	counter	Load	counter	Load	counter	Load
132 KV Sardhana	Y	10	11	20 MW	12	26 MW	13	29 MW	14	28 MW	15	25 MW
132 KV Kankerkhera	N	10	11	36 MW	12	38 MW	13	40 MW	14	40 MW	15	42 MW
132 KV Kapsad	Y	10	11	12 MW	12	12 MW	13	16 MW	14	18 MW	15	17 MW
132 KV KKR 2	Y	10	11	16 MW	12	15 MW	13	15 MW	14	14 MW	15	16 MW
40 MVA T/F 2	-	10	11	10 MW	12	11 MW	13	13 MW	14	12 MW	15	12 MW
63 MVA T/F 3	-	10	11	17 MW	12	20 MW	13	23 MW	14	21 MW	15	22 MW
33 KV Ladies Park	-	10	11	07 MW	12	07 MW	13	08 MW	14	08 MW	15	08 MW
33 KV Pallavpuram	-	10	11	06 MW	12	07 MW	13	07 MW	14	07 MW	15	08 MW
33 KV Siwaya	-	10	11	01 MW	12	01 MW	13	03 MW	14	03 MW	15	03 MW

Details received from Delhi (DTL)

Annex-II

Format for submission of Information regarding load shedding

Name of Sub-station: 400 kV Bamnauli
Name of the Utility: DTL

Name of the Feeder	Whether Feeder is radial or not(Y/N)	Initial Counter Reading	Counter Reading after Condition 1	Counter Reading after Condition 2	Counter Reading after Condition 3	Counter Reading after Condition 4	Counter Reading after Condition 5	Flow on the feeder at the time of receipt of signal (MW)
220kV PPK-I CKT-1	N	4	—	—	—	—	5	100 MW
220 kV PPK-I CKT-2	N	4	—	—	—	—	5	100 MW

Revised Logic of SPS for 765 kV Agra-Gwalior

Sr. No	Revised Logic	Action in revised SPS
1	When both ckts are in service and total steady state flow on 765 kV Gwalior to Agra is more than 4000 MW for a period of 10 seconds	Shed loads in Group C, D.
2	When only one ckt is in service and flow on 765 kV Gwalior to Agra is more than 3000MW for a period of 5 seconds	Shed loads in Group C, D.
3	Steady state voltage at 400kV Agra less than 380 kV & more than 50kV for a period of 10secondsdirection of power flows is WR to NR)	Shed loads in Group C, D.
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-1 & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW in Group H, I, J and K. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

(Signature of sub-station officer/in-charge with Name, Designation and Mobile No)

Amit G
09-05-2019
AM(T) Pool-I
#-9999535079

Annex-C

पावर सिस्टम ऑपरेशन कारपोरेशन लिमिटेड

(भारत सरकार का उद्यम)

POWER SYSTEM OPERATION CORPORATION LIMITED

(A Government of India Enterprise)

पश्चिम क्षेत्रीय भार प्रेषण केन्द्र

एफ-3, सेन्ट्रल रोड, एम्.आई.डी.सी. एरिया, मरोल, अन्धेरी (पूर्व), मुंबई - 400 093.

दुरभाष : 022-28202690 • फैक्स : 022-28235434, 28202630 • ई-मेल : wrldc@posoco.in

WESTERN REGIONAL LOAD DESPATCH CENTRE

F-3, Central Road, MIDC Area, Marol, Andheri (East), Mumbai – 400 093.

Phone : 022-28202690 • Telefax : 28235434, 28202630 • E-mail : wrldc@posoco.in

CIN : U40105DL2009GOI188682

WRLDC/SO-II/002/2019-01 Date: 02.05.2019

संदर्भ संख्या / Ref. No.

To

Member Secretary,
Western Region Power Committee
F-3 MIDC Area, Marol, Andheri East
Mumbai 400093

Sub: Report on the mock testing of 765kV Agra-Gwalior SPS for load shedding in NR and automatic generation backing down in WR generating stations conducted on 01.05.19

Ref: - NRPC letter No-NRPC/ OPR/107/03/2019/4040-4049 dt 26.04.19

Dear Sir,

This has reference to the above mentioned letter regarding mock testing of 765kV Agra-Gwalior SPS conducted on 01.05.19. The above SPS testing was conducted successfully on 01st May 2019 and all the four generators in Western Region i.e. CGPL, SASAN, NTPC Korba and NTPC Vindhyachal have received the signal for Condition 5 of WR-NR SPS. The report on the SPS testing is attached as annexure.

Thanking you

Yours faithfully,

Pushpa

(Pushpa. S)
General Manager (SO)

Copy to:-

1. CGM, NLDC, POSOCO, New Delhi.
2. ED, NRLDC, POSOCO, New Delhi.
3. MS, NRPC, New Delhi.

Annexo

Report on testing of 765 kV Agra-Gwalior SPS on 01-05-19

As per letter No. NRPC/OPR/107/03/2019/4040-4049 dt 26.04.2019 from SE (O) NRPC, a mock testing of SPS for 765 kV Gwalior-Agra was proposed on 30th April 2019. However due to shutdown requirement of 765kV Gwalior-Agra bays one by one for logic modification as suggested by NRPC, the above said testing was postponed to 01st May 2019.

WRLDC coordinated for condition-5 of 765kV Agra-Gwalior SPS i.e. "Reduction of import by NR on 765kV Agra-Gwalior-I&II by more than or equal to 3000 MW and action of 1000 MW automatic generation back down in WR" (Presently automatic generation back down is 500 MW in WR) with CGPL, SASAN, NTPC and POWERGRID. Code was issued from WRLDC Control room to CGPL, SASAN and NTPC to block the automatic backing down of generation during the mock drill.

Accordingly test signal for condition-5 of 765kV Agra-Gwalior SPS was sent from Agra end at 15:30hrs on 01st May 2019 as intimated by NRLDC and it was reported from CGPL, SASAN, KSTPS and VSTPS that SPS signals were received at their end. The confirmation mail received from CGPL, SASAN, KSTPS and VSTPS are attached as annexures 1, 2, 3 and 4 respectively.

WRLDC, Mumbai

Annexure 1: CGPL

Annex-III

Format for submission of Information regarding Generation Back down

Name of the Generating Station	Initial Counter reading	Counter Reading after condition 5
CGPL	15	16

Sr. No	Revised Logic	Actions in revised SPS
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-1 & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW : Group H, I, J and K. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

Name : Priyank Shah.
Desig. : Shift charge Engineer
Mobile : 9227891537

(Signature of generating station officer/in-charge with Name, Designation and Mobile No)

Annexure 2: SASAN

Annex-III

Format for submission of Information regarding Generation Back down

Name of the Generating Station	Initial Counter reading	Counter Reading after condition 5
SASAN	Code B 14	15

Sr. No	Revised Logic	Actions in revised SPS
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-I & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW : Group H, I, J and K. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

We received Generation Back down signal through code B of DTPC related to Agra. Therefore no increment for DTPC related to Gwalior.

(Signature of generating station officer/in-charge with Name, Designation and Mobile No)

Raghavendra Jha

RAGHAWENDRA JHA
SENIOR MANAGER
9820359447.

Annexure 3: NTPC-KORBA

Mock Testing of Gwalior-Agra-SPS_01.05.2019

Name of the Generating station	Initial counter reading		Counter reaging after simulation of condition-5	
NTPC-Korba	Rx	Tx	Rx	Tx
	00 00 00 00	00 00 00 00	01 01 00 00	00 00 01 00

Yatish Tikaria
01/05/2019
YATISH TIKARIHA
Agm (Opers)
9425249891

Annexure 4: NTPC-VINDHYACHAL

Annex-III

Format for submission of Information regarding Generation Back down

Name of the Generating Station	Initial Counter reading	Counter Reading after condition 5
VSTPS Stage #03	5	4

Sr. No	Revised Logic	Actions in revised SPS
5	Reduction of import by NR on 765 kV Agra-Gwalior Ckt-I & II by more than or equal to 3000 MW. (The sum of flows on these circuits would be continuously compared with the sum of flows two (2) seconds earlier and the SPS would activate if the difference crosses 3000 MW).	Shed loads in Group C, D, E and F. Additional loads of 500-1000 MW : Group H, I, J and K. Automatically back down 1000 MW generation in WR in the shortest possible time at Vindhyachal, Sasan and CGPL Mundra.

21/5/2009

मुनेन्द्र शर्मा
MUNENDRA SHARMA
उप महाप्रबंधक (विद्युत अनुरक्षण)
DGM (O&M-EMD)
एनटीपीसी लि –विंध्याचल
N[illegible] Ltd.-Vindhyachal

(Signature of generating station officer/in-charge with Name, Designation and Mobile No)

Mobile:- 9650323666

NORTHERN REGION LOAD DESPATCH CENTRE, NEW DELHI

Preliminary Report

NR_GD_GI /	1530	
Date and Time of Event	5/7/2019	11:34:00 AM
Date Time of Restoration	5/7/2019	2:44:00 PM
Duration	3h 10mins	
Introduction of Event	Mutiple element tripping at 400/220kV Bikaner(RRVPNL)	
Weather		
Loss of Gen (MW)	800 ← Rajasthan & Adani may Confirm.	
Names of Plant Affected		
Loss of Load(MW)	300 ← Rajasthan may Confirm.	
Area Affected	Rajasthan	
Substations Affected	400/220kV Bikaner(RRVPNL)	

Antecedent Condition :-

Frequency	50.02	Hz	
NR Demand Met	46664	MW	
Total IR Import	9878	MW	
Rihand -Dadri Flow	1300	MW	
Balia-Bhiwadi Flow	250	MW	
Vin BTB Flow	250	MW	North to West
HVDC Mundra-Mahendergarh:	1600	MW	
HVDC Champa-Kurukshetra:	300	MW	
HVDC BNC-Agra:	1250	MW	

Triggering Incident: As reported, 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2 tripped due to R-Y fault, 6.64km from Bikaner end. At the same time, 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 & 2 tripped on 86 A & 86 B relay tripped at Sikar(PG).

Category: GD-1 Energy Unserved(MU):

Description: As reported, 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2 tripped due to R-Y fault, 6.64km from Bikaner end. At the same time, 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 & 2 tripped on 86 A & 86 B relay tripped at Sikar(PG). As per PMU, Y-B fault is observed in the system. In antecedent conditions, 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2 carrying 533 MW.

Name of the Tripped Elements	1) 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 2) 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-2 3) 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2

Inference from PMU data :

Fault Duration 80ms Faulted Phase Y-B fault

Other Info Dip in frequency of around 0.103Hz is observed.

Preliminary Observations

1. There is a dip in frequency of around 0.103Hz. It seems there is a solar Generation loss at Bhadla of around 800 MW may be due to LVRT issue. Same needs to be confirmed. Reason of operation of LVRT may be looked into.
2. Decrease in Rajasthan demand of around 300 MW is observed at the time of event. Load loss, if any, needs to be reported.
3. Why three elements tripped on phase to phase fault needs to be looked into.
4. Remedial measures taken report also needs to be shared.

It is requested to kindly forward the details of tripping in your area, during above incident for further analysis. Disturbance Recorder / Event Logger output and analysis associated with above incidents may kindly be forwarded in line with Section 5.9.6 of the Indian Electricity Grid Code (IEGC).

Please share remedial measures taken/to be taken(with time frame) to avoid such incident in future.

Rajasthan, Adani & POWERGRID may expedite the details/report for the incident.

Action Taken Instructions were given for immediate revival of the tripped elements.

Signature

Thursday, May 9, 2019

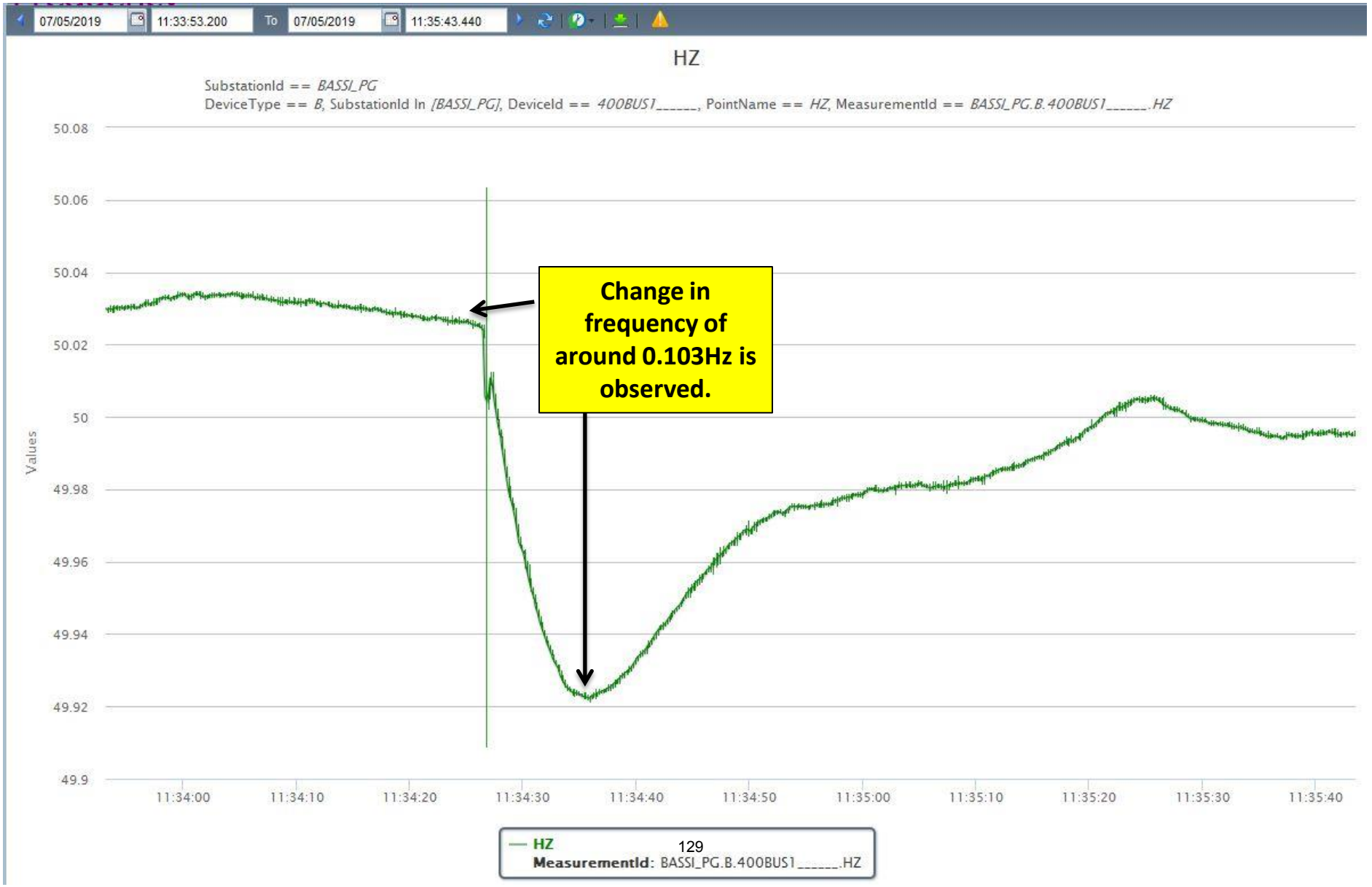
Distribution :

SLDCs : Punjab (Patiala) ,Haryana (Chandigarh), Rajasthan (Heerapura), Delhi (Minto Road), UP (Lucknow), Uttarakhand (Rishikesh), J K (Gladni), BBMB (Chandigarh)/ ISGS: NTPC-Lucknow, NTPC-NCR, NHPC-Faridabad, THDC, SJJVNL-Jhakri, NR-1(Operation and Maintenance), NR-2(Operation and Maintenance)

Member (GO and D), CEA, New Delhi
Member Secretary, NRPC, New Delhi
General Manager, NLDC, New Delhi
General Manager, NRLDC, New Delhi

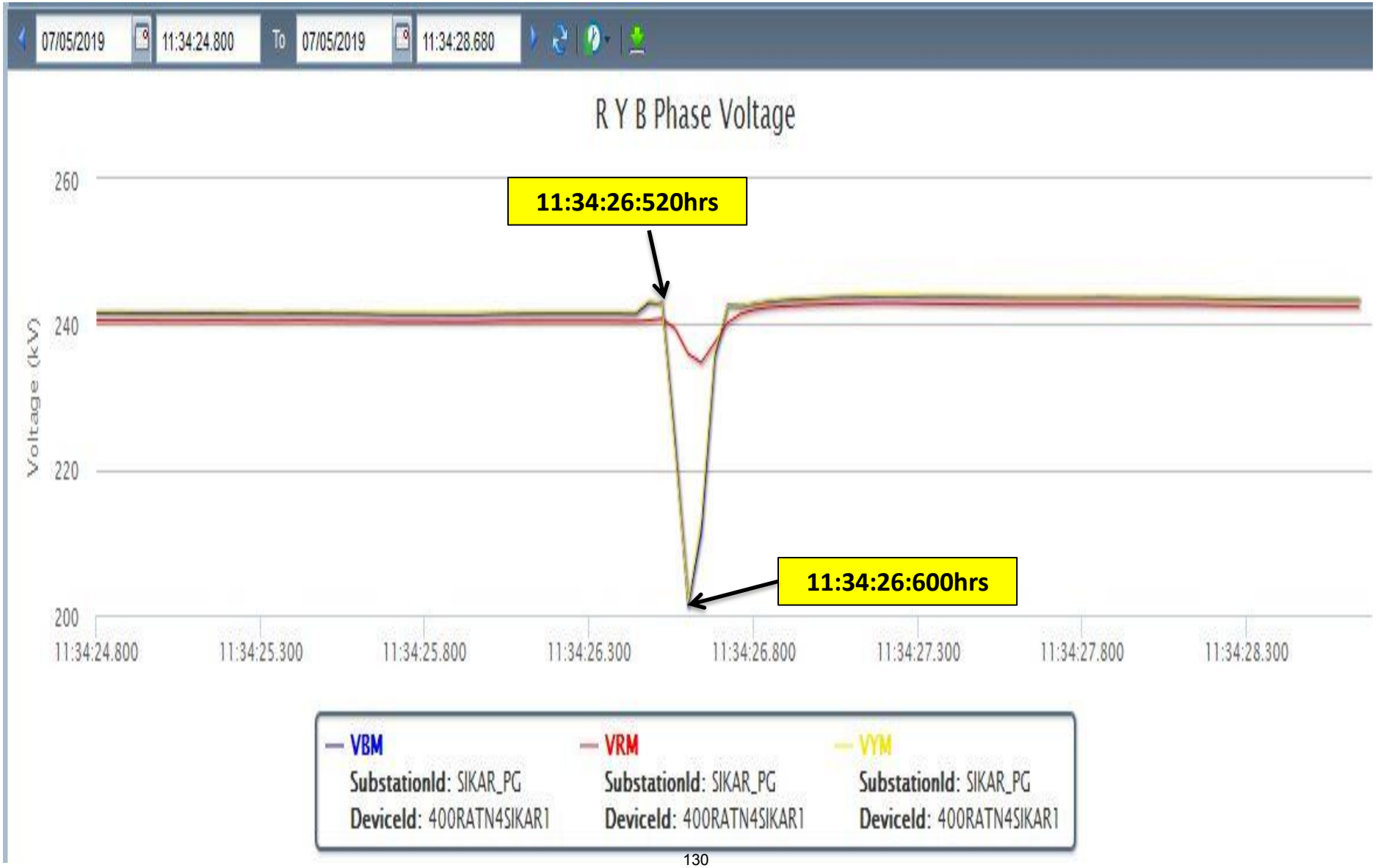
PMU Plot of frequency at Bassi(PG)

11:34hrs/07-May-19



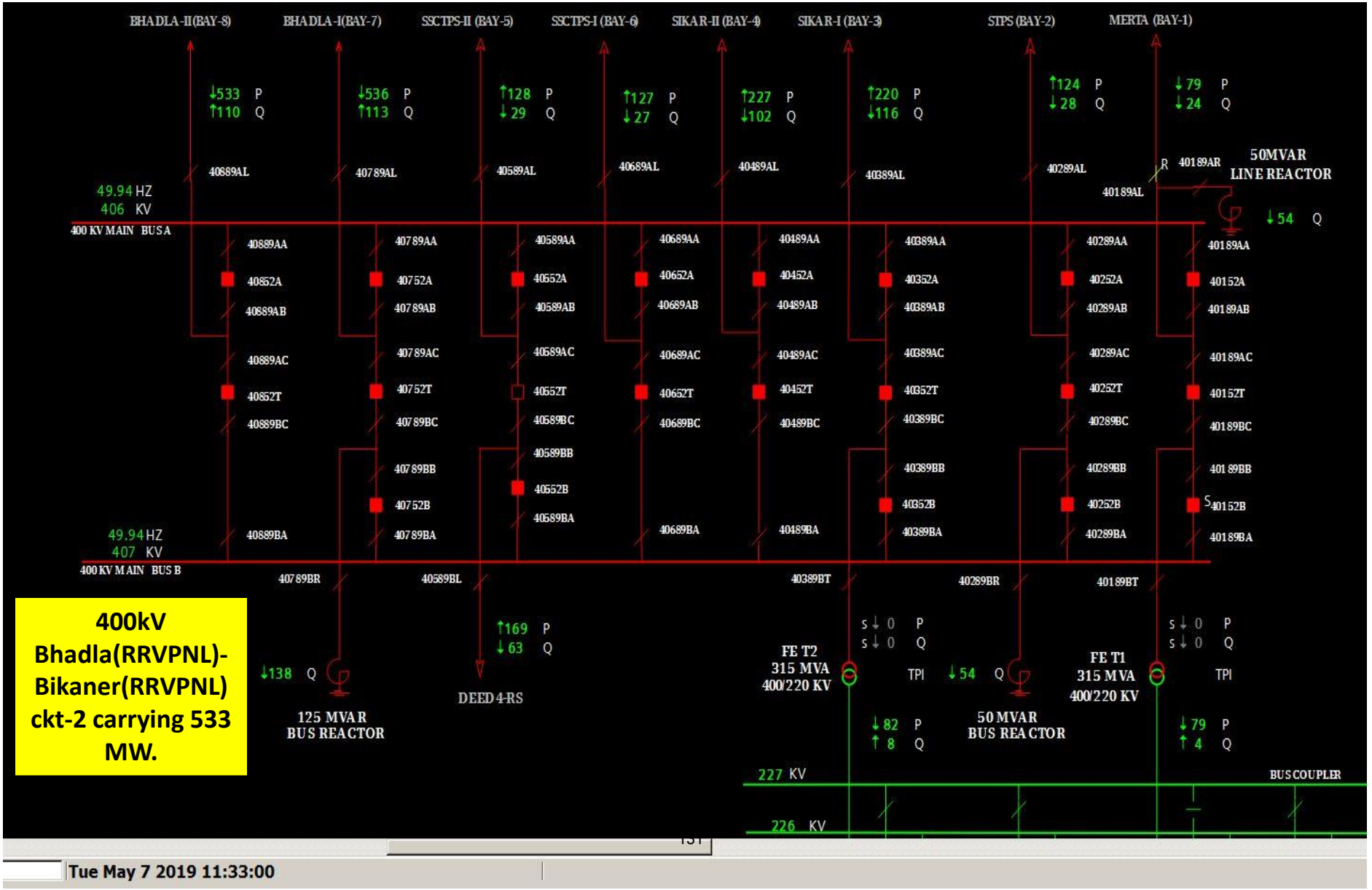
PMU Plot of phase voltage magnitude at Sikar(PG)

11:34hrs/07-May-19



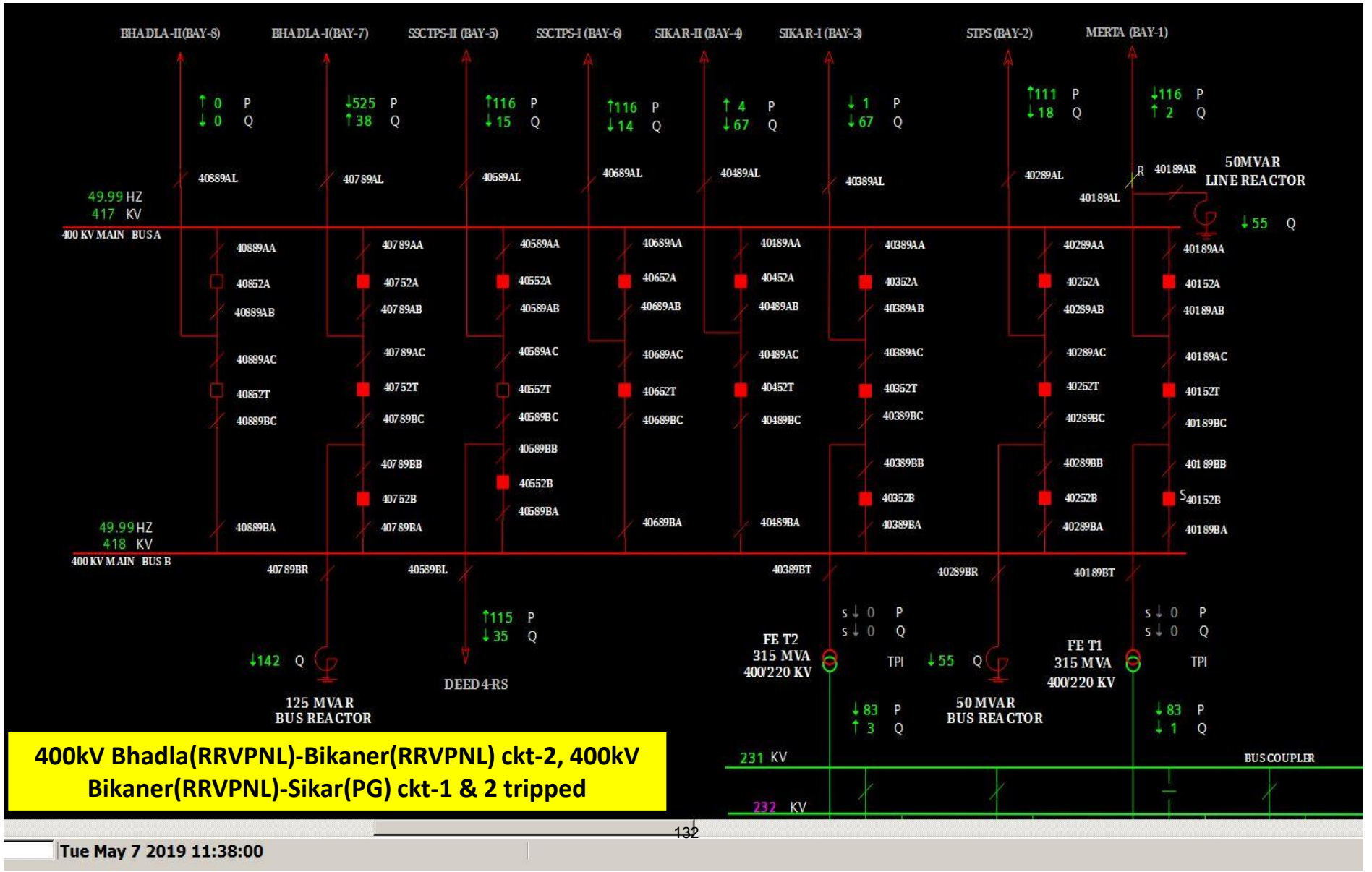
SLD of 400/220kV Bikaner(Raj) before the incident

11:33hrs/07-May-19



SLD of 400/220kV Bikaner(Raj) after the incident

11:38hrs/07-May-19

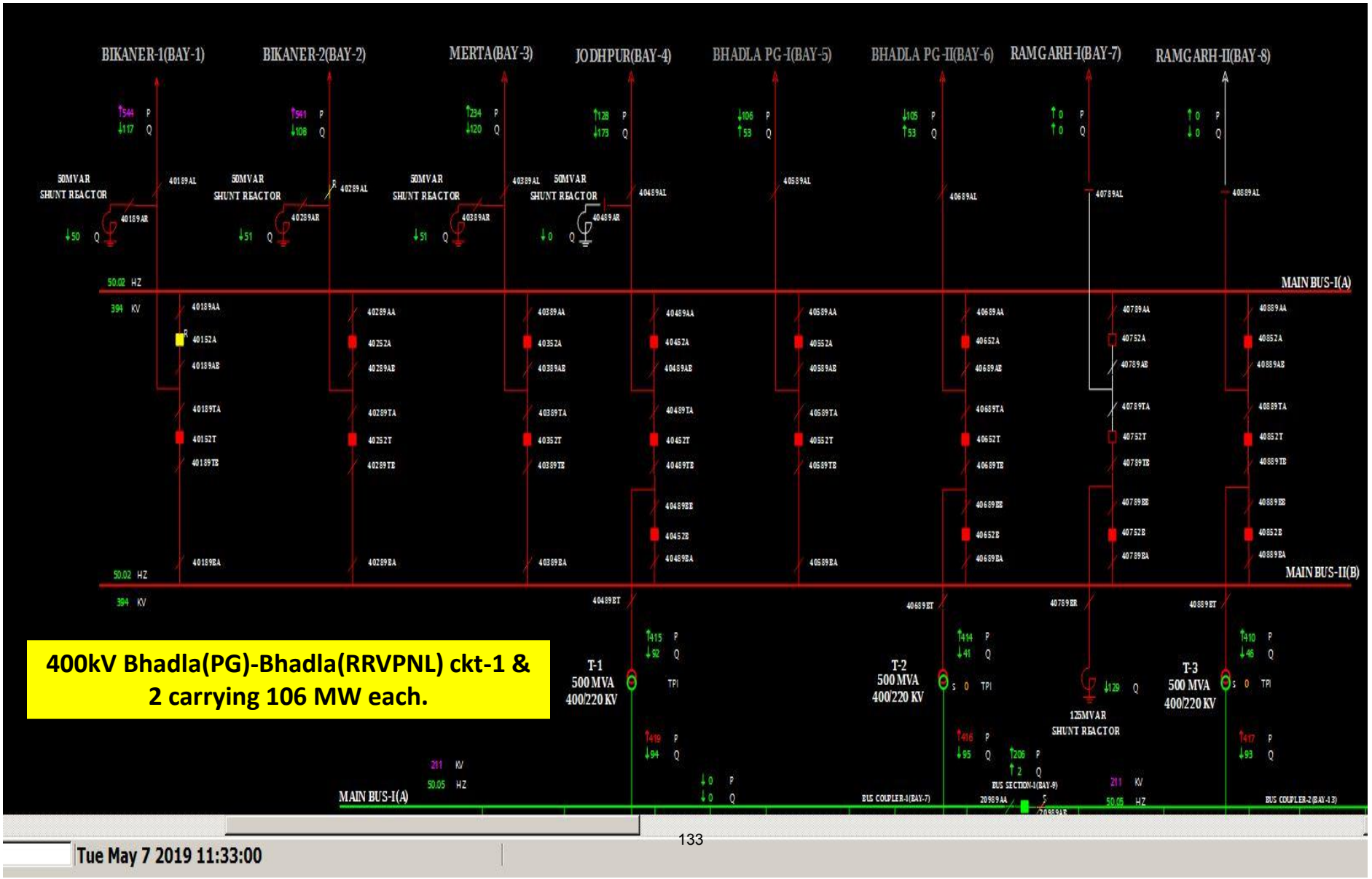


400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2, 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 & 2 tripped

Tue May 7 2019 11:38:00

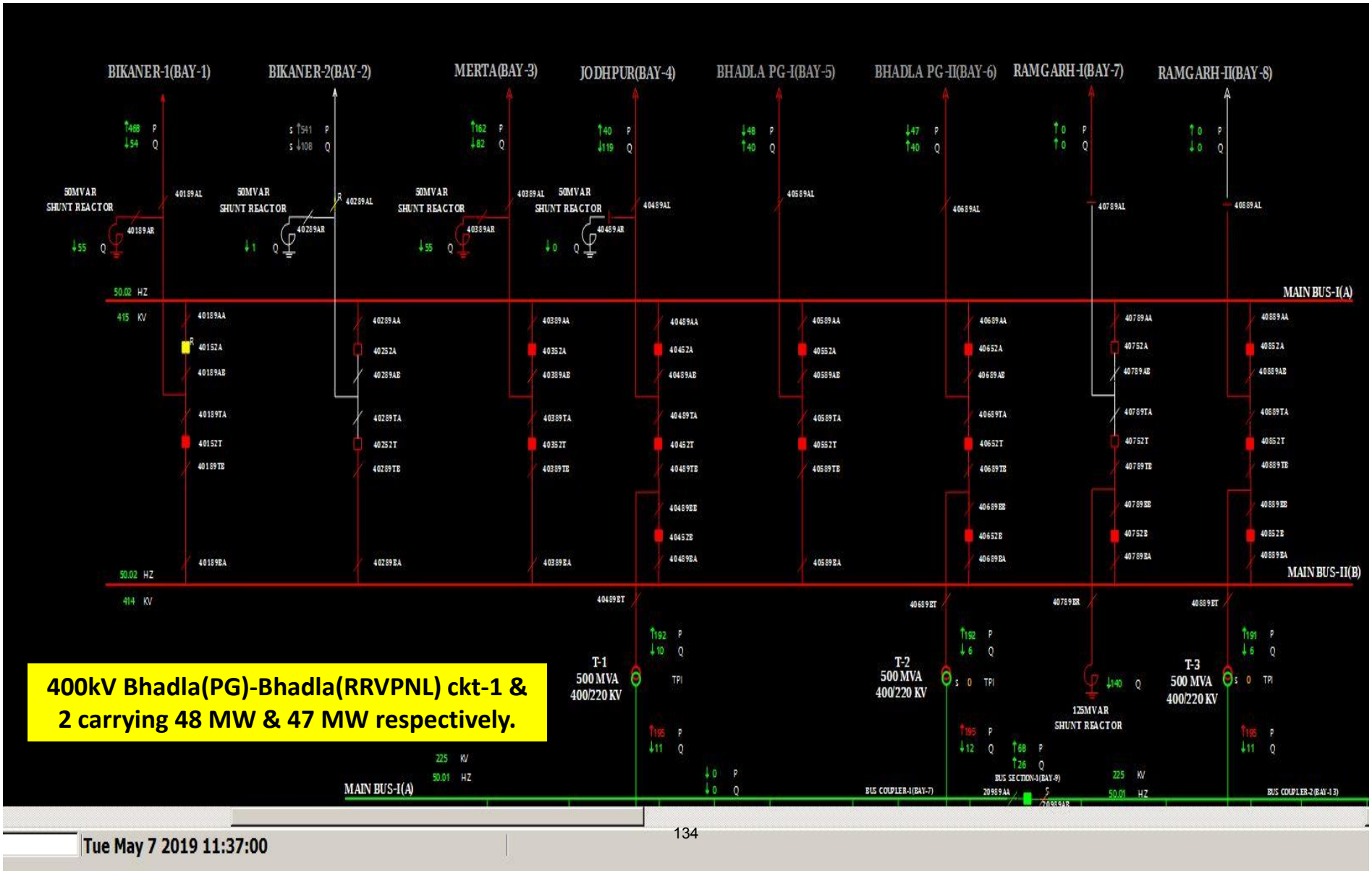
SLD of 400/220kV Bhadla(Raj) before the incident

11:33hrs/07-May-19



SLD of 400/220kV Bhadla(Raj) after the incident

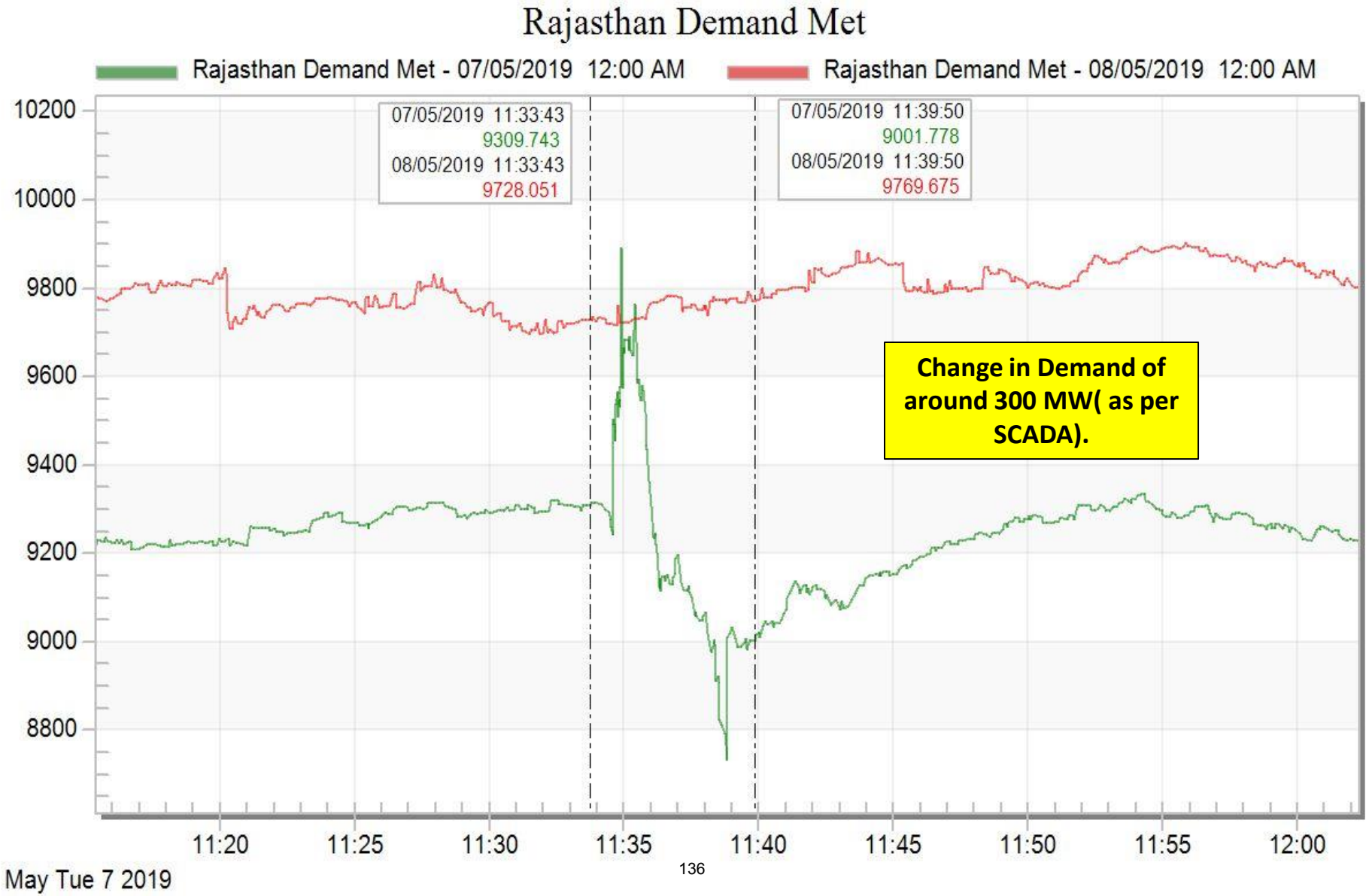
11:37hrs/07-May-19



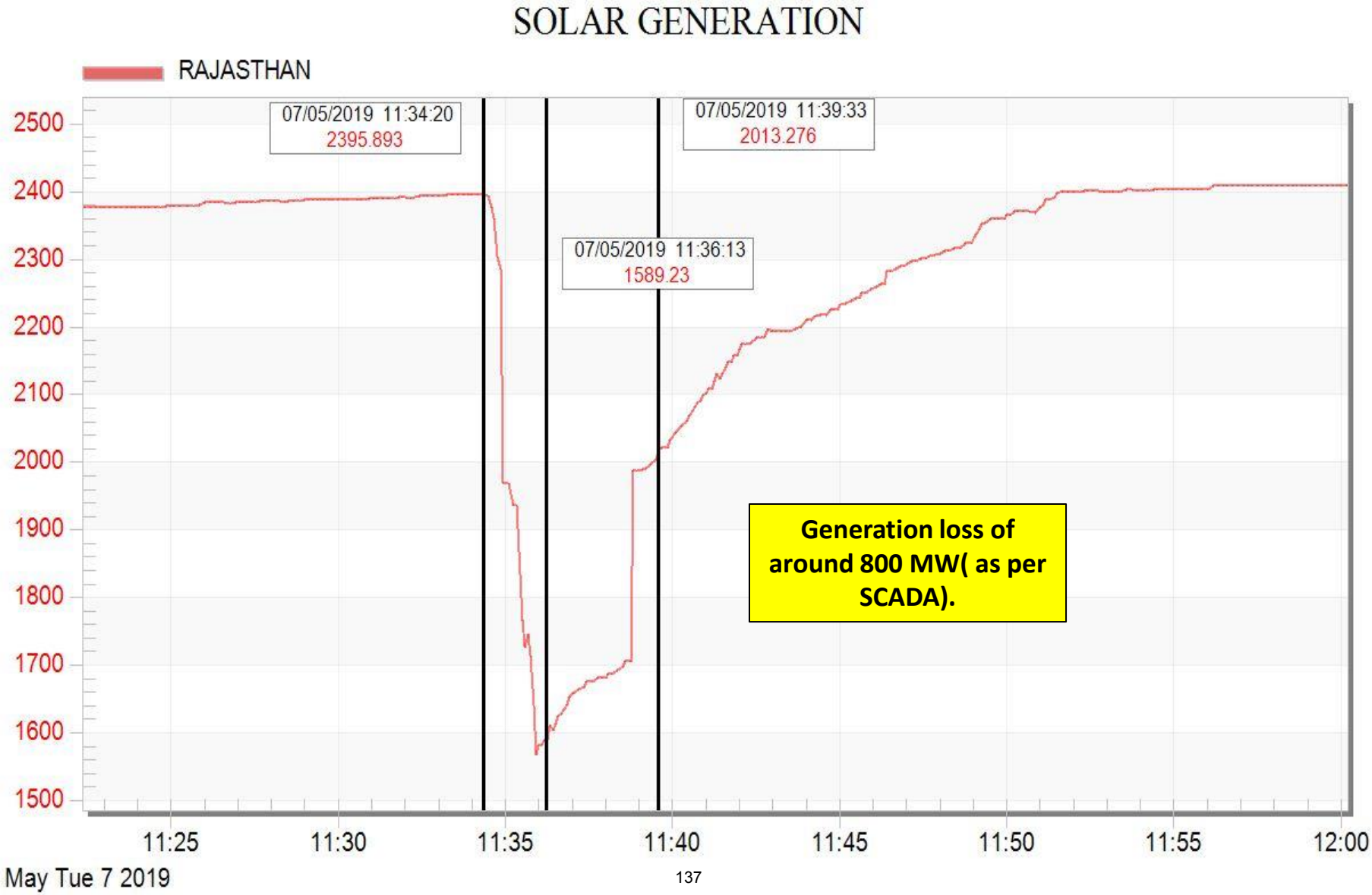
Rajasthan/POWERGRID SCADA SOE

Time	S/S Name	Voltage Level (in kV)	Element Name	Element Type	Status	Remarks
11:34:26:631	SIKAR	400kV	19BKNR2	Circuit Breaker	disturbe	
11:34:26:631	SIKAR	400kV	20BKN2TI	Circuit Breaker	disturbe	
11:34:26:636	SIKAR	400kV	29BKN1TI	Circuit Breaker	disturbe	
11:34:26:640	SIKAR	400kV	28BKNR1	Circuit Breaker	disturbe	
11:34:26:646	SIKAR	400kV	20BKN2TI	Circuit Breaker	Open	Tie CB of 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-2 opens.
11:34:26:647	SIKAR	400kV	19BKNR2	Circuit Breaker	Open	Main CB of 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-2 opens.
11:34:26:649	SIKAR	400kV	29BKN1TI	Circuit Breaker	Open	Tie CB of 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 opens.
11:34:26:650	SIKAR	400kV	28BKNR1	Circuit Breaker	Open	Main CB of 400kV Bikaner(RRVPNL)-Sikar(PG) ckt-1 opens.
11:34:26:691	BHDLA_R	400kV	04BKNR2	Circuit Breaker	Open	Main CB of 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2 opens.
11:34:26:692	BHDLA_R	400kV	05BKNR2	Circuit Breaker	Open	Tie CB of 400kV Bhadla(RRVPNL)-Bikaner(RRVPNL) ckt-2 opens.

Rajasthan Demand pattern during tripping



Rajasthan Solar Generation pattern during tripping



Generation loss of around 800 MW(as per SCADA).

Record of discussions held in Joint Study Meeting with HVPNL on 24th May'19

Participants:-

S. No.	NRPC	POSOCO	Haryana SLDC
1.	Sh. Saumitra Mazumdar	Sh. M.M. Hassan, GM (SO) NRLDC	Sh. Anshu Jain, AE (SO)
2.		Sh. M.M. Mehendale, GM (SO), NLDC	Sh. Kamal Das, JE (SO)
3.		Sh. Alok Kumar, Sr. DGM (SO), NRLDC	
4.		Sh. Rahul Shukla, Manager (SO), NLDC	
5.		Sh. Riza Naqvi, Manager (SO), NRLDC	
6.		Sh. Priyam Jain, Dy. Manager (SO), NLDC	

- The isolators at 400 kV M'garh and Dhanauda Stations are rated at **2000 Amps** due to which the thermal capacity of 400 kV Mahendergarh-Dhanauda lines is currently limited to only **1384 MVA each ckt** despite actual thermal capacity being **2211 MVA** at 45° ambient temperature. The isolator ratings, therefore, have put a restriction on the power order of HVDC Mundra – M'garh Bipole in real-time operation.

- This issue was highlighted by POSOCO several times in its operational feedbacks from April 2017 to April 2019. Further, the issue was raised in various OCC meetings of Northern Region. Further, in the 39th Standing Committee Meeting of NR, HVPNL informed that the average load of about 700 MW (each ckt) is continuously running on the said line and agreed to carry out the equipment upgradation at both the sub-stations for safe operation in case of N-1 of one ckt.

- In the 159th OCC meeting of NR on 17th May'19, POSOCO once again raised the issue of restriction on power order of inter-regional HVDCs viz., HVDC Mundra – M'garh and HVDC Champa – K'shetra Bipole because of non-upgradation of isolators/switch-gear at M'garh and Dhanunda station. In view of the upcoming high demand season in NR, POSOCO proposed the following interim arrangement for the safety of switchgear at both stations without any restriction on power order of HVDCs.

  "The 400 kV Mahendergarh and 400 kV Neemrana feeders are in same diameter at 400 kV Dhanauda station. As an interim measure, 400 kV main bays of the above mentioned feeders at 400 kV Dhanauda station may be opened which will result in 400 kV Mahendergarh - (Dhanaunda) - Neemrana D/C direct lines. With proposed bypass arrangement, the flow on 400 kV M'garh - (Dhanonda) - Neemrana D/C (2×534 MW) is approx. ***33.66%*** *less than the flow on 400 kV M'garh - Dhanonda D/C (2×805 MW) in base case."*

- Due to unavailability of HVPNL representatives in the OCC meeting, a special meeting was held by NRPC with participation of NLDC, NRLDC and Haryana representatives through VC. The matter was deliberated in detail. However, Haryana representatives requested that the studies need to be understood at NRLDC study facilities so that the same can be appreciated / put up to their management.

Rahul Shukla

MMMehendale

JE SLDC/HARYANA.

- Accordingly, On 24th May'19, representatives from SLDC Haryana visited NRLDC for the joint study session and following studies were carried out:-

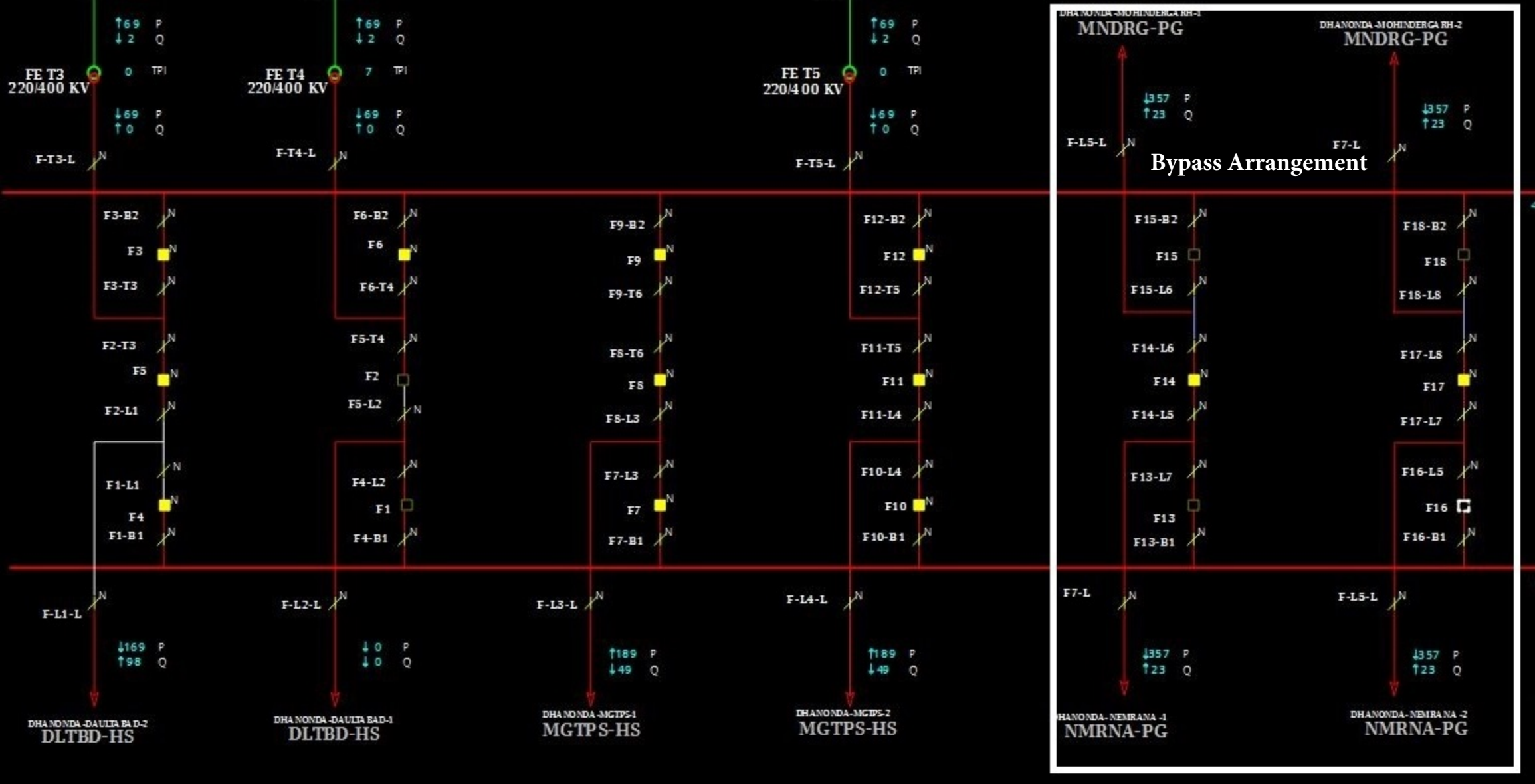
S. No.	Description	Remarks
1.	Visualization of Bypass Arrangement through NRLDC SCADA OTS	SLDC Haryana representatives agreed that the loading of proposed 400 kV M'garh - (Dhanaunda) - Neemrana D/C is considerably less than the flow on existing 400 kV M'garh - Dhanaunda D/C. (SCADA snapshots enclosed at Annex - I)
2.	Comparison of line flows in normal and bypass arrangement through SCADA OTS	
3.	Comparison of line flows in PSS/E base case and bypass arrangement	After simulating various contingencies in bypass arrangement in PSS/E, SLDC Haryana representatives agreed that their system is N-1 secure in the proposed arrangement. Further, as observed in SCADA OTS, the loading of proposed 400 kV M'garh - (Dhanaunda) - Neemrana D/C is considerably less than the flow on existing 400 kV M'garh - Dhanaunda D/C. (PSS/E study results enclosed at Annex-II)
4.	Simulating various contingencies in Bypass Arrangement	

- After the joint study session, SLDC Haryana representatives understood the gravity of the situation and stated that they will discuss the interim arrangement with their management.

- POSOCO stated that the issue of upgradation of isolators is pending since long and in view of the existing constraints on the HVDCs and upcoming high demand season in NR, the decision on proceeding with the interim arrangement in real-time may be taken soon.

- Haryana SLDC representatives stated that the study report discussed at NRLDC will be submitted to their management on priority for approval.


Annexure - I
FE T5
220/400 KV
↑69 P
↓2 Q
8 TPI
↓69 P
↑0 Q
F-T5-L
F6-B2
F6
F6-T4
F5-T4
F2
F5-L2
F4-L2
F1
F4-B1
F9-B2
F9
F9-T6
F8-T6
F8
F8-L3
F7-L3
F7
F7-B1
F12-B2
F12
F12-T5
F11-T5
F11
F11-L4
F10-L4
F10
F10-B1
F-L3-L
F-L4-L
↓0 P
↓0 Q
↓1 P
↓141 Q
DHA NONDA -MGTPS-1
DHA NONDA -MGTPS-2
MNDRG-PG
DHA NONDA -MOHINDERGARH-2
MNDRG-PG
↓683 P
↓37 Q
F-L5-L
F7-L
Exiting Arrangement
409 KV
F15-B2
F15
F15-L6
F14-L6
F14
F14-L5
F13-L7
F13
F13-B1
F18-B2
F18
F18-L8
F17-L8
F17
F17-L7
F16-L5
F16
F16-B1
↓376 P
↑98 Q
DHA NONDA - NEMRA NA -1
DHA NONDA - NEMRA NA -2


FE T3
220/400 KV
FE T4
220/400 KV
FE T5
220/400 KV
F-T3-L
F-T4-L
F-T5-L
F3-B2
F3
F3-T3
F6-B2
F6
F6-T4
F9-B2
F9
F9-T6
F12-B2
F12
F12-T5
F2-T3
F5
F2-L1
F5-T4
F2
F5-L2
F8-T6
F8
F8-L3
F11-T5
F11
F11-L4
F1-L1
F4
F1-B1
F4-L2
F1
F4-B1
F7-L3
F7
F7-B1
F10-L4
F10
F10-B1
F-L1-L
F-L2-L
F-L3-L
F-L4-L
DHANONDA -DAULTA BAD-2
DLTBD-HS
DHANONDA -DAULTA BAD-1
DLTBD-HS
DHANONDA -MGTPS-1
MGTPS-HS
DHANONDA -MGTPS-2
MGTPS-HS
MNDRG-PG
MNDRG-PG
F-L5-L
F7-L
Bypass Arrangement
F15-B2
F15
F15-L6
F18-B2
F18
F18-L8
F14-L6
F14
F14-L5
F17-L8
F17
F17-L7
F13-L7
F13
F13-B1
F16-L5
F16
F16-B1
F7-L
F-L5-L
NMRNA-PG
NMRNA-PG

400 KV M'garh - (Dhanonda) - Neemrana D/C - By-pass Arrangement

S. No.	Description	Base Case Flow (MW)	By-Pass Arrangement (MW)	Delta (MW)	Remarks
1	400 KV M'garh - Dhanonda D/C	2×805	×	-1610	a) With bypass arrrangement, the flow on 400 kV M'garh - (Dhanonda) - Neemrana D/C (2×534 MW) is approx. 33.66% less than the flow on 400 kV M'garh - Dhanonda D/C (2×805 MW) in base case. b) 400 kV M'garh - Neemrana S/C has sensitivity of around 55% sensitivty on other ckt. c) In worst case scenario, the loading of 400 kV M'garh - (Dhanonda) - Neemrana D/C is observed to be less than 600 MW on each ckt. In case of N-1 of one ckt, the line current of other ckt. will remain below 2 KA.
2	400 KV M'garh - Neemrana D/C	×	**2×534**	1068	
3	400 KV Dhanonda - Neemrana D/C	2×282.3	×	-565	
4	400 KV M'garh - Bhiwani D/C	2×134.7	2×405	541	
5	400 KV CLP Jhajjar - Dhanonda D/C	2×1.1	2×245.5	489	
6	400 KV CLP Jhajjar - Kabulpur D/C	2×263.4	2×19	-489	
7	400 KV Dhanonda - Daulatabad D/C	2×264.5	2×37.2	-455	
8	400 KV Neemrana - Manesar D/C	2×113.8	2×239.1	251	
9	400 KV Daulatabad - Gurgaon D/C	2×237.3	2×61.3	-352	
10	400 KV Manesar - Gurgaon D/C	(-)2×27.3	2×93.8	242	

A.	**Fault Level -** Dhanonda S/s (MVA, KA)	32447 MVA, 46.83 KA	22910 MVA, 33.06 KA

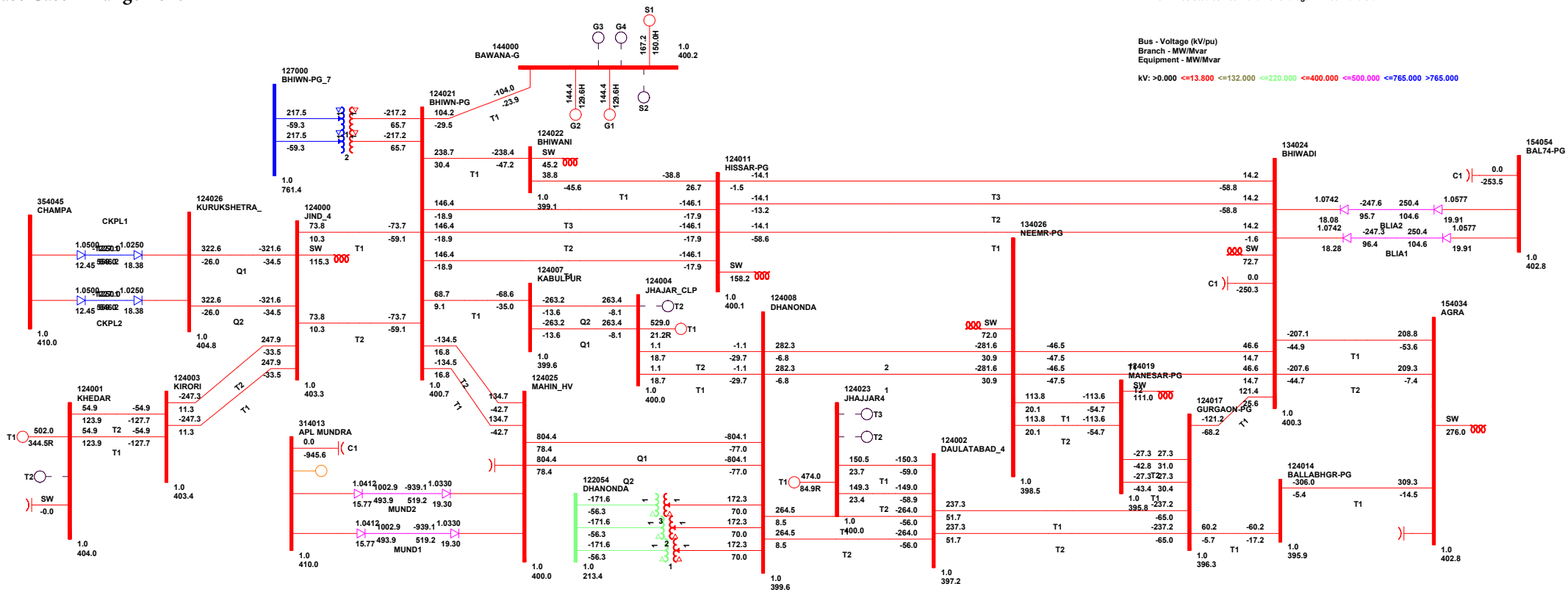
Assumptions in PSS/E base/study case are as under:-

a) August'19 Peak Case has been considered for study purpose

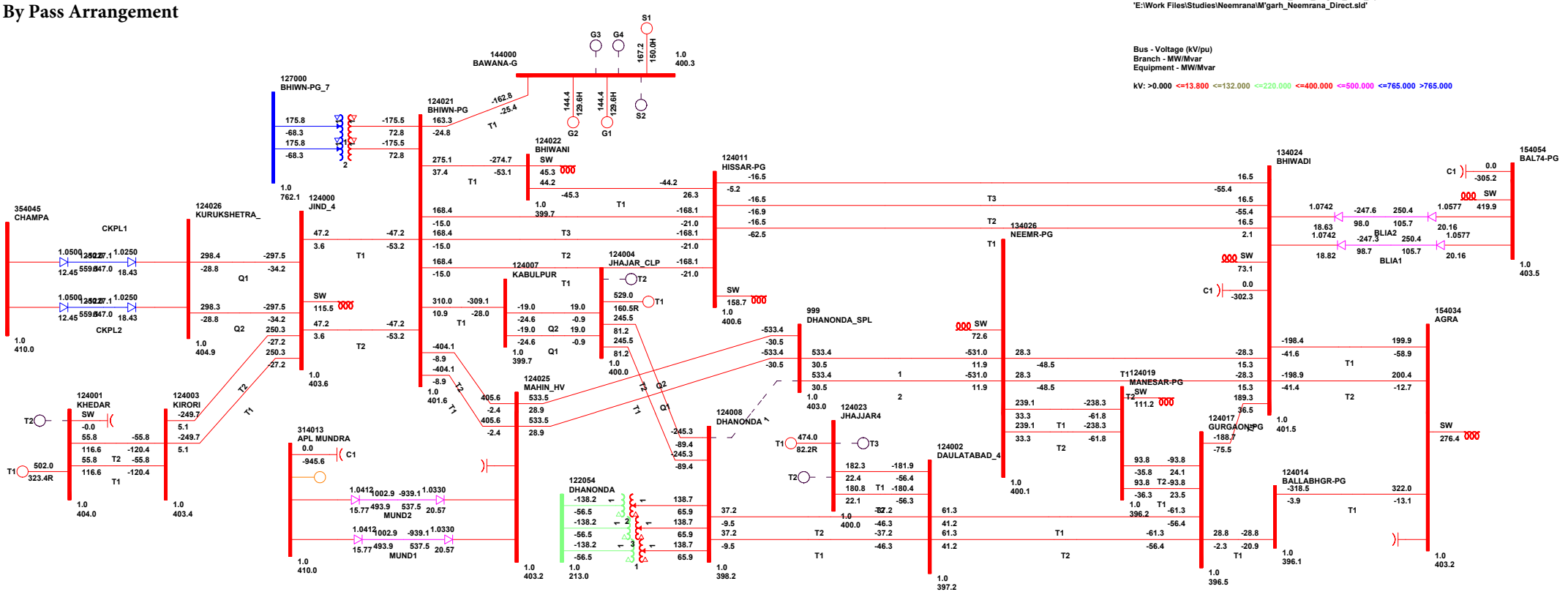
b) HVDC Flows:-
Mundra - M'garh Bipole - 2000 MW
Champa - Kurukshetra - 2500 MW
BNC - APD- Agra - 1000 MW
Balia- Bhiwadi - 500 MW
Rihand - Dadri - 1500 MW

c) Ex-bus Generation considered at nearby stations:-
CLP Jhajjar- 530 MW
IG Jhajjar - 474 MW
Khedar - 500 MW
Rajpura - 1340 MW
Bawana - 456 MW

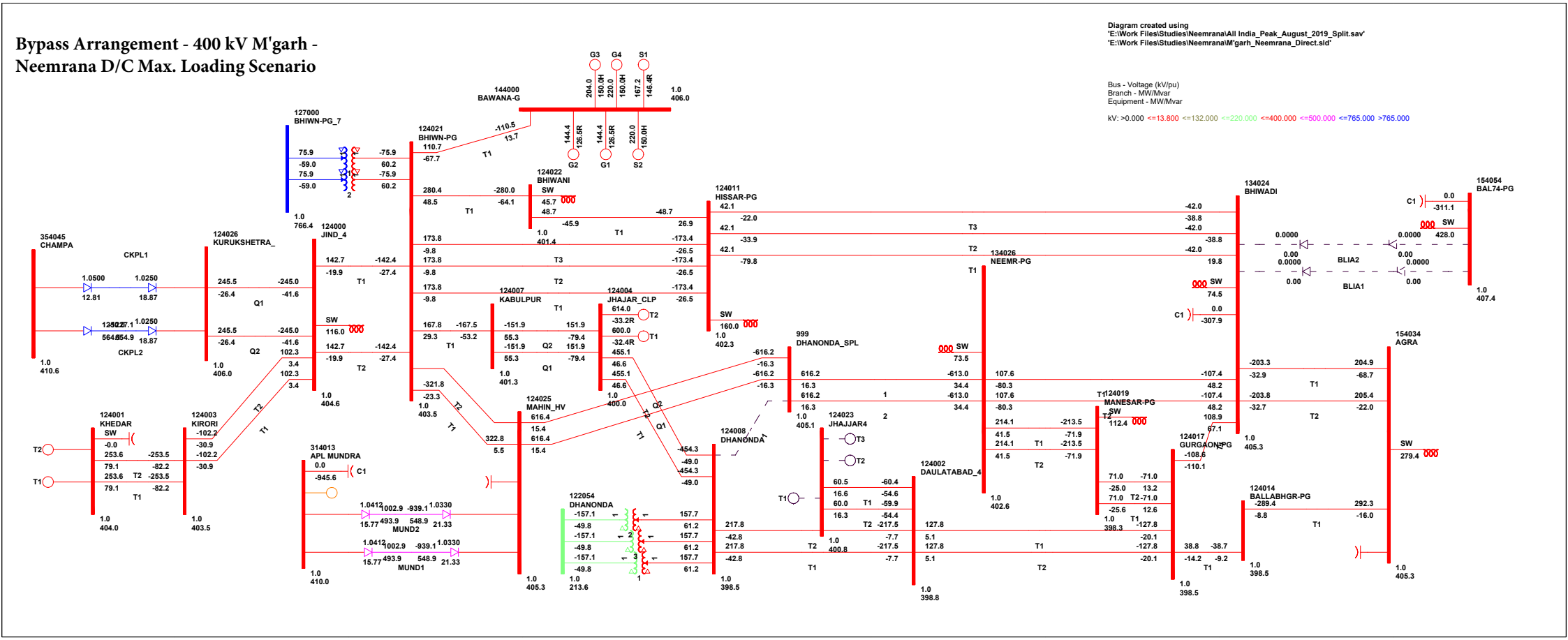
Base Case Arrangement



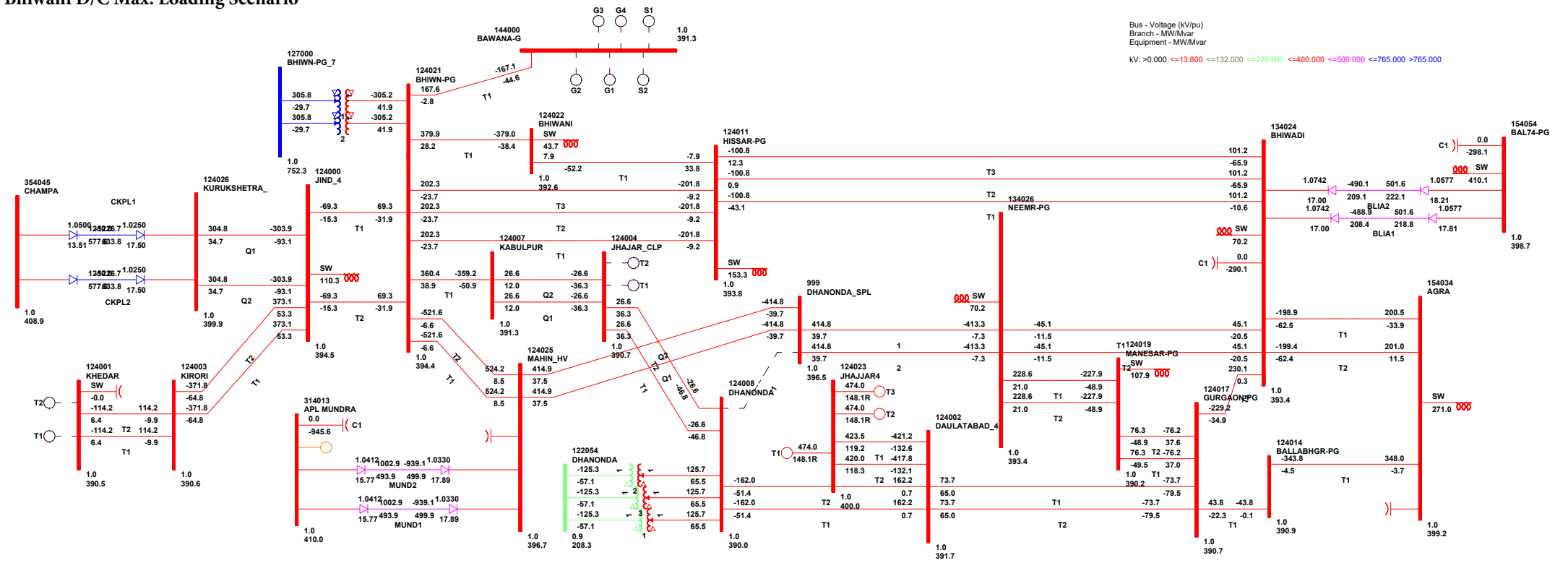
By Pass Arrangement



Bypass Arrangement - 400 kV M'garh - Neemrana D/C Max. Loading Scenario



Bypass Arrangement - 400 kV M'garh - Bhiwani D/C Max. Loading Scenario



Restriction on HVDC Mundra - M'garh Bipole Power Order - Study Results

Description	HVDC Mundra - Mahendragarh Bipole (MW)	400 KV M'garh - Dhanonda D/C (MW)	400 KV M'garh - Bhiwani D/C (MW)	400 kV M'garh - Dhanonda S/C flow in case of N-1 of other ckt (MW)	400 kV M'garh - Dhanonda S/C -Line current (kA)	Remarks
Base Case	2000	2×905	2×34	1745	**2.52**	HVDC Mundra - M'garh flow may be restricted at 1400 MW for safety of switchgear at 400 kV Dhanonda Station in case of N-1 of 400 kV M'garh - Dhanonda D/C
Case -1	1700	2×813	(-)2×7	1567	**2.26**	
Case -2	1400	2×719	(-)2×49	1386	**2.00**	

Assumptions in PSS/E base/study case are as under:-

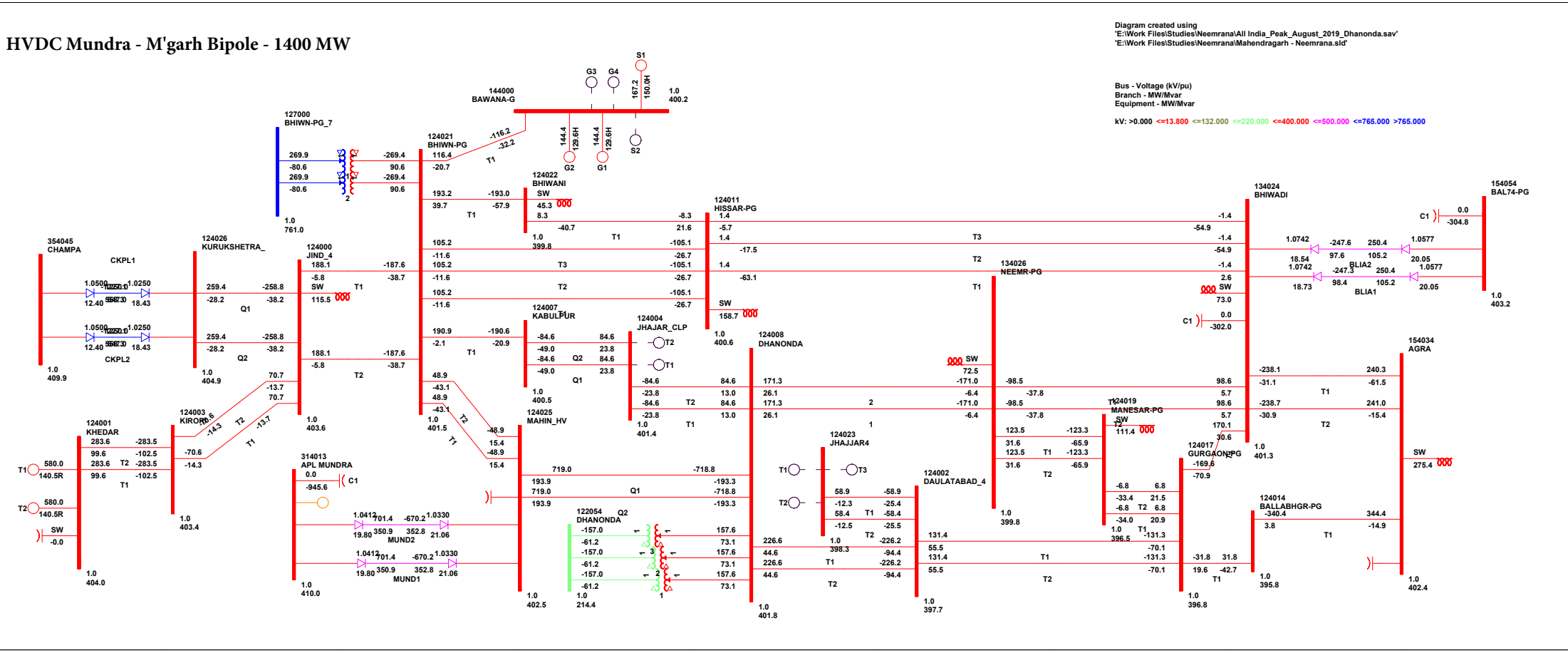
a) August'19 Peak Case has been considered for study purpose

b) Simulation has been carried out for worst possible scenario considering full generation at Khedar TPS, Nil generation at both CLP Jhajjar and IG Jhajjar TPS, and HVDC Champa - K'shetra flow at 2500 MW

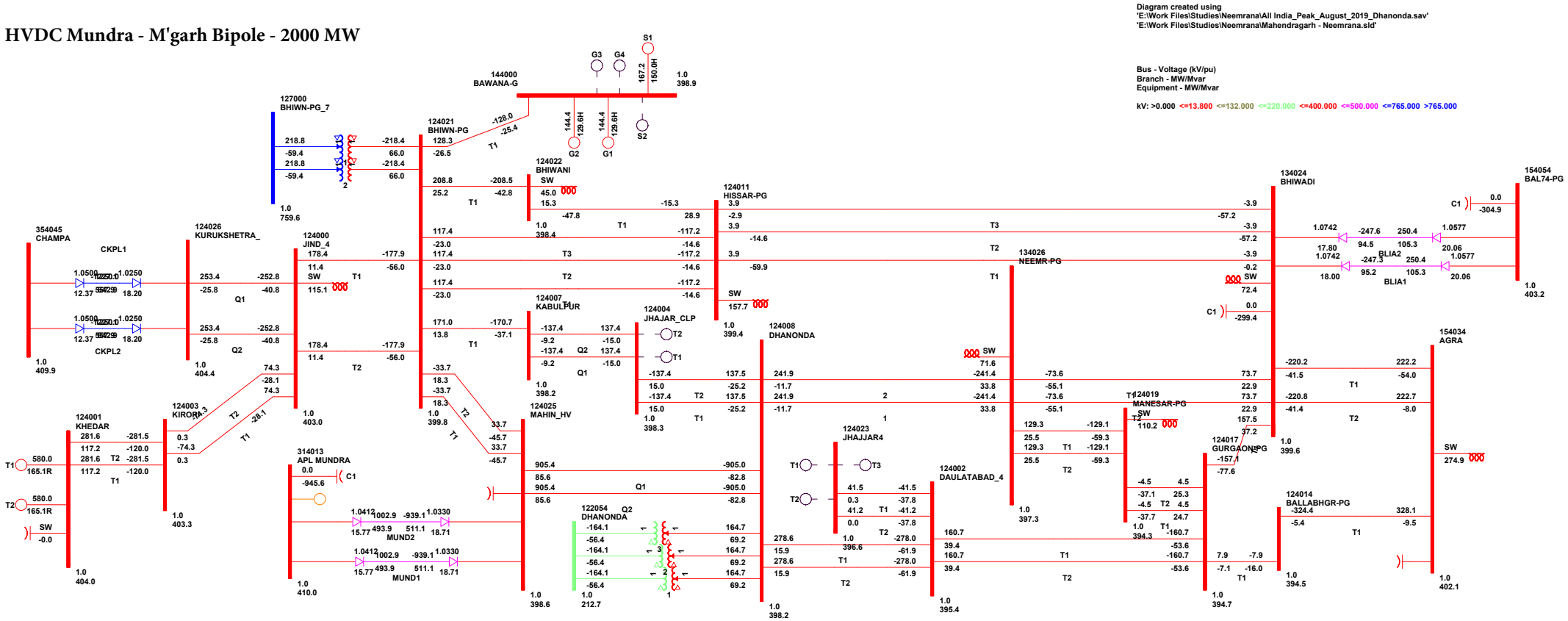
c) HVDC Flows:-
Champa - Kurukshetra - 2500 MW
BNC - APD- Agra - 1000 MW
Balia- Bhiwadi - 500 MW
Rihand - Dadri - 1500 MW

c) Generation considered at nearby stations:-
CLP Jhajjar - 0 MW
IG Jhajjar - 0 MW
Khedar - 1160 MW
Rajpura - 1340 MW

HVDC Mundra - M'garh Bipole - 1400 MW



HVDC Mundra - M'garh Bipole - 2000 MW



~~Annex-VIII~~

Tripping of lines in Punjab control area during night hours (Dec 2018 to Feb 2019)

S.No	Element Name	Type	Voltage Level	Owner	Outage		Revival		Reason / Remarks
					Date	Time	Date	Time	
1	Amritsar(PG)-Makhu(PSEB) -2	Line	400 kV	PSTCL	14-Dec-2018	4:00	14-Dec-2018	17:06	Auto reclosed. Phase to earth (B-N fault) 2.2km from Makhu end. Fault current = 13.37kA at Makhu(Disc insulator String Breakdown fault occure at tower no. 7)
2	Makhu -Mukatsar -1	Line	400 kV	PSTCL	23-Dec-2018	4:29	23-Dec-2018	17:56	Phase to earth fault. B-phase,fog suspected.14 km from Makhu.(E/S/D due to Insulator string failure at location no-222)
3	Amritsar(PG)-Makhu(PSEB) -2	Line	400 kV	PSTCL	23-Dec-2018	4:29	26-Dec-2018	16:29	Phase to earth fault. Y-phase 5 KM from Makhu,fog suspected.
4	Makhu -Mukatsar -2	Line	400 kV	PSTCL	23-Dec-2018	4:48	25-Dec-2018	16:06	Phase to earth fault. Y-phase,fog suspected.14 km from Makhu.(E/S/D due to Insulator string failure at location no-222)
5	Amritsar(PG)-Makhu(PSEB) -1	Line	400 kV	PSTCL	23-Dec-2018	5:43	25-Dec-2018	18:34	Phase to earth fault. R-phase 5 KM from Makhu,fog suspected.
6	Mukatsar -Talwandi Sabo - 1	Line	400 kV	PSTCL	23-Dec-2018	8:11	24-Dec-2018	12:34	Phase to earth fault. R-N Fault ,current = 3KA ,Distance = 50km from Mukatsar end(E/S/D availed due to disc damage at loc no-131)
7	Moga(PG) -Nakodar(PSEB)	Line	400 kV	PSTCL	23-Dec-2018	8:11	23-Dec-2018	8:56	Phase to earth fault. (B-N)
8	Mukatsar -Talwandi Sabo - 2	Line	400 kV	PSTCL	24-Dec-2018	0:46	24-Dec-2018	21:38	Phase to earth fault. B-N
9	Moga(PG) -Talwandi Sabo(PSEB)	Line	400 kV	PSTCL	24-Dec-2018	8:09	24-Dec-2018	9:07	Tripping details awaited.
10	Mukatsar -Talwandi Sabo - 2	Line	400 kV	PSTCL	25-Dec-2018	3:07	26-Dec-2018	12:34	Phase to earth fault. Fog suspected (B-N ,55.4KM ,Fault current=5.347KA from Talwandi end)
11	Mukatsar -Talwandi Sabo - 1	Line	400 kV	PSTCL	25-Dec-2018	3:48	25-Dec-2018	19:20	Phase to earth fault. Fog suspected (Y-N ,4.139KM , Fault current=20.22KA from Talwandi end)
12	Moga(PG) -Talwandi Sabo(PSEB)	Line	400 kV	PSTCL	25-Dec-2018	4:26	25-Dec-2018	16:56	Phase to earth fault. Fog suspected.(B-N,10.37KM , Fault current=12.90KA from Talwandi end)
13	Nakodar - Talwandi Sabo-1	Line	400 kV	PSTCL	25-Dec-2018	4:44	25-Dec-2018	12:35	fog suspected(Y-N ,15.19KM ,Fault current=13.81km from Talwandi end)
14	Dhuri(400kv) -Talwandi Sabo 2	Line	400 kV	PSTCL	25-Dec-2018	5:22	25-Dec-2018	12:19	Fog suspected(Tripping details awaited)
15	Dhuri(400kv) -Talwandi Sabo 1	Line	400 kV	PSTCL	25-Dec-2018	7:10	25-Dec-2018	9:57	Due to fog, detail awaited
16	Dhuri (400kV)-Rajpura (400kV)-1	Line	400 kV	PSTCL	25-Dec-2018	7:10	25-Dec-2018	8:54	Trip along Dhuri - T. sabo Ckt-1, details awaited
17	Rajpura (400kV)-Rajpura (TH)-1	Line	400 kV	PSTCL	25-Dec-2018	8:54	25-Dec-2018	10:39	During charging of 400kV Rajpura-Dhuri-1
18	Nakodar - Talwandi Sabo-1	Line	400 kV	PSTCL	3-Jan-2019	5:07	3-Jan-2019	14:43	Phase to earth fault. B-N , 41.2 KM ,Fault current = 5.92KA from Talwandi end
19	Mukatsar -Talwandi Sabo - 2	Line	400 kV	PSTCL	3-Jan-2019	5:47	3-Jan-2019	18:08	Suspected to fog. B-N ,7.23KA,8.01KM from Talwandi sabo
20	Makhu -Mukatsar -1	Line	400 kV	PSTCL	3-Jan-2019	5:47	4-Jan-2019	16:07	Phase to earth fault. Suspected to fog. B-N ,65.80KM ,Fault current=2.62KA from Makhu end
21	Mukatsar -Talwandi Sabo - 1	Line	400 kV	PSTCL	3-Jan-2019	5:59	3-Jan-2019	18:18	Suspected to fog. R-N ,2.46KA,81.10KM from Talwandi sabo
22	Moga(PG) -Talwandi Sabo(PSEB)	Line	400 kV	PSTCL	3-Jan-2019	6:15	3-Jan-2019	13:30	Suspected to fog.Details awaited
23	Makhu -Mukatsar -2	Line	400 kV	PSTCL	16-Feb-2019	5:49	16-Feb-2019	18:21	Y-N fault.
24	Amritsar(PG)-Khassa(PSEB) 1	Line	220 kV	PSTCL	3-Jan-2019	3:18	3-Jan-2019	18:01	Tripped from Amritsar end only
25	Amritsar(PG)-Khassa(PSEB) 2	Line	220 kV	PSTCL	3-Jan-2019	3:18	3-Jan-2019	7:54	Tripped from both ends

Annexure-C.5.1

Jan-19					
Week	Date	Total UI charges (crores)	UI as per SEM (LUs)	UI as per SCADA (LUs)	%age error
Week 1	01-01-2019	12.68	16.32	-4.35	127
	02-01-2019		14.87	-8.03	154
	03-01-2019		16.13	-6.25	139
	04-01-2019		19.09	-1.73	109
	05-01-2019		18.37	-0.58	103
	06-01-2019		23.02	2.64	89
Total			107.80	-18.3	
Week 2	07-01-2019	15.49	21.35	-0.312	101
	08-01-2019		21.50	-1.01	105
	09-01-2019		23.68	3.66	85
	10-01-2019		13.80	-5.51	140
	11-01-2019		8.58	-2.94	134
	12-01-2019		17.56	-2.87	116
	13-01-2019		21.51	3.12	85
Total			127.98	-5.862	
Week 3	14-01-2019	12.65	19.19	1.61	92
	15-01-2019		19.71	3.68	81
	16-01-2019		22.31	-2.19	110
	17-01-2019		42.22	-2.71	106
	18-01-2019		11.37	-3.36	130
	19-01-2019		13.25	-2.1	116
	20-01-2019		-1.08	-3.5	224
Total			126.97	-8.57	
Week 4	21-01-2019	6.19	-4.59	-7.39	61
	22-01-2019		18.02	-1.22	107
	23-01-2019		15.35	-2.14	114
	24-01-2019		15.40	-0.58	104
	25-01-2019		8.08	-2.39	130
	26-01-2019		4.14	-1.17	128
	27-01-2019		-0.72	-1.69	135
Total			55.68	-16.58	
Week 5	28-01-2019	3.80	2.18	-1.6	173
	29-01-2019		12.11	2.02	83
	30-01-2019		11.32	-0.62	105
	31-01-2019		5.42	-7.004	229
	01-02-2019		-0.21	-9.65	4495
	02-02-2019		-13.56	-3.7	73
	03-02-2019		7.77	-4.16	154
Total			25.03	-24.714	
Grand Total		50.81	443.46	-74.03	

Jan-19			
Week	Punjab Zero crossing Violations (Numbers)		
	Date	As per Punjab SCADA	As per SEM
Week 1	01-01-2019	3	8
	02-01-2019	3	9
	03-01-2019	4	7
	04-01-2019	2	7
	05-01-2019	2	10
	06-01-2019	3	10
Total		17	51
Week 2	07-01-2019	3	8
	08-01-2019	2	9
	09-01-2019	0	11
	10-01-2019	1	6
	11-01-2019	1	10
	12-01-2019	3	10
	13-01-2019	0	9
Total		10	63
Week 3	14-01-2019	1	8
	15-01-2019	0	9
	16-01-2019	1	7
	17-01-2019	3	13
	18-01-2019	1	7
	19-01-2019	1	5
	20-01-2019	1	4
Total		8	53
Week 4	21-01-2019	2	7
	22-01-2019	1	8
	23-01-2019	5	7
	24-01-2019	1	7
	25-01-2019	3	6
	26-01-2019	0	6
	27-01-2019	1	5
Total		13	46
Week 5	28-01-2019	1	6
	29-01-2019	0	6
	30-01-2019	0	4
	31-01-2019	0	4
	01-02-2019	1	5
	02-02-2019	0	5
	03-02-2019	0	5
Total		2	35
Grand Total		50	248

Feb-19					
Week	Date	Total UI charges (crores)	UI as per SEM (LUs)	UI as per SCADA (LUs)	%age error
Week 1	04-02-2019	1.45	7.31	-7.3	200
	05-02-2019		4.86	-8.39	273
	06-02-2019		4.17	-7.75	286
	07-02-2019		-3.55	-8.05	127
	08-02-2019		-0.97	-8.13	738
	09-02-2019		0.66	-8.79	1432
	10-02-2019		0.67	-9.06	1452
Total			13.15	-57.47	
Week 2	11-02-2019	0.31	-5.33	-11.83	122
	12-02-2019		-0.50	-6.94	1288
	13-02-2019		-3.40	-8.62	154
	14-02-2019		-10.92	-13.39	23
	15-02-2019		-3.82	-10.63	178
	16-02-2019		-5.67	-12.72	124
	17-02-2019		-3.38	-15.18	349
Total			-33.02	-79.31	
Week 3	18-02-2019	0.53	1.51	-9.79	748
	19-02-2019		-2.13	-14.32	572
	20-02-2019		-2.27	-13.63	500
	21-02-2019		-7.12	-16.53	132
	22-02-2019		-3.88	-16.83	334
	23-02-2019		-4.30	-13.71	219
	24-02-2019		-6.77	-14.41	113
Total			-24.96	-99.22	
Week 4	25-02-2019	0.47	-6.10	-16.15	165
	26-02-2019		-3.49	-13.39	284
	27-02-2019		-1.67	-11.87	611
	28-02-2019		-8.73	-16.68	91
	01-03-2019		-5.92	-10.22	73
	02-03-2019		-5.34	-14.75	176
	03-03-2019		-4.16	-14.52	249
Total			-35.41	-97.58	
Grand Total		2.76	-80.24	-333.58	

Feb-19			
Week	Punjab Zero crossing Violations (Numbers)		
	Date	As per Punjab SCADA	As per SEM
Week 1	04-02-2019	0	4
	05-02-2019	0	4
	06-02-2019	0	2
	07-02-2019	0	0
	08-02-2019	0	2
	09-02-2019	0	2
	10-02-2019	0	1
Total		0	15
Week 2	11-02-2019	1	2
	12-02-2019	0	1
	13-02-2019	1	1
	14-02-2019	1	3
	15-02-2019	0	2
	16-02-2019	0	1
	17-02-2019	0	1
Total		3	11
Week 3	18-02-2019	0	1
	19-02-2019	0	1
	20-02-2019	1	2
	21-02-2019	0	2
	22-02-2019	2	2
	23-02-2019	0	0
	24-02-2019	1	1
Total		4	9
Week 4	25-02-2019	0	0
	26-02-2019	0	3
	27-02-2019	1	0
	28-02-2019	0	0
	01-03-2019	0	2
	02-03-2019	0	1
	03-03-2019	1	2
Total		2	8
Grand Total		9	43

Mar-19					
Week	Date	Total UI charges (crores)	UI as per SEM (LUs)	UI as per SCADA (LUs)	%age error
Week 1	04-03-2019	2.73	3.12	-10.88	449
	05-03-2019		6.84	-12.95	289
	06-03-2019		7.48	-8.89	219
	07-03-2019		-5.76	-15.69	172
	08-03-2019		-0.54	-14.1	2511
	09-03-2019		5.20	-12.74	345
	10-03-2019		-1.64	-12.96	690
Total			**14.70**	**-88.21**	
Week 2	11-03-2019	0.28	-6.84	-16.75	145
	12-03-2019		-3.59	-15.87	342
	13-03-2019		-1.61	-14.45	798
	14-03-2019		-1.19	-11.44	861
	15-03-2019		-3.45	-10.73	211
	16-03-2019		4.71	-7.56	261
	17-03-2019		-5.23	-12.05	130
Total			**-17.20**	**-88.85**	
Week 3	18-03-2019	0.51	-5.78	-8.28	43
	19-03-2019		-12.92	-16.31	26
	20-03-2019		-15.68	-17.19	10
	21-03-2019		-11.81	-16	35
	22-03-2019		-6.95	-15.24	119
	23-03-2019		-11.58	-18.97	64
	24-03-2019		-9.46	-16.06	70
Total			**-74.18**	**-108.05**	
Week 4	25-03-2019	0.49	-2.30	-14.19	517
	26-03-2019		-4.07	-17.39	327
	27-03-2019		-7.76	-20.07	159
	28-03-2019		-6.67	-20.18	203
	29-03-2019		-2.36	-17.4	637
	30-03-2019		-13.24	-20.88	58
	31-03-2019		-9.90	-19.62	98
Total			-46.30	-129.73	
Grand Total		**4.01**	**-122.98**	**-414.84**	

Mar-19			
Week	Punjab Zero crossing Violations (Numbers)		
	Date	As per Punjab SCADA	As per SEM
Week 1	04-03-2019	0	2
	05-03-2019	0	4
	06-03-2019	0	4
	07-03-2019	0	3
	08-03-2019	0	1
	09-03-2019	0	2
	10-03-2019	0	0
Total		0	**16**
Week 2	11-03-2019	1	3
	12-03-2019	0	0
	13-03-2019	1	0
	14-03-2019	1	1
	15-03-2019	0	3
	16-03-2019	0	2
	17-03-2019	0	2
Total		**3**	**11**
Week 3	18-03-2019	0	0
	19-03-2019	1	1
	20-03-2019	1	4
	21-03-2019	0	5
	22-03-2019	1	1
	23-03-2019	0	3
	24-03-2019	1	2
Total		**4**	**16**
Week 4	25-03-2019	1	1
	26-03-2019	0	2
	27-03-2019	2	1
	28-03-2019	1	1
	29-03-2019	0	1
	30-03-2019	0	5
	31-03-2019	0	2
Total		4	13
Grand Total		**11**	**56**

Apr-19					
Week	Date	Total UI charges (crores)	UI as per SEM (LUs)	UI as per SCADA (LUs)	%age error
Week 1	01-04-2019	1.44	-9.71	-20.51	111
	02-04-2019		-13.10	-17.45	33
	03-04-2019		4.45	-13.76	409
	04-04-2019		2.53	-16.44	750
	05-04-2019		4.86	-13.23	372
	06-04-2019		5.95	-12.41	309
	07-04-2019		4.42	-13.47	405
Total			**-0.60**	**-107.27**	
Week 2	08-04-2019	6.54	10.99	-10.03	191
	09-04-2019		12.55	-12.39	199
	10-04-2019		15.09	-10.75	171
	11-04-2019		8.25	-10.39	226
	12-04-2019		5.68	-9.65	270
	13-04-2019		13.17	-9.12	169
	14-04-2019		3.70	-11.28	405
Total			**69.43**	**-73.61**	
Week 3	15-04-2019	5.44	-14.17	-26.77	89
	16-04-2019		24.37	-39.1	260
	17-04-2019		6.57	-13.17	300
	18-04-2019		14.65	-8.31	157
	19-04-2019		10.44	-9.19	188
	20-04-2019		4.98	-13.18	365
	21-04-2019		4.82	-12.01	349
Total			**51.66**	**-121.73**	
Week 4	22-04-2019	2.71	3.55	-10.22	388
	23-04-2019		5.51	-9.24	268
	24-04-2019		-9.95	-18.65	87
	25-04-2019		-0.85	-17.9	2006
	26-04-2019		-6.24	-21.42	243
	27-04-2019		-3.06	-14.99	390
	28-04-2019		-15.60	-26.64	71
Total			**-26.64**	**-119.06**	
Grand Total		**16.13**	**93.85**	**-421.67**	

Apr-19			
Week	Punjab Zero crossing Violations (Numbers)		
	Date	As per Punjab SCADA	As per SEM
Week 1	01-04-2019	2	0
	02-04-2019	1	4
	03-04-2019	0	1
	04-04-2019	0	0
	05-04-2019	0	3
	06-04-2019	0	2
	07-04-2019	0	2
Total		**3**	**12**
Week 2	08-04-2019	0	5
	09-04-2019	0	7
	10-04-2019	0	9
	11-04-2019	0	8
	12-04-2019	0	3
	13-04-2019	1	5
	14-04-2019	3	3
Total		**4**	**40**
Week 3	15-04-2019	2	6
	16-04-2019	4	8
	17-04-2019	0	3
	18-04-2019	0	4
	19-04-2019	1	6
	20-04-2019	0	3
	21-04-2019	1	6
Total		**8**	**36**
Week 4	22-04-2019	0	2
	23-04-2019	0	7
	24-04-2019	2	2
	25-04-2019	0	0
	26-04-2019	3	2
	27-04-2019	0	4
	28-04-2019	5	7
Total		**10**	**24**
Grand Total		**25**	**112**