Minutes

of

155th OCC Meeting

Date: 03.04.2019

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Minutes of 155th OCC Meeting held on 25th March, 2019 at Kolkata

List of participants is at **Annexure-A**.

Item no. 1: Confirmation of minutes of 154th OCC meeting of ERPC held on 21.02.2019

The minutes of 154th OCC meeting were uploaded in ERPC website and circulated vide letter dated 07.03.2019 to all the constituents.

Members may confirm the minutes.

Deliberation in the meeting

Members confirmed the minutes of 154th OCC meeting.

PART A : ER GRID PERFORMANCE

Item no. A1: ER Grid performance during February, 2019

ERLDC may present the performance of Eastern Regional Grid covering the followings:

1. **Frequency profile**
2. **Over drawal/under injection by ER Entities**
3. **Performance of Hydro Power Stations during peak hours**
4. **Performance of ISGS during RRAS**
5. **Reactive Power performance of Generators**
6. **Restricted Governor /Free Governor Mode Operation of generators in ER**
7. **Deviation Settlement Mechanism**
8. **Fast Response Ancillary Service (FRAS) (Presentation would be given by ERPC)**

Deliberation in the meeting

*ERLDC presented the performance of the Eastern Regional Grid during February 2019. Presentation is enclosed at **Annexure- A1**.*

OCC observed that the % of time of frequency remaining within the IEGC had been decreased to 70% in February,19 w.r.t. 80% in February, 18. Similarly % of time of grid frequency greater than 50.05 Hz had been increased to 22% in February,19 w.r.t. 10% in February, 18. ERLDC clarified that the performance of the frequency was analyzed using the instantaneous frequency data.

ERLDC informed that Sagardhigi and Kolaghat TPS units were not absorbing VAR during high voltage as per their capability curve.

OCC advised WBPDCL to take necessary action to improve the reactive power performance.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: Power Assistance at Manique GSS from DVC and at Kendposi GSS from OPTCL –JUSNL

JUSNL vide letter dated 8th February 2019 informed that they are planning shutdown of 132 KV D/C RCP-ADP line for erection of 05 nos. Multi Circuit Tower in place of existing transmission tower. Erection of Multi Circuit Tower is inevitable for new 132 KY RCP-Jadugoda transmission line due to limitation of vacant corridor.

In 154th OCC, JUSNL explained that they needed around 35 MW power from Manique (DVC) and 40 MW power from Joda (OPTCL) S/s during the shutdown of 132kV Ramchandrapur-Adityapur D/C line for 31 days.

DVC informed that, due to network constraints in DVC system, DVC would not be in a position to give power from Manique (DVC).

OPTCL informed that the ATRs at Joda are quite old and they are planning to augment the ATRs. Power could be extended to JUSNL only after completion of augmentation of ATR.

Underlining the need to facilitate the shut-down to JUSNL and at the same time, to ensure system integrity, OCC advised Member Secretary, ERPC to convene a special meeting at ERPC Secretariat to discuss the issue with JUSNL, DVC, OPTCL, ERPC and ERLDC to arrive at an acceptable solution.

Accordingly, a separate meeting was held on 1st March 2019. The minutes of the meeting are enclosed at **Annexure-B1**.

Members may note.

Deliberation in the meeting

OPTCL informed that in view of Lok Sabha Elections, they had not taken the shutdown of 220/132kV ATR at Joda for augmentation work. OPTCL added that they would take the shutdown after the Elections.

JUSNL representative was not available in the meeting for discussion.

OCC decided to review the issue in May 2019 OCC Meeting.

Item No. B.2: Review of Rangpo SPS in view of Shutdown of 400 kV Rangpo-Binaguri D/C ---ERLDC

In 154th OCC, it was decided that a committee with members from Powergrid, Teesta-III, Teesta V, Dikchu, Dansenergy, Chuzachen, ERLDC and ERPC would study the requirement of SPS for safe evacuation of Sikkim hydro power and place the report in next OCC Meeting for further deliberation.

Thereafter, Powergrid has requested for shutdown of 400 KV Rangpo-Binaguri-D/C (Twin Moose) for conductor replacement work.

Both the issues were discussed in a separate meeting which was held at ERPC, Kolkata on 8th March 2019. The meeting was attended by members from Powergrid, Teesta-III, Dikchu, Dansenergy, Chuzachen, ERLDC and ERPC. The minutes of the meeting are enclosed at **Annexure-B2**.

In the meeting, it was decided to implement the following SPS during the shutdown of 400 KV Rangpo-Binaguri-D/C line

- One unit of Teesta-III, Teesta V, Dikchu, Jorethang, Chujachen and Tashiding shall be tripped, in case of tripping of 400kV Teesta 3 – Kishanganj line.
- Two units of Teesta-III and one unit each at Teesta V, Dikchu, Jorethang, Chujachen and Tashiding shall be tripped, in case of tripping of 400kV Rangpo – Kishanganj line

However, based on the experience of real time power flows observed in Teesta-3 – Kisanganj and Rangpo – Kisanganj lines during the first couple of days after taking Rangpo- Binaguri D/C under shutdown, the following modification in SPS logic is being proposed:

Actuating signal for SPS

- 400 kV Rangpo-Kishanganj S/C trips and line power flow measured at Rangpo just prior to the tripping is >650 MW

Or

- When flow of 400 kV Rangpo-Kishanganj crosses 1700 MW

This SPS signal will be sent to Teesta-V, Teesta-III, Dikchu, Tasheding,Jorethang and Chujachen for tripping of one unit at each station.

- In addition to this Teesta-III will trip one more unit
  - If it receives SPS signal and CB of 400 kV Teesta-III-Kishanganjline (at Teesta-3 end) is closed.

Or

- Flow of 400 kV Teesta-III-Kishanganj exceeds 2000 Amps (1385 MVA)

Members may discuss.

Deliberation in the meeting

Powergrid informed that they had taken the shutdown of 400 kV Rangpo-Binaguri D/C line from 20th March 2019 and the reconductoring work is in progress. Powergrid added that, because of hilly terrain, they had been facing severe problems in executing the reconductoring work and requested for extension of both line (400 kV Rangpo-Binaguri D/C line) shutdown from 31st March 2019 to 30th April 2019.

OCC agreed for shutdown of 400 kV Rangpo-Binaguri D/C line till 25th April 2019. OCC decided to review the progress in next OCC Meeting scheduled to be held on 25th April 2019.

Powergrid informed that SPS logic had been implemented as per the decision of the meeting held on 8th March 2019. Powergrid proposed that actuation of SPS signal with increase in power flow in 400 kV Rangpo-Kishanganj be included in the SPS logic.

Teesta III agreed to include the breaker status and power flow of 400 kV Teesta-III-Kishanganj line in the SPS logic.

Powergrid informed that they were planning to test the SPS scheme on 26th March 2019.

OCC advised Teesta III, Testa V, Chuzachen, Dansenergy and Dikchu to implement the SPS logic at their end and send the details to Powergrid and ERLDC before testing of the SPS.

Item No. B.3: Low frequency Oscillation at MTDC BNC-ALP-Agra --ERLDC

On 21st February 2019 from 03:46:28 Hrs to 03:47:15 Hrs (47 Seconds), Severe oscillation were observed across Indian grid. It was observed that oscillation were highly prominent near to the AC nodes connected with MTDC BNC-Alipurdwar-Agra i.e. Binaguri (Eastern Grid) Bongaigaon, Misa, Nehu, Badarpur, Imphal (All nodes in NER Grid) and Agra (Northern Grid). On Analysis, it was observed that there was a tripping of 400 kV Sikar-Bassi 1 on Single-phase fault which cleared in 80 ms (in Northern Region) and after which the HVDC Agra terminal started oscillating with 5 Hz. The 5 Hz oscillation was observed in DC power, Current and Voltage of MTDC as well

as AC Current at Agra end. These oscillations were reflected more prominently in North Eastern region (All Locations) and Binaguri in eastern region. In addition, these oscillations also led to inert-area mode excitation in other regional grids. The Frequency, Voltage for various nodes from PMUs and TFR plot of Agra Node of MTDC is given below indicating the severity of oscillation.

Similarly, on 23rd February 2019 at 00:23:04 Hrs, Oscillation got triggered in the grid during tripping of 765kV Lalitpur-Fatehabad-1 on overvoltage protection and lasted for 7 seconds. The frequency of oscillation was 3.125 Hz and it was again more prominent at Binaguri (Eastern Grid) Bongaigaon, Misa, Nehu, Badarpur, Imphal (All nodes in NER Grid) and Agra (Northern Grid).
These oscillations are forced oscillation in nature and may impact reliability and security of the grid significantly as observed in earlier cases of forced oscillation deliberated in previous OCC like Kahalgoan Unit 6 (139th OCC) and Talcher Unit unit 3 and 6 (147th OCC). These events intensifies the need of proper PSS tuning of all generators in Eastern region as per the relevant regulation of CERC and CEA.

In view of these severe oscillations in the power system during MTDC Interaction with AC system, Powergrid may kindly explain the following:

1. Why the external system faults has led to oscillation in MTDC Agra terminal?
2. Whether there was any controller malfunction at MTDC agra which led to such widely varying quantities on HVDC?
3. Measures taken to ensure such events do not reappear in the system.

PGCIL may explain.

Deliberation in the meeting

ERLDC informed that oscillations were significant in ER and NER compared to NR. Significant oscillations were also observed in HVDC power flow and current signals.

Powergrid explained that the oscillations were significant in ER and NER due to low inertia corresponding to availability of low hydro generation in these regions.

Powergrid added that their corporate office had been analyzing the disturbance in consultation with ABB and NLDC.

OCC advised Powergrid submit the details of findings to ERPC and ERLDC.

Item No. B.4: REPLACEMENT OF OLD RTUS IN EASTERN REGION FOR REPORTING OF RTU/SAS TO BACKUP CONTROL CENTRES

In 39th ERPC Meeting, it was decided that,

i) ERPC approved the proposal of Power Grid for replacement of the old RTUs in the Eastern Region for reporting of RTU / SAS to backup control centres at an estimated cost of Rs. 88.57 Crore with an implementation time of 36 months.
ii) Power Grid shall place a proposal before PSDF Committee for financing the above project from PSDF.

In 40th TCC, Powergrid informed that the DPR for PSDF would be submitted by April, 2019.

Powergrid may update.

Deliberation in the meeting

OCC advised Powergrid to submit the updated status to ERPC Secretariat.

Item No. B.5: Mapping of Feeders of Automatic Under Frequency Load Shedding (AUFLS) Scheme

In 8th NPC held on 30th November 2018, it was decided that each RPC would submit the details / progress of feeder mapping to NPC secretariat on a regular basis (quarterly).

In 154th OCC, DVC informed that mapping of the UFR feeders had already been implemented in DVC system.

In 40th TCC, Bihar and Jharkhand have confirmed that mapping of the UFR feeders has been implemented.

West Bengal informed that out of 18 S/s only 6 S/s data are available at SLDC. For the remaining 12 S/s the RTUs are old and needed replacement. WBSETCL added that they have already placed a proposal for PSDF funding.

OPTCL informed that out of 58 feeders only 14 feeders data are available at SLDC. For mapping of the remaining feeders, the RTUs needed to be replaced as they were old. OPTCL added that replacement of old RTUs is in advance stage and it would be implemented within a year.

Members may update.

Deliberation in the meeting

ERLDC informed that acquiring the UFR feeders data from SLDCs to ERLDC is in process.

OCC decided to review the progress in SCADA O&M Meeting scheduled to be held in second week of April 2019.

Item No. B.6: Coal requirement for thermal power plants –MoP

MoP vide letter dated 7th February 2019 informed that, it has been decided that in view of expected increased power demand in the next few months up to monsoons, all power plants be advised to be watchful, and do maintain plant availability and adequate coal stocks as per norms, in this period.

All the thermal plants are advised to take effective steps for immediate implementation of the decision. The action taken report may also be forwarded to the Ministry at the earliest.

In 154th OCC, all the thermal generators were advised to assess the requirement of coal in the coming few months and take the necessary action to build up adequate stock to ensure uninterrupted supply of power.

In 40th TCC, all the thermal generators were advised to inform ERPC Secretariat any hurdle being faced by them in building up the coal stock. If required, a separate meeting would be convened by ERPC Secretariat with the thermal generators, coal companies and the Railways.

Thermal plants may comply and submit the report.

Deliberation in the meeting

OCC advised all the thermal generators to assess the requirement of coal in the coming few months and take the necessary action to build up adequate stock to ensure uninterrupted supply of power.

Item No. B.7: Upgradation of CTS substations Birpara, Siliguri, Dalkhola & Malda of Eastern Region-II namely --Powergrid

In ER-II, there are 04 stations originally constructed under CTS by NHPC way back in early eighties. Details of the S/S and corresponding zero dates/ DOCO dates are as follows:

SL NO	NAME OF SUB-STATIONS	VOLTAGE LEVEL,KV	ZERO DATE	DOCO DATE	NO OF BAYS	REMARKS
01.	MALDA	400/220/132	01.02.1982	19.06.1984	23 (AIS)	Complete AIS system.
02.	DALKHOLA	220	22.12.1981	19.06.1984	12 (AIS)	Complete AIS system.
03.	BIRPARA	220/132	01.01.1982	14.06.1984	AIS BAYS-09 GIS BAYS-07	132 KV CONVERTED TO GIS IN 2016. 220 KV SYSTEM IS STILL AIS.
04.	SILIGURI	220/132	15.01.1982	14.06.1984	AIS BAYS-08 GIS BAYS- 07	132 KV CONVERTED TO GIS IN 2016. 220 KV SYSTEM IS STILL AIS.

For Birpara & Siliguri, 132 KV system is upgraded to GIS under ERSS-XIV & ERSS-XII in 2017 & 2016respectively. However, 220 KV systems of both the stations are very old. In early 80's, when this stations are envisaged, 220 KV is the highest system voltage available at that time. Accordingly entire scheme was designed to accommodate 220/132 KV level. Although, in late 80's & early 90's, few 400 KV projects are conceptualized and Malda S/s, although having severe space constraints, introduced by 400 KV DMT scheme (Under KTP).

Till now, the S/s are catering the grid requirement & till date there are huge importance of all the above mentioned S/s. However, coming by the ages, there are some constraints, which, really required some thought & scope for further improvement and increasing reliability is the need of the time. Under CTS scheme, all the S/s are having control room at Ground Floor. When control room, situated at Ground Floor, there are different problem coming out. With progress in time, mainly, difficulties faced are:

a. New Cable connection. (From switchyard to panel). As control room is at Ground Floor, new cable entry or removal of old cable is very difficult.
b. Malda/Dalkhola/Birpara being a flood prone S/s and having a history of flooding during several occasions, always puts threat to the existing system by means of water ingress in the running panels / equipments. Recent flood at Dalkhola S/s, even forced RLDC to completely switch off all the connected elements at Dalkhola S/s, as water entered in the control room & completely flooding the switchyard.
c. For any new requirement / Modification of existing scheme, it is felt, that there are requirement of new cable laying for intra panel or from switchyard to CP/RP. However, as the existing panels are placed most densely and there are no space left for cable entry, every time S/s persons are facing difficulty for implementation of the same.
d. All the auxiliary relays of all the panels are old/obsolete (UE Make, Duplex type). However, it is felt that simply putting new relays in place of old relays are not solution as old bus wiring / Ferrules are very difficult to remove.
e. Reliability of old cables are almost very susceptible as, due to poor insulation health due to continuous moisture ingress. Cable failure & causing DC E/F is very common as due to old age& frequent moisture ingress inside cable core, the reliability of old cables are almost gone.

Considering the difficulty of the ongoing stations, POWERGRID is planning for composite upgradation of the old elements in order to have operational reliability and flexibility enhancement for future system requirements. Detail planning with DPR for above mentioned four S/S upgradation will be submitted for further planning with execution plan & cost there off.

Members may discuss.

Deliberation in the meeting

Powergrid explained that they had been planning to upgrade the substations with SAS or Process based technology to improve the reliability and requested for approval.

Powergrid added that the DPR would be placed within two months and the cost would be recovered through Capital Expenditure.

OCC in principle agreed for the proposal and advised Powergrid to place the DPR.

Item No. B.8: Removal of Vedanta Towers(5 nos) for direct connectivity on permanent basis of 400kV Sundargarh-Raigarh ckt#4 and 400kV sundargarh-Raigarh ckt#2--Powergrid

Initially 02 nos LILO was made in 400kV Rourkela-Raigarh ckt-2 and Ckt-4 to evacuate power generation of Sterlite Energy Ltd(Now Vedanta Ltd),Jharsuguda. However, as per directives from ERLDC/ERPC LILO of 400kV Rourkela-Raigarh ckt-2(Now Sundargarh-Raigarh ckt-3) was opened in 2014 and LILO of 400kV Rourkela-Raigarh ckt-4(Now Sundargarh-Raigarh ckt-4) was opened in October 2017.

As a temporary measure to facilitate immediate disconnection of LILO and making the line direct PG clamps were used in Vedanta Towers. In this process 05nos of Vedanta Towers are there in the 400kv Sundargarh-Raigarh ckt-2 and 4. 03nos between Loc 298-299of 400kV Sundargarh-Raigarh ckt-4 and 02nos of Towers between Loc 834-833 of 400kV Sundargarh-Raigarh Ckt-3.The sketch showing the Vedanta Towers in both the circuits is enclosed for ready reference.

The matter for removal of Towers and making direct connectivity with Raigarh on permanent basis has been discussed several times with M/s Vedanta. But till date no action has been taken by M/s Vedanta for making the line direct after removal of Towers. Maintenance of the said Towers and corridor are not being done. Any outage of these lines due to issues in these towers and span shall not be attributed to POWERGRID.M/s Vedanta may be asked to restored the line as it was before making the Line LILO.

Members may discuss.

Deliberation in the meeting

OCC advised Odisha to take up the issue with Vedanta.

Odisha agreed to take up the issue with Vedanta and place the details in next OCC Meeting.

Item No. B.9: Implementation of Automatic Generation Control (AGC) in India (at Inter-State level)

CERC in its order dated 13.10.2015 in Petition No. 11/SM/2015 reiterated the need for mandating Primary Reserves as well as enabling Secondary Reserves, through Automatic Generation Control (AGC) as follows:

"(a) All generating stations that are regional entities must plan to operationalise AGC along with reliable telemetry and communication by 1st April, 2017. This would entail a one-time expense for the generators to install requisite software and firmware, which could be compensated for

Communication infrastructure must be planned by the CTU and developed in parallel, in a cost-effective manner.
(b) On the other hand, National/Regional/State Load Dispatch Centres (NLDC/RLDCs/SLDCs) would need technical upgrades as well as operational procedures to be able to send automated signals to these generators. NLDC /RLDCs and SLDCs should plan to be ready with requisite software and procedures by the same date.
(c) The Central Commission advises the State Commissions to issue orders for intra-state generators in line with this timeline as AGC is essential for reliable operation of India's large inter-connected grid."

The issue was discussed in 8th NPC Meeting held on 30th November 2018, it was decided that each RPC would submit the status of implementation of AGC to NPC.

In 154th OCC, it was informed that ISGS generators at Barh and Teesta V* are in the process of implementation of the AGC as a pilot project.

It was informed by Member Secretary, ERPC that, during the deliberation in the 8th NPC meeting on 30.11.2019, it emerged that states in the other regions had already taken initiative for implementation of AGC. ERPC was advised to sensitize this issue in the ERPC forum.

OCC advised Odisha, West Bengal and DVC to identify one generator in their system for implementation of AGC as a pilot project and place the detailed implementation plan in coming TCC Meeting.

In 40th TCC, NTPC informed that AGC at Barh STPS will be implemented by May, 2019.

SLDC Odisha informed that they have written a letter in this regard to OPGC also pointed that regulatory changes need to be framed by SERC before implementation of AGC in the state.

OPGC suggested to implement the AGC in new units to be commissioned shortly.

DVC confirmed that unit#8 of Mejia TPS has been identified for AGC implementation as a pilot project.

WBPDCL informed that they will submit the details in OCC meeting.

The followings were decided in the TCC Meeting:

1. *Status of implementation of AGC shall be regularly monitored in OCC meetings.*

2. *An workshop shall be organised in ERPC wherein NLDC and NTPC will be invited to interact with the ER constituents regarding the experience they have gained in implementing the AGC in other regions.*

Members may update.

** Not at Teesta-V as inadvertently mentioned in 154th OCC Meeting.*

Deliberation in the meeting

NTPC informed that implementation of AGC at Unit#4 & 5 of Barh STPS are in progress and was expected to completed by May 2019.

Odisha informed that unit#3 of OPGC had been selected for implementation of AGC.

WBPDCL informed that unit#5 of Bakreswar had been selected for implementation of AGC.

Item No. B.10: Declaration of commercial operation date (COD) of unit of Nabinagar Thermal Power Plant: East Central Railway

East Central Railway vide letter dated 18th January 2019 informed the issues related to declaration of commercial operation date (COD) of unit #3 of Nabinagar Thermal Power Plant.

A separate meeting was held at ERPC, Kolkata on 11th March 2019. Minutes of the meeting are enclosed at **Annexure-B10.1**.

As per the decision of the meeting, the COD of unit#3 of Nabinagar, BRBCL (00:00hrs of 26.02.2019) has been informed to CEA vide letter dated 12th March 2019 (copy enclosed at **Annexure-B10.2**.)

Members may note.

Deliberation in the meeting

Members noted.

Item No. B.11: Maintenance and support (AMC) renewal of PSSE software.

Siemens vide letter dated 20th March 2019 informed that the AMC for PSSE software has ended on 30th November 2018. The letter is enclosed at **Annexure-B11**.

Siemens requested ERPC Secretariat to renew the maintenance and support period for all the existing supplied licenses of states for next five years.

Members may discuss.

Deliberation in the meeting

OCC advised all the SLDCs to send their comments to ERPC within a week.

Item No. B.12: Status of Pollution Mapping in Eastern Region.

Powergrid may present the latest status.

Deliberation in the meeting

*CPRI gave a detailed presentation on the report of pollution mapping in Eastern Region. Presentation is enclosed at **Annexure-B12**.*

It was informed that the report would be made available at ERPC website.

OCC advised all the states to take the help of this report while planning the new transmission system.

Item No. B.13: Information regarding details of existing transmission system (220 kV and above AC & DC voltage level) in Eastern Region as on 31.12.2018

CEA vide letter dated 29/01/2019 intimated that MoP, GoI has desired information regarding details of state wise growth of transmission system (both interstate and intra state system) over the years to create database of existing transmission system.

Accordingly, it is requested that the information in respect of existing transmission system (both interstate and intra state system) as well as State Power Map and single line Diagram of transmission network including Powergrid (ISTS) and other Transmission Service Provider

(TSPs) (as on 31.12.2018) may please be made available in the specified format attached at **Annexure –B13.I &II** to ERPC for onward transmission to CEA / MoP by 28.02.2019.

In 154th OCC, all the constituents were advised to submit the relevant information as per the format to ERPC Secretariat vide mail at the earliest.

Members may furnish.

Deliberation in the meeting

The data has been received from Powergrid Odisha, Jharkhand and West Bengal.

Item No. B.14: Review of the PSS Tuning of Generators in Eastern Region

PSS tuning meeting was conducted by ERPC on 31st January 2019 where generators from Eastern Region have participated. The MoM of the meeting has been released by ERPC and is available on the website. During the PSS meeting following decision have been taken:

1. Generators who had already done the PSS tuning shall submit the details of the Excitation System, PSS tuning and its report. The generators shall submit the Generator terminal voltage, Field voltage, Real power, Reactive Power, Generator Speed, and PSS output in excel/.csv format for better analysis of the result.
2. Generators for which PSS tuning was not carried out shall take up the PSS Tuning with OEM immediately.
3. Generators for which PSS was not in service shall take up the issue with OEM immediately to bring the PSS into service.
4. For any future tuning, it was recommended to all generators to collect the response along with data in .csv/excel format.
5. All the generators where the PSS tuning was done and PSS not in service shall submit their action plan for PSS Tuning in line with IEGC and CEA standards before the next OCC meeting to ERPC/ERLDC.

In view of the same five categories have been made for comprehensive checkup and plan for PSS tuning for Eastern region Generating plants, which are given at **Annexure-B14.**

Members may update.

Deliberation in the meeting

*Members updated the latest status. Updated status is given at **Annexure-B14**.*

OCC advised all the generators to take necessary action to comply the IEGC and CEA standards.

Item No. B.15: Shutdown of 315 MVA ICT for Augmentation works-Powergrid

Powergrid vide letter dated 18th March 2019 informed that 315 MVA ICT at Pasauli S/s to be augmented with 500 MVA under ERSS-XII scheme.

BSPTCL had earlier given their consent for requisite shutdown for augmentation of the ICT after completion of ICT augmentation work at Patna S/s.

Powergrid informed that augmentation work at Patna has been completed and therefore, BSPTCL may accord shutdown of 315 MVA ICT at Pusauli S/s for a period of five weeks to complete the augmentation work.

BSPTCL may respond.

Deliberation in the meeting

Bihar agreed to allow the shutdown of 315 MVA ICT at Pusauli S/s from 25th May 2019.

Item No. B.16: Updated Black Start and Restoration procedure of State--ERLDC

As per clause IEGC 5.8(b)

"*Detailed plans and procedures for restoration after partial/total blackout of each User's/STU/CTU system within a Region, will be finalized by the concerned User's/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year."*

In 154th OCC all the SLDCs to were advised to submit the updated restoration procedure of their respective state.

However SLDCs are yet to submit the Black Start and restoration procedure for respective states.

SLDCs may update.

Deliberation in the meeting

OCC advised all the SLDCs to review the Black Start and restoration procedure and submit the revised procedure to ERLDC before next OCC.

Item No. B.17: Periodical Audit and Vulnerability Assessment & Penetration Testing (VAPT) of IT Infrastructure--CEA

Central Electricity Authority vide letter dated 31st January 2019 informed that a vulnerability has been reported in website of an organization under Power Sector. Any vulnerability present in IT infrastructure, website, web application etc. may invite attackers to carry out malicious activities. In this case, attackers could exploit the targeted organization.

To avoid the possibility of Cyber Security related issue by plugging and fixing the vulnerability, it is essential to conduct regular & meaningful audit and Vulnerability Assessment and Penetration testing (VAPT) of all IT infrastructure in addition to adopting the best practices and guidelines by all Power Sector Organizations.

In this regard, all Power Sector organizations are requested to ensure periodical audit and Vulnerability Assessment and Penetration testing (VAPT) of all IT infrastructure by competent auditors and testers. Further, Sectoral CERTs are requested to take immediate action and co-ordinate with organizations under their purview for the same.

In 154th OCC, all the constituents were advised to conduct the Audit, Vulnerability Assessment and Penetration Testing (VAPT) of all IT infrastructure, website, web application etc. and submit a report to CISO, MoP with a copy to ERPC Secretariat.

Members may update.

Deliberation in the meeting

OCC advised all the constituents to conduct the Audit, Vulnerability Assessment and Penetration Testing (VAPT) of all IT infrastructure, website, web application etc. and submit a report to CISO, MoP with a copy to ERPC Secretariat.

OCC also decided to discuss this issue in SCADA O&M Meeting.

Item No. B.18: Details of Capacitor bank installed in Distribution/Sub transmission network --ERLDC

Details of capacitor installed in Eastern Region as a whole was last collected in year 2011. The last updated list is given in **Annexure-B18**. In the meantime, many utilities might have installed additional capacitor bank for better voltage regulation some has also applied for fund form PSDF for installation of capacitor banks.

Utilities are requested to provide the updated capacitor bank list for record purpose.

Members may submit the data.

Deliberation in the meeting

OCC advised all the states to submit the updated capacitor bank list of their control area to ERLDC and ERPC.

Item No. B.19: Status of projects funded under PSDF schemes

In the PSDF review meeting, it was advised to RPCs to monitor the status of all the projects funded by PSDF. Therefore, constituents are requested to update the status of projects which are being funded by PSDF in the desired format.

A. Projects approved:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	PSDF grant approved (in Rs.)	Amount drawn till date (inRs.)	Latest status
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14	April 2018 Extended till March 2019	108.6 Cr	37 Cr.	100 % Supply and Erection is Completed. Compilation of final bills is in progress.
2		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17	25 months from date of release of 1st instalment	70.13	21.03 Cr	Order has been placed . Work is in progress.
3		Installation of switchable reactor at 400kV & shunt capacitors at 33kV	22-05-17	19 months from date of release of 1st instalment	43.37	6.59 Cr	Order had been placed and work is in progress.
4	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station	*10.04.17*	*March 2018*	1.39 Cr	1.25 Cr	*The islanding scheme had been implemented and in operation wef**15.11.2018***
5		Upgradation of Protection and SAS		April 2020	23.48	2.348 Cr	Bid opened and order has been placed. Work started.
6	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	11.05.15	31.03.19	162.5 Cr.	37.79 Cr	90% work has been completed. Total expenditure may not exceed 68 Cr.
7		Implementation of OPGW based reliable communication at 132kV and above substations	15.11.17		25.61 Cr.		Agreement signed on 03.01.2018. Tender has been floated.
8		Installation of 125 MVAR Bus Reactor along with construction of associated bay each at 400kV Grid S/S of Mendhasal, Meramundali& New Duburi for VAR control &stabilisation of system voltage	27.07.18		27.23 Cr		Tender has been floated.
9	OHPC	Renovation and up-gradation of protection and control system of 4 nos.OHPC substations.		*U.Kolab, Balimela, U.Indravati, Burla, Chiplima*	*22.35 Cr.*	2.235 Cr	Placed the work order.

				March 2019			
10	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharshariff, Bodhgaya, Fatuha, Khagaul, Dehri -on-sone& 132/33 kV GSS Kataiya	11/5/15	31.07.2018	64.02 crore	56.04 crore	85% of work has been completed. Contract awarded for Rs.71.37 Cr till date. The work would be completed by Feb 2019.
11		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016	31st March 2019	18.88 crore	Nil	Work awarded for all GSS. 90% supply and 60% of erection had been completed.
12		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.	02.01.17	31st March 2018	49.22 Cr.		75% work completed for seven no. GSS as part of R & M work. Revised DPR is to be submitted for rest 5 no. GSS.
13	JUSNL	Renovation and up-gradation of protection system	*September 2017*	*15 Months*	*138.13 crores*		LOA placed to Siemens on 28th Sep 2018.
14	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation	02.01.17	01.06.2019	25.96 Cr	2.596 Crore on 01.06.2017	Work awarded for 28.07 Cr. Work would be completed by May 2019.
15		Renovation and upgradation of control & protection system including replacement of substation equipment at Parulia, Durgapur, Kalyaneshwari, Jamshedpur, Giridih, Barjora, Burnpur, Dhanbad and Burdwan Substation of DVC	27.11.17	24 Months from the date of release of fund.	140.5 Cr.	1st installment of 14.05 Cr. received on 21.12.2017	Work awarded for 77.97 Cr.
16	POWERGRID	Installation of STATCOM in ER		June 2018	*160.28 Cr*	*16.028 Cr*	Work is in progress, expected to complete by June 2018. STATCOM at Rourkela has been commissioned.
17	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16	Project is alive from 30th October 2017	20 Cr.	4.94 Cr. + 9.88 Cr.	1) Protection Database Project has been declared 'Go live' w.e.f. 31.10.17. 2) Pending training on PDMS at Sikkim and 3rd training on PSCT has been also completed at ERPC Kolkata.
18a	ERPC	Training for Power System Engineers	*27.07.18*		0.61 Cr.	Nil	Approved
18b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents	*27.07.18*		5.46 Cr.	Nil	

B. Projects under process of approval:

SN	Name of Constituent	Name of Project	Date of Submission	Estimated cost (in Rs.)	Latest status
1	Sikkim	Renovation &Upgradation of Protection System of Energy and Power Department, Sikkim.	09-08-17	68.95 Cr	The proposal requires third party protection audit. Issue was discussed in the Monitoring Group meeting in Siliguri on 8.6.2018. Sikkim was asked to coordinate with ERPC.
2		Drawing of optical ground wire (OPGW) cables on existing 132kV & 66kV transmission lines and integration of leftover substations with State Load Despatch Centre, Sikkim	09-08-17	25.36 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
3	JUSNL	Reliable Communication & Data Acquisition System upto 132kV Substations.	23-08-17	102.31 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.

4	OPTCL	Implementation of Automatic Demand Management System (ADMS) in SLDC, Odisha	22-12-17	3.26 Cr	Scheme was approved by Appraisal Committee. It was sent to CERC for concurrence.
5		Protection upgradation and installation of SAS for seven numbers of 220/132/33kV Grid substations (Balasore, Bidanasi, Budhipadar, Katapalli, Narendrapur, New-Bolangir&Paradeep).	12-03-18	41.1 Cr.	Scheme examined by TSEG on 20.03.2018. Inputs sought from the entity are awaited.
6	WBSETCL	Implementation of Integated system for Scheduling, Accounting, Metering and Settlement of Transactions (SAMAST) system in West Bengal	22-12-17	25.96 Cr	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
7		Installation of Bus Reactors at different 400kV Substation within the state of West Bengal for reactive power management of the Grid	12-03-18	78.75 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
8		Project for establishment of reliable communication and data acquisition at different substation at WBSETCL.	10-05-18	80.39 Cr.	Proposal recommended by Appraisal committee as communicated on 16.11.2018.
9	BSPTCL	Implementation of Schedulling, Accounting, Metering and settlement of Transcation in Electricity (SAMAST)in SLDC Bihar.	27-02-18	93.76 Cr.	Scheme examined by TSEG on 20.03.2018 & 31.05.2018. Further inputs furnished by BSPTCL on 1.8.2018. Shall be examined in the next meeting of TESG.

Respective constituents may update the status.

Deliberation in the meeting

Members updated the status as mentioned in above table.

Item No. B.20: Additional agenda

1. Replacement of Energy meters at NTPC Farakka--NTPC

NTPC vide mail dated 16th March 2019 informed that four nos. commercial energy meters of Analogics (L&T) make at Farakka are having time drift in the range of 10 to 12 minutes. The list of meters with time drift as on 15.03.2019 is as follows:

Meter	DATE	SY CLOCK	METER CLOCK	TIME DRIFT
GT # 1	15-03-2019	10:05:00	10:16:00	00:11:00
GT # 2	15-03-2019	10:05:00	10:17:00	00:12:00
GT # 3	15-03-2019	10:04:00	10:14:00	00:10:00
Gokarna - 2 Check	15-03-2019	10:23:00	10:11:00	00:10:00

Due to the time drift of meters, FSTPS is incurring Type- II deviations and subsequent financial loss. These violations are not occurring actually but are getting reflected in the SEM data being sent to ERLDC. The correction in time drift of meters is restricted to only one minute, per week. Therefore, correction of the meters will take about three months.

NTPC requested that the drifted meters may be replaced with 'Zero time drift' meters to avoid further financial losses to the station.

Deliberation in the meeting

OCC advised Powergrid to replace the above SEMs at the earliest. Powergrid agreed.

During deliberation, it was emphasised that time synchronization of SEM is the responsibility of the individual constituent. OCC advised all the constituents to check the time synchronization of all the SEMs on weekly basis and carry out the time correction immediately.

PART C: ITEMS FOR UPDATE

Item no. C.1: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of February, 2019 has been received from OPTCL, CESC, WBSETCL, DVC, BSPTCL and JUSNL.

Members may note.

Deliberation in the meeting

Members noted.

Item no. C.2: Status of Islanding Schemes healthiness installed in Eastern Region

At present, the following islanding schemes are in service:

1. CESC as a whole Islanding Scheme, CESC
2. BkTPS Islanding Scheme, WBPDCL
3. Tata Power Islanding Scheme, Haldia
4. Chandrapura TPS Islanding Scheme, DVC
5. Farakka Islanding Scheme, NTPC
6. Bandel Islanding Scheme, WBPDCL

In 108th OCC meeting, respective constituents agreed to certify that the islanding schemes under their control area are in service on monthly basis.

The healthiness certificate for Islanding Scheme for February, 2019 has been received from CTPS, DVC, NTPC, West Bengal, JUSNL, WBPDCL and CESC.

Members may note.

Deliberation in the meeting

Members noted.

Item no. C.3: Healthiness of SPS existing in Eastern Region

The Status of healthiness certificate for February, 2019 is given below:

Sl. No.	Name of the SPS	Healthiness certificate received from	Healthiness certificate not received from
1.	*Talcher HVDC*	*NTPC,GMR, Powergrid,*	*JITPL,*
2.	*Rangpo*	*Chuzachen,*	*Dikchu, Dansenergy, Powergrid, Teesta-III*
3.	SPS in CESC system	*CESC*	*Nil*
4.	SPS at Chuzachen	*Chuzachen*	*Nil*

Members may update.

Deliberation in the meeting

It was informed that SPS at Rangpo is not in service after commissioning of the dedicated transmission lines of Teesta III HEP.

Item no. C.4: Implementation of Automatic Demand Management Scheme (ADMS)-ERLDC

The latest status along with proposed logic as follows:

Sl No	State/Utility	Logic for ADMS operation	Implementation status/target	Proposed logic (if different from under implementation logic)
1	West Bengal	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 25.11.16	F <49.9 AND deviation > 12 % or 150 MW
2	DVC	F <49.7 AND deviation > 12 % or 150 MW	Implemented on 17.06.2016	
3	Bihar	F <49.7 AND deviation > 12 % or 150 MW	They would place the order to Chemtrol for implementation.	F <49.9 AND deviation > 12 % or 150 MW
4	Jharkhand	1. System Frequency < 49.9 Hz AND deviation > 12 % or 25 MW 2. System Frequency < 49.9 Hz AND deviation > 12 % or 50 MW 3. System Frequency < 49.9 Hz AND deviation > 12 % or 75 MW	9 Months Tendering for RTU installation is in progress. Offer received from Chemtrol for implementation.	Condition 1: Block I feeders will be selected for load shedding Condition 2: Block I & II feeders will be selected for load shedding Condition 3: Block I, II & III feeders will be selected for load shedding
5	Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. DISCOM over-drawl > (40 MW)	10 Months Sent for PSDF approval.	Logic 2 and 3 is AND or OR, in case it is AND then ADMS may not operated when discom are in schedule but GRIDCO is overdrawing due to less generation at state embedded generators
6.	Sikkim			Sikkim informed that they have submitted a proposal to PSDF Committee for installation of OPGW cables which is under approval stage. Sikkim added that ADMS scheme would be implemented after installation of OPGW.

In 142nd OCC, it was opined that uniform logic should be implemented for all the states. OCC decided to review the logic of ADMS after implementation of the scheme by all the states.

In 40th TCC, ERLDC informed that in SCADA O&M Meeting held on 6th March 2019, Chemtrol has agreed to implement ADMS in Bihar and Jharkhand system without any additional charges. However necessary consent for making payment of Rs 4 lakhs (excluding GST) for remaining period of maintenance contract shall be given before implementing the same.

In the TCC Meeting both Bihar and Jharkhand gave consent for making necessary payment.

Members may update.

Deliberation in the meeting

Members noted.

Item no. C.5: 220 kV inter-connecting lines of OPTCL with 400/220 kV Bolangir (PG), Keonjhar&Pandiabil S/s

PGCIL has already commissioned the 2x315MVA 400/220kV Bolangir S/s by LILOing of 400kV Meramandali-Jeypore S/C line and 400/220 kV Keonjhar S/s with an objective of supplying power from ER grid to its adjoining areas in Odisha.

In lastOCC, OPTCL updated the completion schedule of inter-connecting system as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA 400/220kV Bolangir S/s**	
a.	LILO of one circuit of Sadeipalli-Kesinga220 kV D/C line at Bolangir S/S	*Only 7 towers left (Severe ROW problem).**By July, 2019.***
2.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	***By July, 2019.***
3.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	Both the ckts commissioned.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019. The work is yet to be started.

OPTCL may update.

Deliberation in the meeting

OPTCL updated the status as mentioned in above table.

Item no. C.6: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj&Dhanbad

In last OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj(POWERGRID)–Latehar220kVD/c	By Dec, 2019.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	The line expected to be completed by May, 2018 but – Garhwa 220kV is expected to be completed by June 2019.
c	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Tendering is in progress. Expected to be completed by October 2019
2	**Chaibasa400/220kVS/s**	
A	Chaibasa(POWERGRID)–Noamundi220kVD/c	Not yet started
3	**Dhanbad400/220kVS/s**	
A	LILO of Govindpur–Jainamore/TTPS 220kVD/c at Dhanbad	ROW issues.Target date November 2018.

JUSNL may update.

Deliberation in the meeting

JUSNL updated the status as mentioned in above table.

Item no. C.7: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Subashgram & 2x500 MVA Rajarhat sub-stations

In last OCC, *WBSETCL updated the latest status as follows:*

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x500MVA, 400/220kV Rajarhat---**	
a.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	ROW problem, December 2019
b.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	The line is charged from Rajathat and Jeerat. The line would be charged from Barasat end after completion of rest of the work by March 2020.
2	**Subashgram400/220kVS/s**	
a	Subashgram–Baraipur220kVD/cline	Sep 2019, 80% of work has been completed.

WBSETCL may update.

Deliberation in the meeting

WBSETCL updated the status as mentioned in above table.

Item no. C.8: Bypassing arrangement of LILO of 400kV Lines at Angul

LILO of Meramundali-Bolangir/Jeypore 400 kV S/C line and LILO of one Ckt of TalcherMeramundali 400 kV D/C line has been done at Angul 765/400kV Sub-station. The bypass arrangement for these circuits were under implementation at Angul by Powergrid.

In 154th OCC, Powergrid informed that bypass arrangement would be completed by March 2019.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that bypass arrangement would be completed by April 2019.

Item no. C.9: Update on status of telemetry

CERC vide order dated 28.02.2016 on Petition No. 007/SN/2014 directed NLDC and respective RLDCs to update the status of telemetry every month at their respective websites and take up the issue of persistent non-availability of data from Generating Stations/substations at RPC meetings for appropriate action.

Major issues are given below:

i. Regarding frequent intermittent of real time SCADA data from Talcher STPS Stage 1 & 2, NTPC agreed to provide additional ports by March 2019.
ii. Alternate path for Malda–Farakka OPGW link

In 153rd OCC, Powergrid was advised to implement alternate OPGW link through 400 kV Kishenganj- Darbhanga-Muzaffarpur lines.

In 40th TCC, it was informed that in SCADA O&M Meeting held on 6th March 2019, both DMTCL and KPTL agreed to extend the necessary support to implement the scheme. DMTCL has insisted on payment for extending the facility.

In the TCC Meeting, Powergrid clarified that as per the terms of TBCB project, DMTCL and KPTL are not entitled for any charges for using the OPGW for SCADA.

TCC advised Powergrid to implement the scheme within three months as indicated by Powergrid in SCADA O&M Meeting.

ERLDC may present. Members may update.

Deliberation in the meeting

*ERLDC presented the latest status which is enclosed at **Annexure-C10**.*

OCC advised all the constituents to take the necessary action to ensure data availability to ERLDC.

Item no. C.10: Transfer capability determination by the states

In order to ensure, safe and secure operation of the grid, the states should carry out the power system study for operational planning and power transfer capability through their respective transmission links with the rest of the grid.

It was decided in the NPC meeting that to begin with, power system study for assessment of operational limits / power transfer capability for each state will be done by the concerned RLDC in association with concerned SLDC. Monthly TTC /ATC will be uploaded by the SLDCs at their respective websites and also communicated to concerned RLDC & NLDC subsequently.

Latest status of State ATC/TTC declared by states for the month of July-2019

Sl No	State/Utility	TTC import(MW)		RM(MW)		ATC (Import) MW		Remark
		Import	Export	Import	Export	Import	Export	
1	BSPTCL	4600	--	100	--	4500	--	March-19
2	JUSNL	1107	--	60	--	1047	--	
3	DVC	1221	3123	62.5	49	1158.5	3074	
4	OPTCL	2238	--	88	--	2150	--	Jun-19
5	WBSETCL	4170	--	300	--	3870	--	April-19
6	Sikkim	--	--	--	--	--	--	

Once again, it may kindly be note that the SLDC has to calculate ATC/TTC and show the same on their website in line with approved "Detailed Procedure for Relieving Congestion in Real Time Operation" as per the CERC (Measures to relieve congestion in real time operation) Regulations, 2009 regulation.

Members may update.

Deliberation in the meeting

OPTCL submitted the ATC/TTC for July 2019.

ERLDC informed that DVC and JUSNL had been submitting the ATC/TTC in time.

OCC advised all the other states to compute ATC/TTC figures three months in advance and send to ERLDC.

Item no. C.11: Replacement of GPRS communication with Optical Fiber for AMR

In ER, 80% meters are connected through Automated Meter Reading (AMR). At present the communication system used for data transfer from each location is GPRS. It has been observed that many locations are not communicating with AMR system due to poor/no GPRS signal. Many substations have their own optical fiber which is also used for the LAN network of respective stations. TCS has successfully connected 02 locations (Subhasgram-PG and Binaguri-PG) in ER-II with PGCIL intranet and these two locations are smoothly reporting to AMR system after connecting with PGCIL LAN. The proposed network will not only provide better communication but also reduce the cost of GSM.

In 154th OCC, Powergrid informed that optical fiber for AMR had been implemented at 32 locations and rest of the locations would be completed by April 2019.

POWERGRID may please update the progress.

Deliberation in the meeting

Powergrid informed that optical fiber for AMR had been implemented at 33 locations and rest of the locations would be completed by April 2019.

Powergrid added that optical fiber details under state control area could be provided to Powergrid for transferring the AMR data at more locations.

OCC advised all the states to share the details of optical fiber availability to ERLDC and Powergrid.

OCC decided to review the status in SCADA O&M Meeting.

Item no. C.12: Mock Black start exercises in Eastern Region – ERLDC

Tentative Schedule for mock black start exercise for FY 2018-19 is given below:

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2018	*Completed on 8th June,2018*	Last Week of January2019	*Done on 27th Sep 2018*
2	Maithon	1stweek of June 2018	*Completed on 6th June,2018*	1stWeek of February2019	
3	Rengali	2ndweek of June 2018	*Done on 18th August,2018.*	Last week of November 2018	Done on 12th Feb 2019
4	U. Indarvati	3rdweek of une 2018	*Planned in Oct ,2018.*	2ndweek of February2019	*Done on 28th Dec 2018*
5	Subarnarekha	1stweek of October 2018	*Done on 10th August,2018.*	1stweek of January2019	Done on 9th Feb 2019
6	Balimela	3rdweek of October 2018	Done on 21st Dec, 2018	1stweek of March 2019	Done on 11th Mar 2019
7	Teesta-V	2ndweek of Nov 2018	Done on 3rd May 2018	Last week of February2019	
8	Chuzachen	Last Week of May2018	In May 2018	2nd week of January2019	Done on 15th Jan 19
9	Burla	Last Week of June 2018	*Completed on 7th June,2018*	Last week of February2019	Done on 7th Mar 2019
10	TLDP-III	1st Week of June 2018	After Monsoon	2ndWeek of January2019	Done on 10th Jan 2019
11	TLDP-IV	Last Week of June 2018	After Monsoon	1st Week of February2019	Done on 10th Feb 2019
12	Teesta-III	Last week of Oct 2018	Done on 30th Nov 2018	First Week of March 2019	
13	Jorthang	First Week of May 2018		First Week of Feb 2019	
14	Tasheding	2nd Week of May 2018		2nd Week of Feb 2019	
15	Dikchu	3rd Week of May 2018		3rd Week of Feb 2019	Mar 2019

Members may update.

Deliberation in the meeting

Members updated the status as mentioned in above table.

OCC advised ERLDC to prepare the schedule for next year.

Teesta-III informed that while carrying out the black start exercise, the breaker of 400kV Teesta III-Kishanganj Line was inadvertently closed from Kishanganj end. As a result, huge jerk was observed at Teesta III unit.

OCC advised Powergrid to follow proper restoration procedure to avoid such inadvertent operation.

Powergrid agreed to exercise necessary care in future.

Item no. C.13: Submission of Thermal Loading of Transmission line and associated terminal equipment by ISTS licensee

In line with the MoM of 4th NRCE Meeting dt.03-11-14 and "Operational Guidelines for determination Of TTC, ATC and TRM for the Short-Term Horizon (0-3 Months)" published by NRCE dt.20-02-15, thermal limit for transmission line has to be used for calculation of ATC/TTC. However, the thermal loading of transmission line depend on the Maximum Conductor Temperature, End equipment thermal rating. This has to be submitted by the Owner of the equipment. Further, the equipment owner also has to confirm that relay setting has been aligned so that the line can be operated up to its thermal limit. In the absence of complete details, ERLDC is utilising the data from the CEA Planning Criteria for thermal rating as given below :

Conductor Type	Ampacity per conductor(A)*	Thermal loading limit of line (MVA)
765 kV Quad ACSR_Bersimis	732	3880
765 kV HexaACSR_Zebra	560	4452
400 kV Twin ACSR_Moose	631	874
400 kV Quad ACSR_Moose	631	1749
400 kV Quad ACSR_Bersimis	732	2029
400 kV Triple Snowbird	630	1309
400 kV Twin ACSR_Lapwing	773	1071
220 kV Single AAAC_Zebra	557	212
220 kV Single ACSR_Zebra	560	213
220 kV Twin ACSR_Moose	631	481
132 kV Single ACSR_Zebra	560	128
132 kV Single ACSR_Panther	366	84

*Ambient and Maximum conductor temperature are taken as 45°C and 75°C respectively.
Apart from above specifically mentioned in CEA transmission planning criteria following loading limit is considered for HTLS line while calculating ATC/TTC

Conductor Type	Ampacity per conductor(A)*	Thermal loading limit of line (MVA)
400 kV Twin HTLS	1262	1750
220 kV Single HTLS	1020	390
132 kV Single HTLS	732	168

In view of this, it is desired that all ISTS Licensee and STU(for 400 kV and important 220 kV lines) may kindly submit the following details to ERLDC for utilisation in ATC/TTC calculation:

a) Transmission line wise Ampacity and Thermal loading along with Maximum Conductor Temperature and conductor type.
b) End Equipment Rating and
c) Confirmation whether the relay setting has been adopted in line with the thermal rating of the line
d) Any constraint during thermal loading of line

In 152nd OCC, ERLDC informed they received the details only from DVC.

OCC advised all the other ISTS licensees and STUs to submit the relevant data to ERLDC and ERPC.

Members may note and comply.

Deliberation in the meeting

OCC advised all the other ISTS licensees and STUs to submit the relevant data to ERLDC and ERPC.

Item no. C.14: Delay in furnishing information to ERLDC/ERPC regarding of Commissioning of new Transmission Elements/ Generating Units within State--ERLDC

The above matter was deliberated in various OCC meetings and data submission format was also circulated. All states and transmission licensees agreed to submit the list of transmissions elements (ISTS & within state) synchronized **for the first time** during last month and new elements to be commissioned during next month, within 7th day of the current month to ERLDC through mail.

For the Month of January-2019, states and transmission licensees did not submit their List of Transmission element /generators synchronised **in the previous Month** and List of Transmission element and generators expected to be synchronised during next Month.

SL. NO.	Non-submission of new charged elements list of Jan '19	Non-submission tentative charging list of Feb '19
1	Bihar	Bihar
2	Jharkhand	Jharkhand
3	Odisha	Odisha
4	Sikkim	Sikkim
5	DVC	West Bengal
6		Powergrid
7		DVC

It has been observed that some major 220kV intra-state lines have been charged without any data integration & prior information to ERLDC. The list of the lines is as follows:

SL NO	NAME OF THE ELEMENT	STATION	AOR	DATE OF CHARGING
1	220KV Ramchandrapur(JH)-Chaibasa(JH)	Chaibasa	Jharkhand	30-01-2019
2	LILO of 220kV Sagardighi-Gokarna-DC at New-Sagardighi	Sagardighi New	W. Bengal	24-01-2019
3	220kV New Sagardighi	Sagardighi New	W. Bengal	24-01-2019
4	132kV Purulia-Bagmundi	Purulia/Bagmundi	W. Bengal	24-01-2019

5	132kV Sagardighi_New-Raghunathganj	Raghunathganj/Sagardighi_New	W. Bengal	24-01-2019
6	132KV Gokarna-Bhadrapur-DC	Gokarna/Bhadrapur	W. Bengal	24-01-2019
7	132KV Raghunathgunj-New Sagardighi DC	Raghunathgunj/New Sagardighi	W. Bengal	24-01-2019
8	220KV Bodhgaya(BH) – khizersarai(BG)	Khizersarai	Bihar	26-05-2018
9	220KV NewPurnia(PG)-Begusarai(BH)	Begusarai	Bihar	23-12-2018
10	220KV Alipurduar(PG)-Alipurduar (WB)	Alipurduar	W. Bengal	31-05-2018
11	220 KV Meramundali(GR)-Bhanjanagar(GR) lilo at Laxmipur	Laxmipur	OPTCL	----unknown----

220KV Arrah (PG)—Khagaul(BH) which was a tie-line has been charged as 220 KV Sipara(BH) –Khagaul (BH) without intimating both SCADA and Operation Dept. of ERLDC on 03/01/19.

It is again requested to all states to integrate SCADA data before charging of any 220kV & 132kV lines and intimate ERLDC before charging.

In 154th OCC, all the states and transmission licensees were advised to submit the list of transmissions elements (ISTS & within state) synchronized for the first time during last month and new elements to be commissioned during next month, within 7th day of the current month to ERLDC through mail.

OCC advised all the states to ensure SCADA data availability before charging the line and intimate ERLDC before charging the lines.

Members may update.

Deliberation in the meeting

OCC advised all the states and transmission licensees to submit the list of transmissions elements (ISTS & within state) synchronized for the first time during last month and new elements to be commissioned during next month, within 7th day of the current month to ERLDC through mail.

OCC advised all the states to ensure SCADA data availability before charging the line and intimate ERLDC before charging the lines.

Item no. C.15: Load Trimming Scheme on 400/132 kV Motihari ICTs.

400/132 kV Motihari substation is having a two ICTs each with 200 MVA capacity. It has been observed that due to higher load catering of Bihar along with Nepal, the ICTs are running without N-1 reliability. On 22nd August 2018 at 14:59 Hrs, the ICTs combined load increased to 280 MW and one ICT got tripped on mal-operation of OSR relay due to moisture ingress. This led to overloading of other ICT, which tripped in overcurrent protection. This led to the loss of 280 MW of Bihar and Nepal.

Such unreliable operation of ICTs due to higher load is not desirable and following action point may be desired:

1. Implementation of Load Trimming Scheme (LTS) on Motihari ICTs.
2. BSPTCL Long term plan to ensure the meeting such high demand in the areas.

3. Prevention of Tripping of Motihari ICT on OSR relay mis-operation during moisture ingress in rainy season.
4. Capacity augmentation for longterm measures may be planned.

In 149th OCC, it was informed that one more ICT of 315 MVA had been planned in 13thPlan which would be commissioned by May 2020.

OCC advised Bihar to plan a load-trimming scheme till the availability of 3rd ICT.

In 152nd OCC, BSPTCL explained the load trimming scheme.

OCC advised BSPTCL to trip radial loads instead of tripping 132kV lines. OCC also advised to ensure reliable communication for transferring trip signal to respective CBs for successful operation of load shedding scheme.

OCC advised BSPTCL to revise the scheme accordingly and submit the details to ERPC and ERLDC.

Thereafter, BSPTCL has submitted the following details:

- Total capacity of DMTCL 2*200 MVA.
- Maximum load in 2018 summer peak at DMTCL was approx (284 MW).
- Intertripping of 2 ckts of Bettiah T/L (128 MW) and 2 ckts of Motihari T/L (66 MW) will cut the total load of 194 MW & with that one ICT can be saved.
- Load of Bettiah may be extended by Gopalganj.
- Load of Motihari from Motipur.
- Raxaul being connected to international consumer(Nepal) will not be wise to be out from power source.
- Since Bettiah can be fed from Gopalganj so its outage can be normalised within no time.
- Motihari has also alternate source from 220/132/33 KV GSS Motipur (with multiple fed source) so Motihari can also be normalised.
- This scheme can be implemented within the compound of DMTCL and fully controlled by them.

Members may discuss.

Deliberation in the meeting

OCC approved the load shedding scheme and advised Bihar to implement the scheme at the earliest.

Item no. C.16: Status of Emergency Restoration system (ERS) of respective Transmission Licencees

CEA vide mail dated 28-09-2018 has requested to provide Status of Emergency Restoration system (ERS) of respective Transmission Licencees in respective Regions as per the format.

OCC advised all the transmission licensees to submit the requisite information as per the format in the form of soft copy through email (mail ID: mserpc-power@nic.in).

Till date, the details have been received from WBSETCL, OPTCL, DVC and JUSNL as follows:

State-wise Emergency Restoration system				
Transmission Licensee	**Requirement of Total no of ERS in State**	**Number of ERS available in state**	**No of ERS to Be Procured**	**Remark if Any .**
WBSETCL	10	10	Nil	-
OPTCL	84	54	30	
JUSNL	13	8	5	
DVC	400kV – 2 nos	400kV- Nil	400kV – 2nos	
	220kV – 2 nos	220kV – 1 nos	220kV – 1 nos	
	132kV – 10 nos	132kV – 8 nos	132kV – 2 nos	

BSPTCL may submit the details as per the format.

Deliberation in the meeting

OCC advised BSPTCL to submit the details at the earliest.

Item no. C.17: Collection of modelling data from Renewable as well as conventional energy generators: ERLDC

As a National Grid operator, POSOCO is continuously working for ensuring reliability and security of the Grid. With penetration of more and more renewable energy source the task is becoming complicated day by day. An accurate dynamic modeling of the National Grid,needsmodelling of conventional as well as renewable / distributed generation sources. World Bank has engaged Digsilent as consultant for assisting POSOCO for building dynamic model of the Grid. A guideline for dynamic data collection has been developed in consultation with Digsilent Pacific team.

All the utilities are requested to collect data from the grid scale renewable power plants as well as from conventional power plants under their jurisdiction and submit the same to ERLDC/ERPC as early as possible.

In 153rd OCC, OCC advised all the constituents to submit the details of renewable power plants of 5 MW and above.

Members may comply.

Deliberation in the meeting

OCC advised all the constituents to submit the details of renewable power plants of 5 MW and above.

Item no. C.18: Operation Eastern Regional grid from ERLDC back up control Centre at, NLDC, New Delhi as a part of Disaster Management: ERLDC

As informed in 153rd OCC ERPC, ERLDC has successfully operated its backup control center at NLDC, New Delhi from 11:00Hrs to 14:00Hrs on 8th February 2019. All control room activity such as issuance of real time switching code, monitoring of Eastern Region GRID, real time scheduling & reporting were done from backup control center NLDC New Delhi. Entire SCADA system, Open Access & scheduling system have shifted to backup control center of ERLDC. During this process, all the utilities have obtained real time switching code from back up control center and use scheduling server hosted at backup control NLDC, New Delhi for submission of their requisition.

Entire process of operation of ERLDC backup control center was successful only because of full co-operation of utilities of Eastern Region.

Members may please note.

Deliberation in the meeting

Members noted.

PART D:: OPERATIONAL PLANNING

Item no. D.1: Anticipated power supply position during April 19

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of April 19 were prepared by ERPC Secretariat on the basis of Provisional LGBR for 2015-16 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc. is at **Annexure-D.1**.

Members may confirm.

Deliberation in the meeting

Modified anticipated power supply position for the month of April 2019 after incorporating constituents' observations is given at **Annexure-D.1***.*

Item no. D.2: Shutdown proposal of transmission lines and generating units for the month of April 19

In 151st OCC, it was observed that constituents had not submitting the shutdown requisition within stipulated time as a result ERLDC had been facing difficulty in properly analyzing the shutdown.

OCC decided the following procedure for submission of transmission elements outage requisition:

1. ***Shutdown of Intra Regional Lines*** *- Transmission licensee/SLDCs/Transmission Asset owners shall apply shutdown of their respective Intra Regional Lines for the next month to ERLDC strictly by* ***8th*** *of every Month. Based on this, ERLDC shall prepare the list which would be placed in OCC Agenda. Any shutdown requisition received after 8th of the month would not be normally considered for discussion in the OCC meeting unless it is considered to be an emergency requirement.*
2. ***Shutdown of Inter Regional Lines*** *- Transmission licensee/ SLDCs/Transmission Asset owners shall send their shutdown requisition of Inter Regional Lines for the next month directly to NLDC strictly by* ***5th*** *of every month with a copy to respective RLDCs.*

Members may finalize the Shutdown proposals of transmission lines andgenerating stations for the month of March 19.

Dikchu informed that they would require extension of shutdown for Unit-2 till 22nd Feb' 19 against the earlier planned date of 15th Feb' 19 due to extra time consumed in TGB repair works.

Also it is to be informed that overlapping this period of Unit 1 shutdown, from 16th to 18th Feb, there will be no generation from Dikchu HEP as we have to carry out Reservoir flushing.

Generator shutdown:

System	Station	Unit	Capacity (MW)	From	To	Days	Reason
WBPDCL	Kolaghat TPS	1	210	07.06.18	30.06.19	30	R&M
NTPC	FSTPP	5	500	11.03.19	05.04.19	5	AOH
	KhSTPS	7	500	06.04.19	30.04.19	25	AOH
BRBCL	Nabinagar TPS	2	250	16.04.19	30.04.19	15	Boiler and TG PG Test,Boiler License Renewal
IPP	JITPL	1	600	01.04.19	05.05.19	30	AOH

ERLDC may place the list transmission line shutdown discussed on 20th March 2019 through VC.

Members may confirm.

Deliberation in the meeting

NTPC informed that shutdown of unit #5 of FSTPP would be taken from 1st April 2019.

OCC approved the generator shutdown plan as follows:

System	Station	Unit	Capacity (MW)	From	To	Days	Reason
WBPDCL	Kolaghat TPS	1	210	07.06.18	30.06.19	30	R&M
NTPC	KhSTPS	5*	500	06.04.19	15.04.19	10	Maint.
	KhSTPS	7	500	22.04.19	13.05.19	25	AOH
BRBCL	Nabinagar TPS	2	250	16.04.19	30.04.19	15	Boiler and TG PG Test,Boiler License Renewal
IPP	JITPL	1	600	01.04.19	05.05.19	30	AOH

**Eastern Region beneficiaries approved the shutdown of unit#5 of KhSTPS*

NTPC informed that unit#1(800 MW) of Darlipalli STPS would be test synchronised with the grid on 23.03.2019.

OCC approved the transmission elements shutdown as per the list given in **Annexure-D.2.**

Member Secretary, ERPC highlighted that in view of Loksabha Elections, no transmission element or generating unit shall be taken under shutdown without OCC approval unless an emergency condition and this is valid for next two months.

1. SLDC, West Bengal Agenda

- Closing of 66 kV Chalsa-Kalimpong S/C and 66kV Melli(Sikkim)-Kalimpong line from Kalimpong end to feed Kalimpong from dual source to maintain redundancy in power supply.
- Emergency shutdown of 400kV elements of STU system or tie-lines has to be allowed by ERLDC control room if immediate switching off the line is required to avoid subsequent hazard.
- Approval of all planned shutdowns by ERLDC outage coordination team may please be issued at least two working days in advance to mobilize the workforce.

Members may discuss.

Deliberation in the meeting

Regarding closing of 66 kV Chalsa-Kalimpong S/C and 66kV Melli(Sikkim)-Kalimpong line from Kalimpong end, OCC advised WBSETCL to take up the proposal with Sikkim and confirm the healthiness of the bay equipment and protection system at Sikkim end.

Regarding emergency shutdown of 400kV elements, ERLDC agreed to allow during emergency.

Regarding approval of all planned shutdowns, ERLDC requested WBSETCL to submit the requisition in advance and agreed to approve the shutdowns at least two working days in advance.

2. **Non-Issuance of Permit to Work (PTW) from Rangit & Rammam end for doing the Maintenance of 132kV SC Rangit(NHPC)-Rammam(WBSEDCL) Transmission Line --Powergrid**

Powergrid vide mail dated 20th March 2019 informed that 132kV SC Rangit(NHPC)-Rammam(WBSEDCL) Transmission Line belongs to POWERGRID and is being maintained by POWERGRID 220kV New Melli Substation.

Every time they are planning to execute some maintenance work in 132kV SC Rangit-Rammam Line, Substations at both ends (i.e. NHPC Rangit SS & Rammam WBSEDCL SS) of the said line disagree to provide PTW saying that the line belongs to POWERGRID and they cannot provide us PTW thus creates a serious Safety Concern.

Despite our best effort to avoid/prevent accidents, because of the above said problem the work is being carried out with high risk all the time during any shutdown work.

They faced the same situation on 28.09.2018 also while doing maintenance work. Please note there are many times (for instances: 25.08.18, 28.09.18, 26.12.18 & 31.01.19) when we did not get PTW.

Members may discuss.

Deliberation in the meeting

OCC took serious note of the issue and opined that no hindrance should be created to carry out the maintenance work for OCC approved shutdowns.

OCC advised WBSEDCL and NHPC to extend the necessary support to ensure completion of the maintenance work of the line during all planned shutdowns approved by the OCC.

3. **Installation of transmission line arresters in 220kV D/C Alipurduar-Salakati line--Powergrid**

Powergrid informed that they are planning to install transmission line arresters in the section of the line where repeated line fault has been detected and high TFR value is being encountered persistently. Already LOA placed on RAYCHEM for supply on dated 30.10.2018.Supply shall be completed by 15.02.2019.If this activity is not being completed it shall result in large no. of tripping of Alipurduar-Salakati TL during monsoon like every year.

Installation work is being planned to be commenced tentatively from 08.04.2019 to 24.04.2019 for which Ckt-wise S/D one at a time is required on daily Basis.(ODB)

As this is an activity carried out for system improvement, it is requested to consider the outages for above activities as per CERC regulations for non-attributable to POWERGRID.

Members may discuss.

Deliberation in the meeting

OCC agreed for the shutdown subjected to real time grid conditions and NLDC consent.

Item no. D.3: Prolonged outage of Power System elements in Eastern Region

(i) Thermal Generating units:

S. No	Station	Location	Owner	Unit No	Capacity(MW)	Reason(s)	Outage Date	Time
1	KAHALGAON	BIHAR	NTPC	1	210	OVERHAULING TO ATTEND LOW MAIN STEAM TEMPERATURE	12-Mar-19	23:54
2	BARAUNI	BIHAR	BSPHCL	6	105	R & M WORK	17-Mar-12	13:15
3	KOLAGHAT	WEST BENGAL	WBPDCL	1	210	POLLUTION CONTROL PROBLEM	10-May-18	23:05
4	KOLAGHAT	WEST BENGAL	WBPDCL	3	210	POLLUTION CONTROL PROBLEM	23-Feb-17	11:51
5	KOLAGHAT	WEST BENGAL	WBPDCL	5	210	ANNUAL OVERHAULING	5-Feb-19	10:17
6	CTPS	JHARKHAND	DVC	3	130	TURBINE BLADE DAMAGE	30-Jul-17	00:00
7	CTPS	JHARKHAND	DVC	7	250	CAPITAL OVERHAULING	9-Feb-19	23:52
8	JITPL	ODISHA	JITPL	2	600	COAL SHORTAGE	26-Jun-18	0:03
9	TSTPP	ODISHA	NTPC	2	500	BOILER TUBE LEAKAGE	17-Mar-19	11:54
10	NABINAGAR	BIHAR	NTPC	3	250	BOILER TUBE LEAKAGE	17-Mar-19	9:06
11	TSTPP	ODISHA	NTPC	2	500	BOILER TUBE LEAKAGE	17-Mar-19	11:54
12	TENUGHAT	JHARKHAND	JUVNL	1	210	COAL SHORTAGE	11-Dec-18	0:11
13	MEJIA	WEST BENGAL	DVC	3	210	STATOR EARTH FAULT	4-Feb-19	22:15
14	DPL	WEST BENGAL	WBPDCL	8	250	COAL SHORTAGE	13-Feb-19	6:44
15	GMR	ODHISA	GRIDCO	3	350	ETS	15-Mar-19	2:10
16	SAGARDIGHI	WEST BENGAL	WBPDCL	2	300	LOW DEMAND	25-Feb-19	4:44

17	SAGARDIGHI	WEST BENGAL	WBPDCL	1	300	LOW DEMAND	17-Mar-19	20:00
18	KOLAGHAT	WEST BENGAL	WBPDCL	4	210	LOW DEMAND	17-Mar-19	20:17
19	RAGHUNATHPUR	WEST BENGAL	DVC	1	600	BOILER TUBE LEAKAGE	14-Mar-19	11:32
20	STERLITE	ODHISA	GRIDCO	2	600	DUE TO LEAKAGE IN SEAL OIL SYSTEM	9-Mar-19	20:21
21	BANDEL	WEST BENGAL	WBPDCL	5	210	BOILER SEDIMENTATION PROBLEM	9-Mar-19	11:16
	Sub Total (SS)				5915			

Generators/ constituents are requested to update the expected date of revival of the units.

(ii) Hydro Generating units:

S. No	Station	Location	Owner	Unit No	Capacity(MW)	Reason(s)	Outage Date	Time
1	BURLA	ODISHA	OHPC	1	37.5	R & M WORK	14.03.2018	17:20
2	BURLA	ODISHA	OHPC	4	37.5	R & M WORK	25.10.2015	19:00
3	BURLA	ODISHA	OHPC	5	37.5	R & M WORK	25.10.2016	
4	BURLA	ODISHA	OHPC	6	37.5	R & M WORK	16.10.2015	
5	BALIMELA	ODISHA	OHPC	1	60	R & M WORK	05.08.2016	
6	BALIMELA	ODISHA	OHPC	2	60	R & M WORK	20.11.2017	
7	BALIMELA	ODISHA	OHPC	3	60	R & M WORK	20.11.2017	
8	U.KOLAB	ODISHA	OHPC	4	80	Repair of MIV & Draft tube gate leakage	01.02.2019	17:00
9	CHIPLIMA	ODISHA	OHPC	3	24	RENOVATION AND MODERNISATION	21.07.2018	
	Sub Total (SS)				410			

(iii) Transmission elements

SL NO	Transmission Element / ICT	Agency	Outage From		Reasons for Outage
			DATE	TIME (HRS)	
1	220 KV BALIMELA - U' SILERU	OPTCL / APSEB	10/03/18	22:45	LINE ANTITHEFT CHARGED FROM UPPER SILERU ON 17-04-18

2	400 KV IBEUL JHARSAGUDA D/C	IBEUL	29/04/18	17:30	TOWER COLLAPSE AT LOC 44,45
3	400KV NEW PURNEA-BIHARSARIFF(PG)-D/C	ENICL	10/08/18	10:28	TOWER COLLAPSE AT LOC 47/0
4	400 KV PATNA KISHANGANJ- I	POWERGRID	01/09/18	0:32	TOWER COLLAPSE AT LOC 129. PILING DAMAGED
5	400 KV TALA BINAGURI - I	POWERGRID	03/01/19	11:01	AMP WORK BY BHUTAN
6	400 KV TALA BINAGURI - II	POWERGRID	26.02.2018	7:33	S/D BY ALIPURDUAR TRANSMISSION LIMITED RETURNED ON 27.2.19, KEPT OPEN DUE TO OVERVOLTAGE AT TALA END
7	220 KV NEW PURNEA BEGUSARAI -D/C	BSPHCL	05/02/19	13:35	S/D AVAILED BY BIHAR FOR PILE FOUNDATION IN KOSHI RIVER AT KURSELA LOCATION NO 413 A
8	765KV JHARSGUDA-ANGUL IV	POWERGRID	08/03/19	9:54	OPENED DUE TO HIGH VOLTAGE
9	400KV BIHARSARIFF(PG)-PUSAULI-D/C	POWERGRID	09/03/19	11:37	S/D FOR REALIGNMENT WORKS DUE TO CONSTRUCTION OF NEW RAILWAY LINE
10	400KV MERAMUNDALI-LAPANGA-II	OPTCL	15/3/2019	11:59	DUE TO ISOLATOR FLASHOVER AT LAPANGA OF 400KV LAPANGA -MEERAMUNDALI CKT 2
11	400KV FARAKKA - KAHALGAON I	POWERGRID	06.03.2018	8:28	FOR TAKING UP BAY UP GRADATION WORK OF BAY-22
12	400KV MAITHON-MAITHON RB-I	POWERGRID	08.03.2018	10:12	FOR RE-CONDUCTORING WORK

(Reported as per Clause 5.2(e) of IEGC)

** Transmission licensees whose line were out due to tower collapse/ bend, may please update the detail restoration plan and as on date work progress status in OCC.

Also Monthly progress report to be submitted to ERLDC/ERPC till restoration of the element.

Members may update.

Deliberation in the meeting

Members noted.

PART E::ITEMS FOR INFORMATION

The following agenda items are placed for information and necessary compliance:

Item No. E.1: Operation Eastern Regional grid from ERLDC back up control Centre at, NLDC, New Delhi as a part of Disaster Management--ERLDC

As informed in 153rd OCC ERPC, ERLDC has successfully operated its backup control center at NLDC, New Delhi from 11:00Hrs to 14:00Hrs on 8th February 2019. All control room activity such as issuance of real time switching code, monitoring of Eastern Region GRID, real time scheduling & reporting were done from backup control center NLDC New Delhi. Entire SCADA system, Open Access & scheduling system have shifted to backup control center of ERLDC. During this process, all the utilities have obtained real time switching code from back up control center and use scheduling server hosted at backup control NLDC, New Delhi for submission of their requisition.

Entire process of operation of ERLDC backup control center was successful only because of full co-operation of utilities of Eastern Region.

Members may please note.

Item No. E.2: Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN.

The activity of the preparation of Crisis Management Plan for countering the cyber attacks and its implementation including the Mock Drills, audits etc. is being monitored by CEA regularly in line with crisis management plant of Ministry of Power. Power Utilities (including generation, transmission & distribution utilities) of eastern region are to furnish regularly the updated status to on the same to Chief Engineer, Distribution Planning & Development Division, CEA.

In 142nd OCC, ERLDC informed that, in line with Enquiry Committee Recommendation, cyber security audit is being conducted on regular basis for SCADA system installed at ERLDC and SLDC as well but cyber security audit for telecom infrastructure installed in Eastern Region is not being carried out.

OCC advised all the constituents to conduct the cyber security audit on telecom infrastructure installed in Eastern Region. It is further advised that compliance / mitigation of the points observed during the audit should also be completed for improvement of the telecom infrastructure in ER.

In 37th TCC meeting, it was decided that a workshop would be conducted by CEA at ERPC for further benefit of ER Constituents.

In 144th OCC, ERLDC informed that they have already conducted a workshop with the help of NPTI, Durgapur on 21st March 2018.

A workshop on cyber security was conducted by CEA at ERPC, Kolkataon 09-05-2018.

As suggested by CEA, a format would be circulated among ER constituents for furnishing the information of the their respective systems for discussion in OCC Meeting. The format is enclosed at **Annexure-E2**.

OCC advised all the constituents to submit the information to ERPC as per Annexure-E2.

Item No. E.3: Certification through BIS as per IS 18001:2007 to all generating/ transmission units.

In 84th OCC meeting all constituents were requested to interact with BIS with intimation to ERPC and get certified as per CEA direction.

As per the information received from the constituents the following generators certified with IS 18001:

- All NTPC stations in Eastern Region
- Teesta, NHPC
- All OHPC generating units
- All CESC generating units
- All units of WBPDCL
- DGPC units

Item No. E.4: Status of Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipment.

The status of DR/EL and GPS as updated in previous OCCs is enclosed at **Annexure-E.4**.

Constituents are also requested to furnish their list of new DR/EL which are not included in the list.

TeestaUrja Limited vide letter dated 8th September 2017 informed that Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipments are available at Teesta III HEP.

Item No. E.5: Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents

CEA vide letter dated 21.07.2017 requested to send the status of state-wise availability of ERS towers and requirement of ERS towers.

In 136th OCC, MS, ERPC informed that CEA vide letter dated 21.07.2017 has sought the latest status on ERS. Therefore, OCC advised all constituents to send the updated status to ERPC secretariat vide mail (mserpc-power@nic.in).

Latest status is enclosed at **Annexure- E.5**.

In 138th OCC, WBSETCL informed that they are having total 10 ERS towers, 5 at Arambagh and 5 at Gokharno.

In 139th OCC, JUSNL informed that they are having eight 220/132kV ERS towers at following locations:

- Hatia – 3 nos
- Ranchi – 2 nos
- Dumka – 3 nos

Item No. E.6: Status of 1st Third Party Protection Audit:

The compliance status of 1st Third Party Protection Audit observations is as follows:

Name of Constituents	Total Observations	Complied	% of Compliance
Powergrid	54	46	85.19
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	49	72.06

Odisha	59	42	71.19
JUSNL	34	25	73.53
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

** Pending observations of Powergridare related to PLCC problems at other end.*

The substation wise status of compliance are available at ERPC website (Observations include PLCC rectification/activation which needs a comprehensive plan).

In 118th OCC, all the constituents were advised to comply the pending observations at the earliest. All the STUs informed that most of the observations are related to funding from PSDF. DPRs have been submitted to PSDF committee.

Members may comply.

Item No. E.7: Providing relevant data by Power Utilities I Stations in National Power Portal.

CEA vide letter dated 26th June 2018 informed that National Power Portal (NPP) (URL: npp.gov.in), has been launched by Hon'ble Minister of Power on 14th November, 2017. NPP is modified and more user-friendly data portal than the existing Information Management System (IMS) in CEA. Reports prepared from NPP are of vital importance for Power Sector data analytics in order to frame policies, regulations , future road-map for Power Sector etc. at Central as well as at State level. Accordingly, all power utilities have been issued user ID and password, either organisation-wise or station-wise, based on their request , for providing their data on NPP.

NPP has replaced IMS since 1st June, 2018. A Circular (which is available in Circular Section of CEA Website, i.e. cea.nic.in) has been issued by CEA to all power utilities/stations on 14.06.2018 for providing their data online in NPP only.

In this regard, letters/mails have been issued to Utilities to provide their data online through NPP. A letter dated 20.06.2018 was also issued to all SLDC, requesting them to direct the power utilities I stations under their purview for providing data on NPP.

Any issue/problem faced by utilities may kindly be communicated to itcea@nic.in, npp.support@gov.in, ceopm-cea@gov.in and if required, IT Division, CEA may be contacted on 011-26732368 or 011-26732303

CEA requested to pursue the power utilities *I* stations under their purview for providing data on NPP. Further, a workshop/presentation may be arranged if required in each region in which IT Division, CEA will provide a brief demonstration regarding data entering process and report generation into NPP.

Item No. E.8: Commissioning of new transmission elements in Eastern Region

The details of new units/transmission elements commissioned in the month of February-2019 based on the inputs received from beneficiaries

Monthly commissioning List of Tansmission element and generators: February 2019					
SL NO	**Element Name**	**Owner**	**Charging Date**	**Charging Time**	**Remarks**
1	500 MVA 400/220 ICT 3 at Gaya	PGCIL	06-02-2019	10:44 hrs	
2	765 KV BUS-1 at Darlipalli	PGCIL	07-02-2019	11:20 hrs	
3	LILO of 220kV EMSS - NCSS Ckt No.2 at Prinsep Street S/S	CESC	09-02-2019		

4	400 KvRangpoKishanganj	TPTL	11-02-2019	16.22 hrs	
5	160 MVA, 220/132/33kV Power Transformer (T1) at Prinsep Street S/S		11-02-2019		
6	500 MVA ICT-2 at Patna	PGCIL	15-02-2019	20:59 hrs	Idle charged on 14/02/19
7	Bus sectionaliser between Bus I and Bus III at 400 KV Kahalgaon s/s	PGCIL	20-02-2019	21:22 hrs	
8	132 KV Olavar-Chandbalickt I & II	OPTCL	20-02-2019	15:50Hrs	
9	125 MVar MSR 1 at Kishanganj	PGCIL	21-02-2019	18:15 hrs	first time charged
10	125 MVar MSR 2 at Kishanganj	PGCIL	22-02-2019	10:36 hrs	first time charged voltage changed 407/403 kv
11	100MVAR VSC-2 at kishanganj	PGCIL	22-02-2019	18:19 hrs	
12	132 KV Digapahandi- Chikitickt- I & II	OPTCL	25-02-2019	11:38 Hrs	
13	220/33 KV(20 MVA) Power Transformer at Narasinghpur Grid S/S	OPTCL	27-02-2019	15:25 Hrs	

Item No. E.9: UFR operation during the month of February'19

System frequency touched a maximum of 50.26 Hz at 13:02 &06:03 Hrs of 26 & 27/02/19and a minimum of 49.68 Hz at 12:42 2Hrs of 01/02/19. Hence, no report of operation of UFR has been received from any of the constituents.

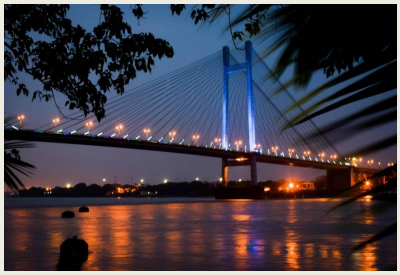
Item No. E.10: Grid incidences during the month of February, 2019

Sr No	GD/ GI	Date	Time	S/S involved	Summary	Load loss (MW)	Gen loss (MW)
1	GI-I	03-02-2019	18:43	Sagardighi	Due to B phase CT failure of Bus coupler Bay and actuation of Bus bar protection, 220 kV Sagardighi - New Sagardighi D/C tripped along with 400/220 kV ICT - I at Sagardighi and unit I at Sagardighi.	0	300
2	GI-II	11-02-2019	14:54	Bakreswar	400 kV bus II at Bakreswar tripped at 14:54 hrs due to Y-N fault at 400 kV Arambag - Bakreswar S/C resulting tripping of 400/220 kV ICT - II at Bakreswar along with unit II GT. As per PMU data analsysis fault was cleared within 100 ms after tripping of line from both ends. Unit II was on house load after tripping of GT-II. So it was transferred later to bus I.	0	0
3	GI-II	25-02-2019	21:32	Koderma	At 21:32 hrs 400 kV Biharshariff Koderma I & 400 kV Bokaro Koderma I tripped from both ends along with bus I and two running units LBB protection operated for tie bay between ST-I & GT-I. It is reported that insulation failure occured in CT associated with GT 1 which was about to be synchronised.	0	900
4	GI-II	26-02-2019	17:50	Meramundali	At 17:50 hrs, 400 kV bus I at Meramundali tripped due to LBB operation of tie breaker between 400 kV Meramundali - New Duburi - I and 400 kV Meramundali - Mendasal S/C resulting tripping of all elements from bus I at Meramundali. No effect in 220 kV bus as other ICT was in service.	0	0

****

Power System Operation Corporation Ltd.

155th OCC Meeting



At Hotel Pride Plaza, Kolkata

25th March, 2019

ER Grid Performances

ERLDC POSOCO

Highlights for the month of Feb-19

Frequency Profile
Average Freq:- 50.0 Hz
Avg FVI: - 0.042
Lowest FVI:- 0.030

Max- 50.26Hz on 26th and 27th Feb' 19
Min- 49.68 Hz on 01st Feb'19

70.73% of the time freq was within IEGC Band

Peak Demand*
ER: 19917 MW on 22nd Feb 2019 at 19:15 hrs
% Growth in Average Demand Met w.r.t. last year: 0.13%

BSPHCL : 4094 MW ; ON 02/02/19
JUVNL: 1165 MW; ON 01/02/19
DVC: 3081 MW; ON 07/02/19
GRIDCO: 4972 MW; ON 15/02/19
WB: 7283 MW; ON 22/02/19
SIKKIM: 109 MW; ON 18/02/19

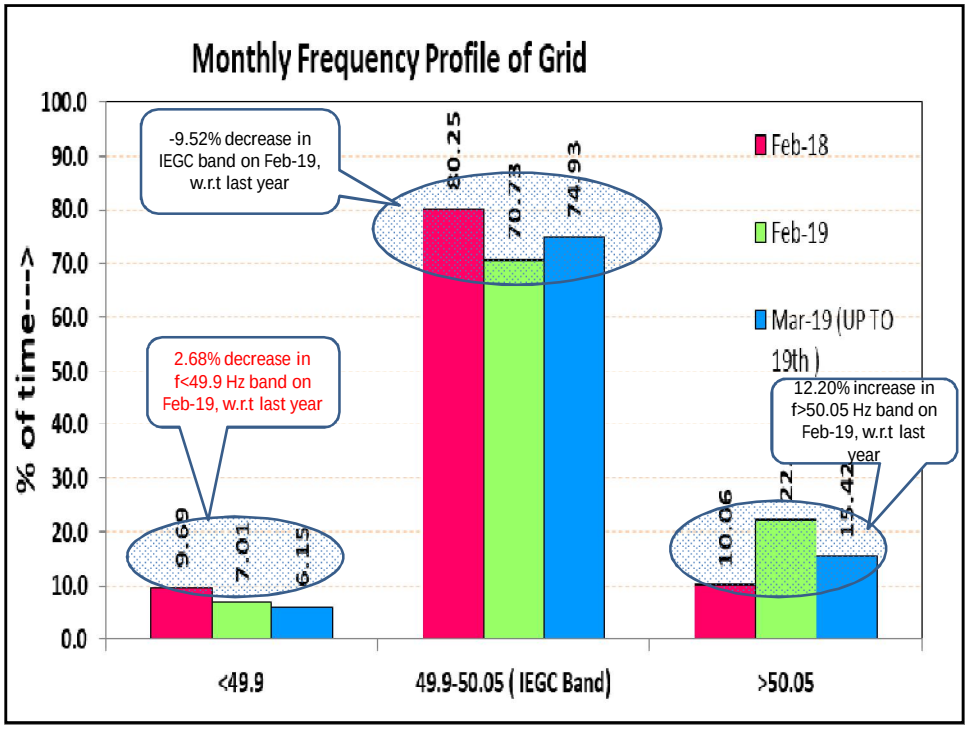
*All data source are from SCADA

Energy met
Max. 398 MU on 22nd Feb *2019*
%Growth w.r.t. last year on Max energy (-)0.54%
Avg. 375 MU in Feb *2019*
%Growth w.r.t. last year on Avg. energy : (-)2.0%

New Element
Generating Units-NIL

Open Access
STOA transactions approved -99 nos.

Energy Approved- 544.1 MUs



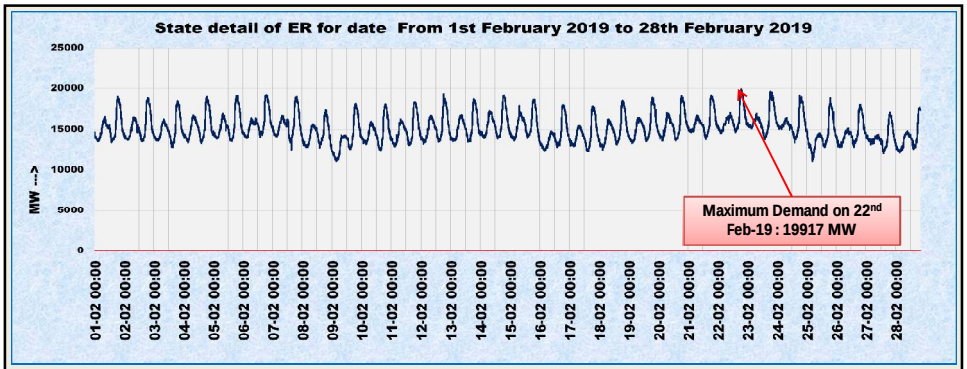
New Element addition during the month:

Monthly commissioning List of Transmission element and generators: February 2019				
SL NO	Element Name	Owner	Charging Date	Charging Time
1	500 MVA, 400/220kV ICT 3 at Gaya	PGCIL	06-02-2019	10:44 hrs.
2	LILO of 220kV EMSS - NCSS Ckt No.2 at princep street S/S	CESC	09-02-2019	11:16 hrs.
3	400 kV Rangpo-Kishanganj	TPTL	11-02-2019	16.22 hrs.
4	160 MVA, 220/132/33kV Power Transformer (T1) at princep street S/S	CESC	11-02-2019	11:58 hrs.
5	500 MVA, 400/220kV ICT-2 at Patna	PGCIL	15-02-2019	20:59 hrs.
6	125 MVar MSR 1 (STATCOM) at Kishanganj	PGCIL	21-02-2019	18:15 hrs.
7	125 MVar MSR 2 (STATCOM)at Kishanganj	PGCIL	22-02-2019	10:36 hrs.
8	100MVAR VSC-2 (STATCOM) at kishanganj	PGCIL	22-02-2019	18:19 hrs.
9	BRBCL #3(250 MW) at Nabinagar	NTPC+ Railway	26-02-2019	0:00 hrs.
10	220/33 kV (20 MVA) Power Transformer at Narasinghpur Grid S/S	OPTCL	27-02-2019	15:25 Hrs.

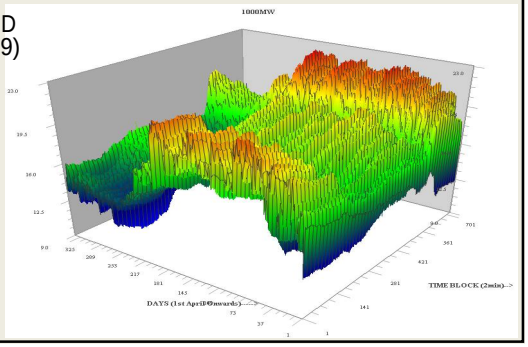
So Far Highest Demand					
Constitute	Demand (in MW)	Date	Time	Dmd met (MW) on 22nd Feb'19 (max dmd met day)	
				MW	Time
Bihar	5011	12-July-18	0:05	4025	19:43
DVC	3536	12-July-18	8:55	3002	20:44
Jharkhand	1319	19-May-18	21:02	1118	05:17
Odisha	5558	23-Aug-18	20:21	4241	19:15
W. Bengal	8896	18-June-18	19:51	7283	18:46
Sikkim	117	28-Oct-16	19:22	97	07:09
ER	23030	03-Oct-18	20:43	19917	19:15

So Far Highest Energy Consumption			
Constitute	Energy consumption (in MUs)	Date	Energy met on 22nd Feb'19 (max dmd met day)
Bihar	104.0	02-Oct-18	71.8
DVC	75.8	12-July-18	64.3
Jharkhand	27.8	19-May-18	20.7
Odisha	123.5	02-Oct-18	79.8
West Bengal	192.6	05-Oct-18	139.9
Sikkim	2.1	07-Dec-17	1.7
ER	499.8	18-Aug-18	390

3D VIEW OF ER DEMAND PATTERN (APR-18 to FEB-19)

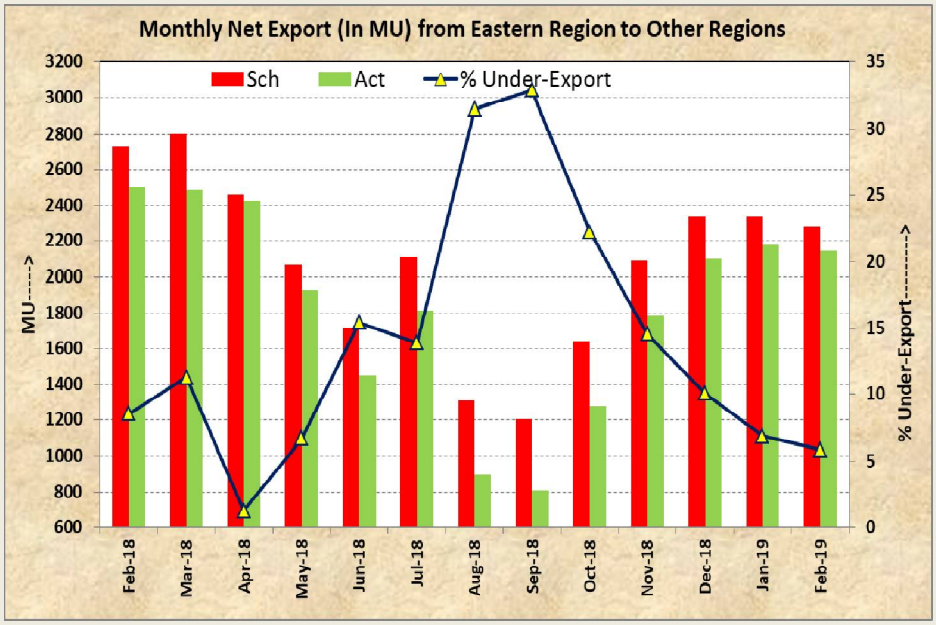


EASTERN REGION DEMAND
3D CURVES (APR'18-FEB'19)



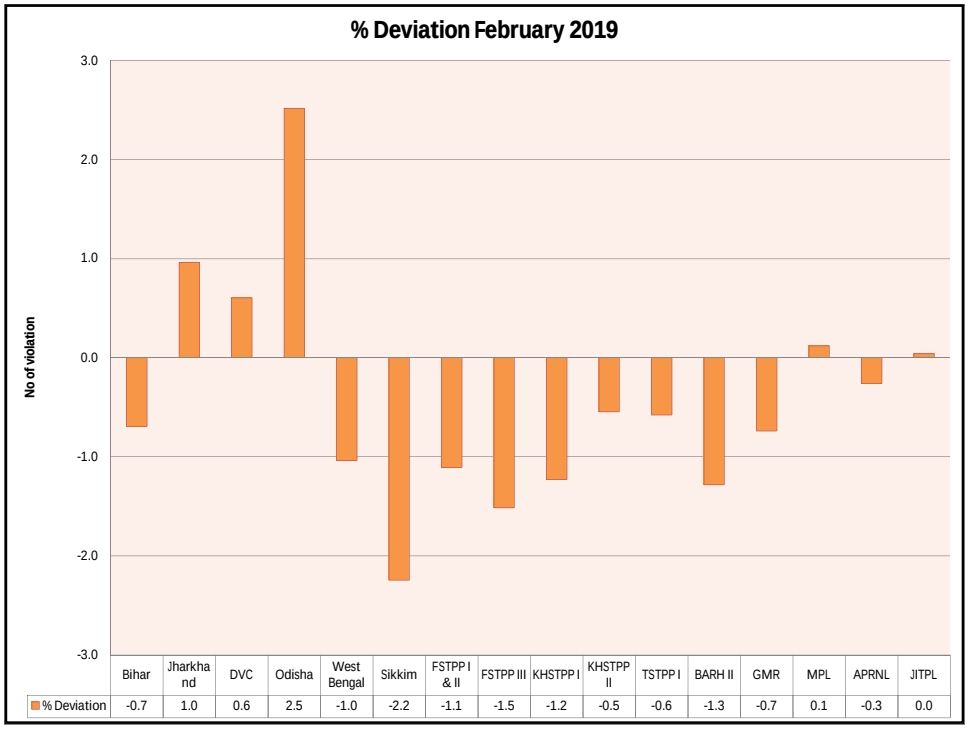
Over Drawl / Under Injection by ER Entities

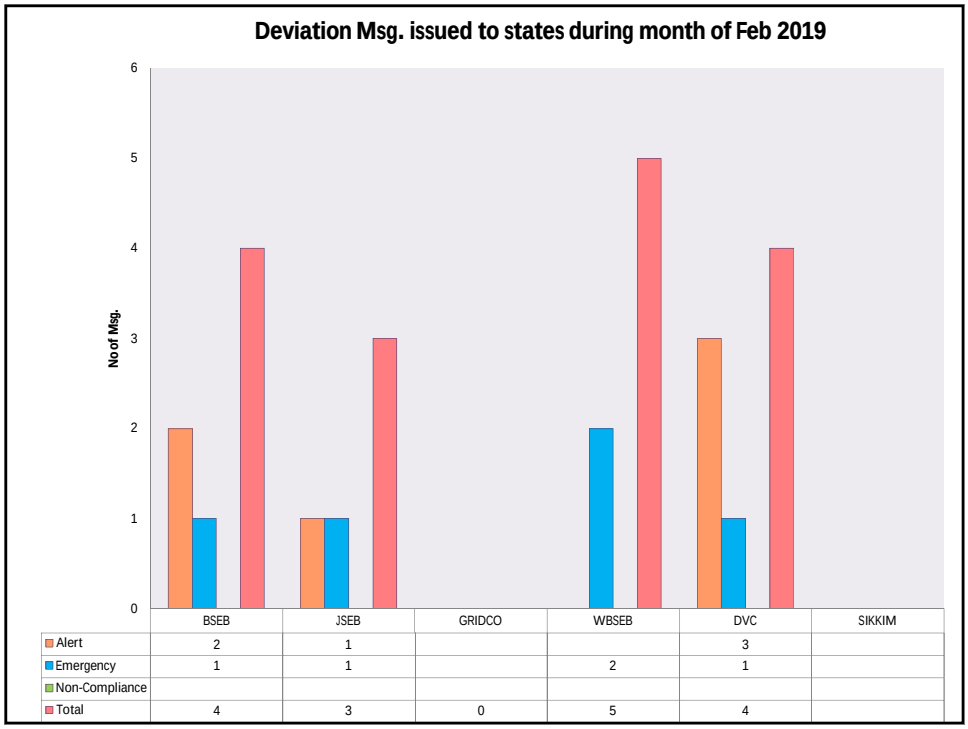
Non-compliance of direction issued by SLDC

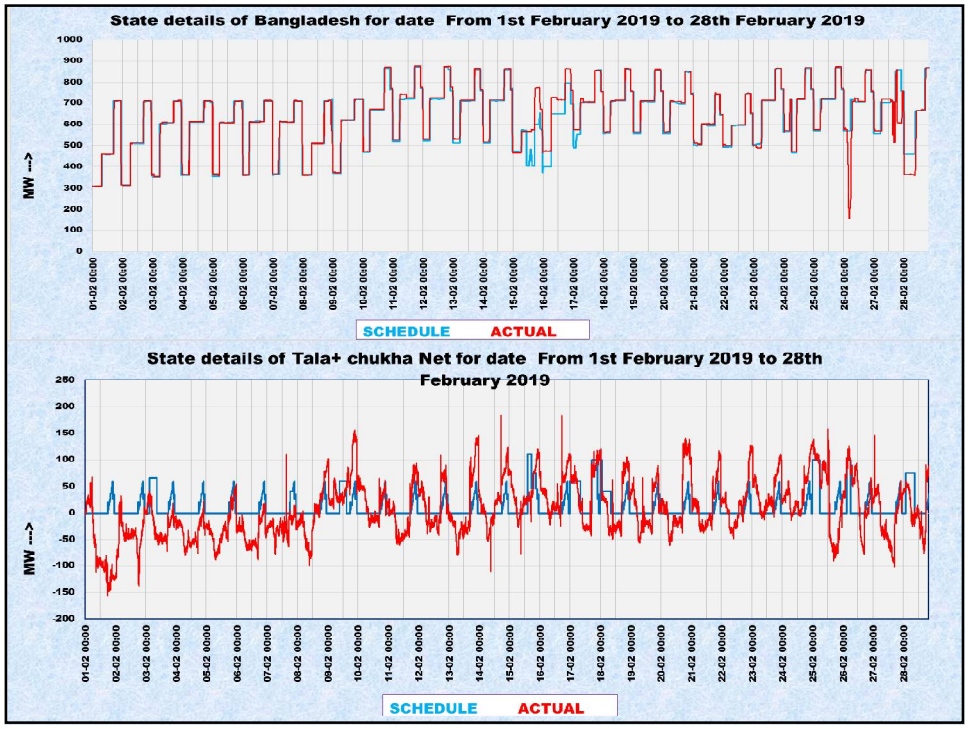


Actual Export schedule for Feb-19 was 2281 Mu, whereas actual export was 2147 Mu
Total Under export was 134 Mu for the month.

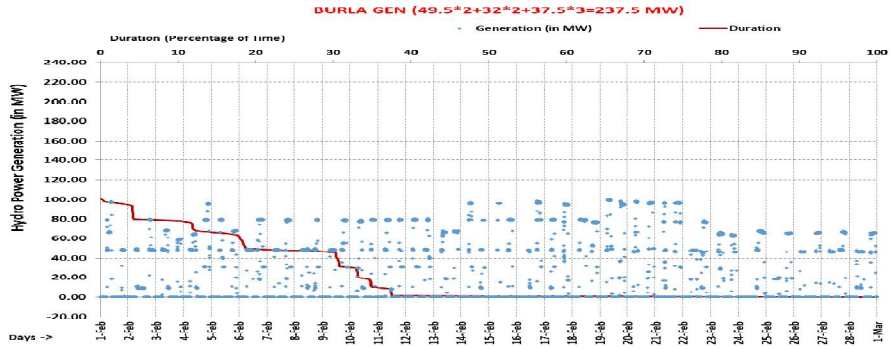
February 2019 Schedule vs Actual Status					
	Schedule	Actual	OD	Daily Avg OD	% Deviation
Bihar	1824	1812	-13	-0.4	-0.7
Jharkhand	470	474	5	0.1	1.0
DVC	-1235	-1228	7	0.2	0.6
Odisha	695	713	**18**	**0.6**	**2.5**
West Bengal	642	635	-7	-0.2	-1.0
Sikkim	46	45	-1	0.0	-2.2
FSTPP I & II	818	809	-9	-0.3	-1.1
FSTPP III	242	238	-4	-0.1	-1.5
KHSTPP I	401	396	-5	-0.2	-1.2
KHSTPP II	745	741	-4	-0.1	-0.5
TSTPP I	509	506	-3	-0.1	-0.6
BARH II	607	599	-8	-0.3	-1.3
GMR	326	324	-2	-0.1	-0.7
MPL	560	560	1	0.0	0.1
APRNL	167	167	0	0.0	-0.3
JITPL	286	286	0	0.0	0.0

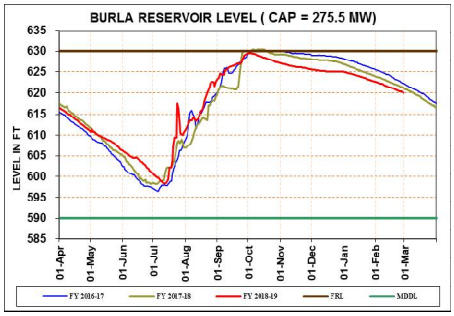

% Deviation February 2019
No of violation
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
Bihar
Jharkhand
DVC
Odisha
West Bengal
Sikkim
FSTPP I & II
FSTPP III
KHSTPP I
KHSTPP II
TSTPP I
BARH II
GMR
MPL
APRNL
JITPL
% Deviation
-0.7
1.0
0.6
2.5
-1.0
-2.2
-1.1
-1.5
-1.2
-0.5
-0.6
-1.3
-0.7
0.1
-0.3
0.0


Deviation Msg. issued to states during month of Feb 2019
No of Msg.
6
5
4
3
2
1
0
BSEB
JSEB
GRIDCO
WBSEB
DVC
SIKKIM
Alert
2
1
3
Emergency
1
1
2
1
Non-Compliance
Total
4
3
0
5
4

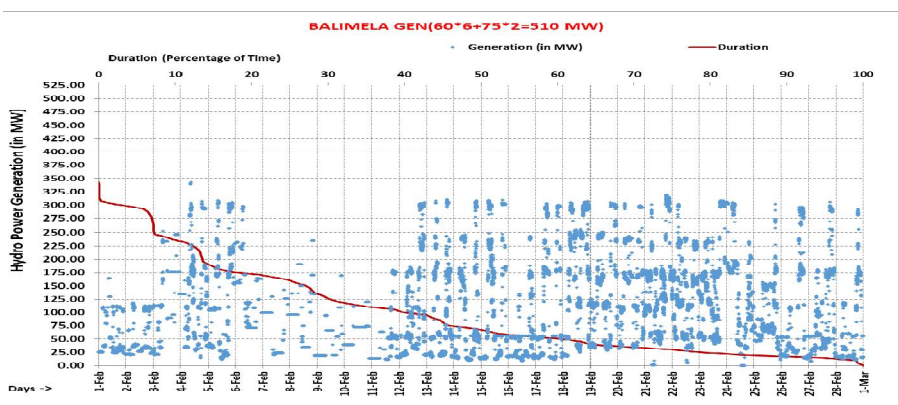


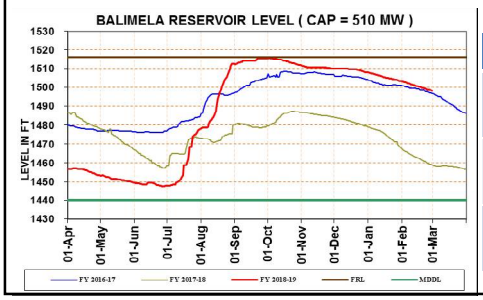
State Hydro Generators Performance



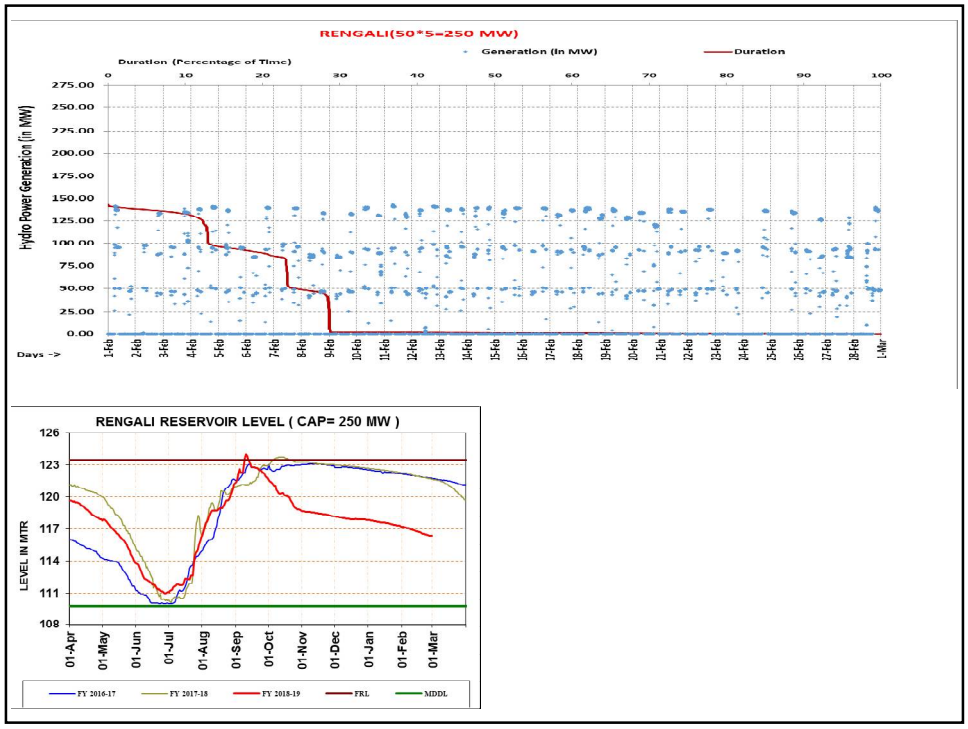


Unit No	Date of Outage	Reason
U - 1	19.11.17(19:00)	Gen. UGB oil temp high
U - 4	25.10.2016	R & M Work
U - 5	25.10.2016	R & M Work
U - 6	16.10.2015	R & M Work

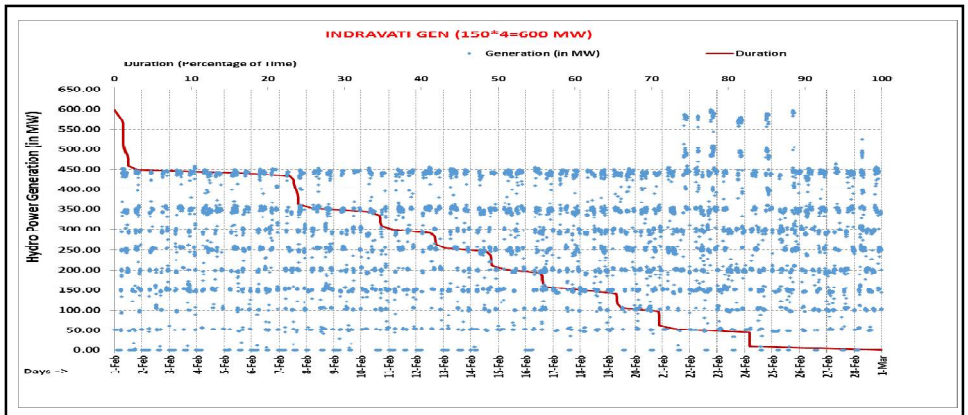


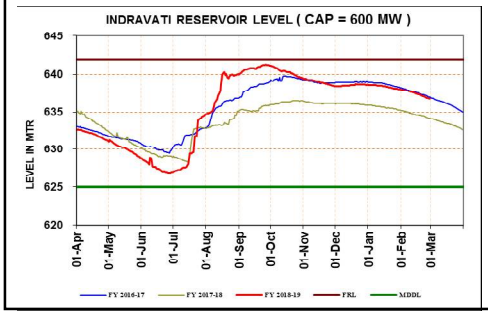


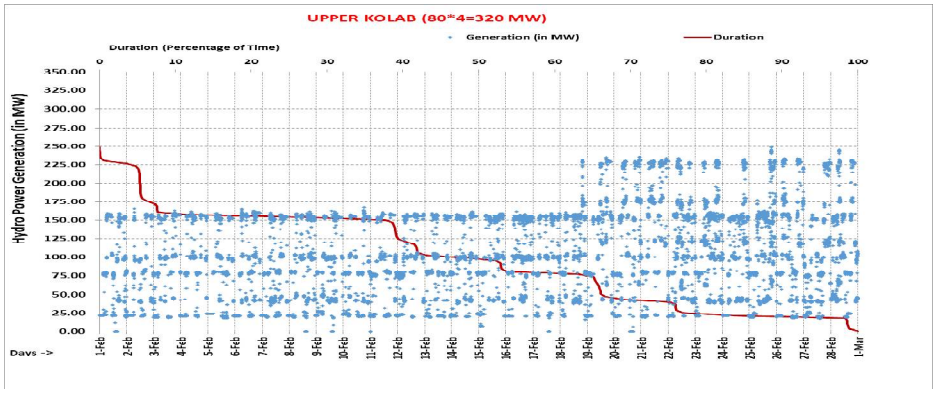
Unit No	Date of Outage	Reason
U – 1(60 MW)	05.08.16	R & M Work
U – 3 (60 MW)	12.10.17(17:30)	R & M Work
U – 2(60 MW)	20.11.17	R & M Work

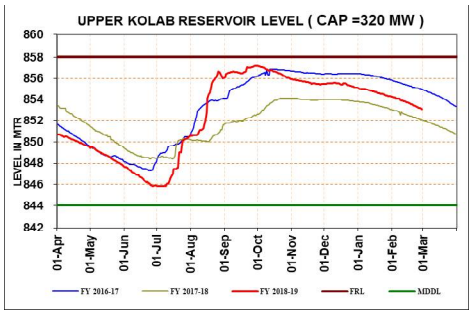

RENGALI(50*5=250 MW)
Generation (In MW)
Duration
Duration (Percentage of Time)
Hydro Power Generation (In MW)
Days ->

RENGALI RESERVOIR LEVEL (CAP= 250 MW)
LEVEL IN MTR
FY 2016-17
FY 2017-18
FY 2018-19
FRL
MDDL

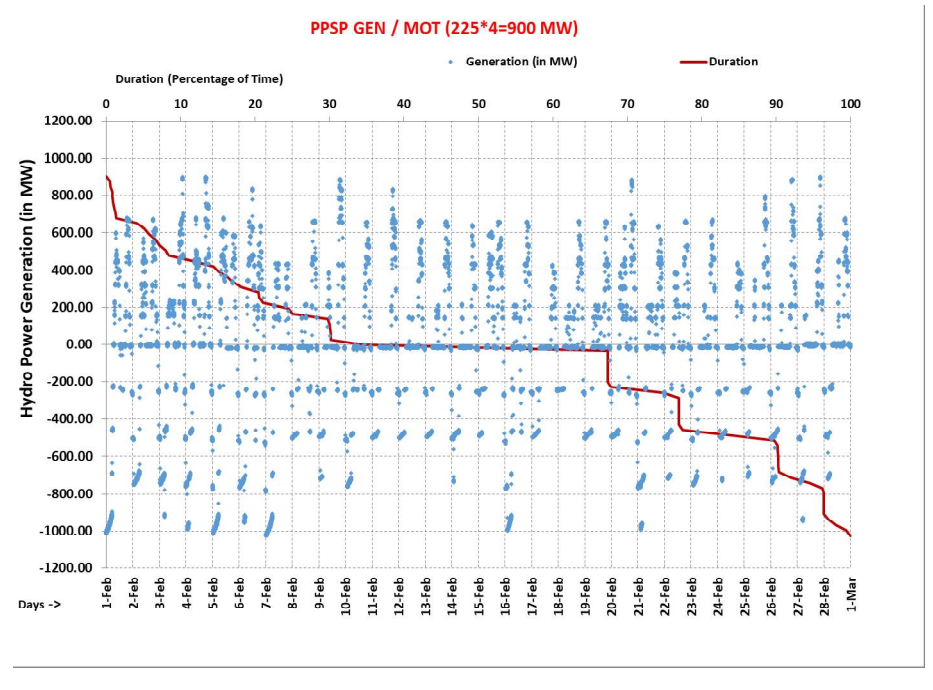

INDRAVATI GEN (150*4=600 MW)
Generation (In MW)
Duration
Duration (Percentage of Time)
Hydro Power Generation (In MW)
Days ->


INDRAVATI RESERVOIR LEVEL (CAP = 600 MW)
LEVEL IN MTR
FY 2016-17
FY 2017-18
FY 2018-19
FRL
MDDL





Unit No	Date of Outage	Reason
U – 4 (80 MW)	01.02.2019	Repair of MIV & Draft Tube Gate leakage



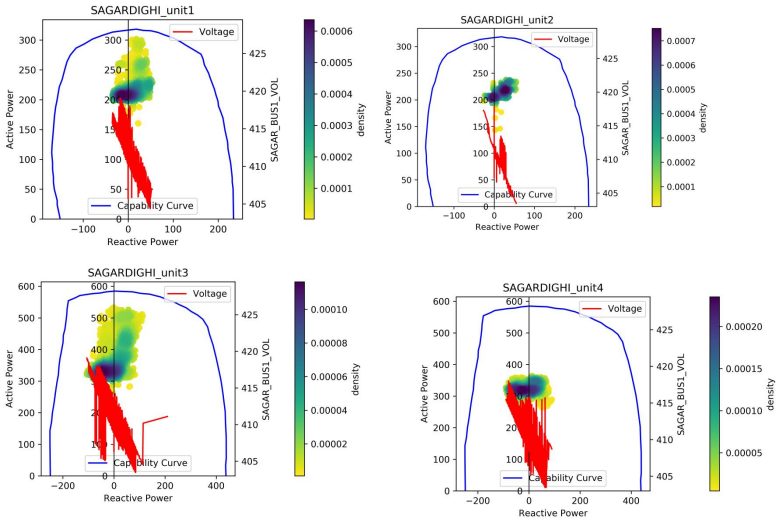
Reactive power performances of various units in the month of February, 2019

- Reactive power injection/drawl and terminal bus voltage are compared for various generating units in ER.
  - Scatter plot of active power along with capability and voltage is shown. Indicating operating points inside the capability region at rated hydrogen pressure.
    - Colour code is used to highlight intensity of number operating point in the operating plane
    - Trend of voltage is included
    - Margin can be seen from the Plots

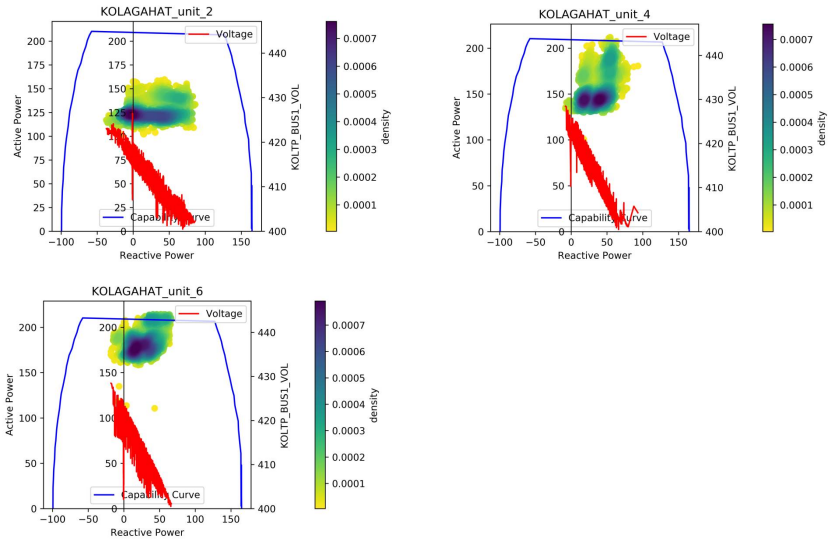
Performance of units in South Bengal in the month of January, 2019

- In the month of Feb, 2019, voltage at Jeerat and Subhasgram was Higher than nominal value (400 kV) for considerable amount of time. MVAr injection/drawl by nearby units is plotted along with their bus voltage
  - ➢ MVAr absorption of all units of Sagardighi , Kolaghat, Bakreswar, Buge Bude in south Bengal were not fully satisfactory during high voltage condition.

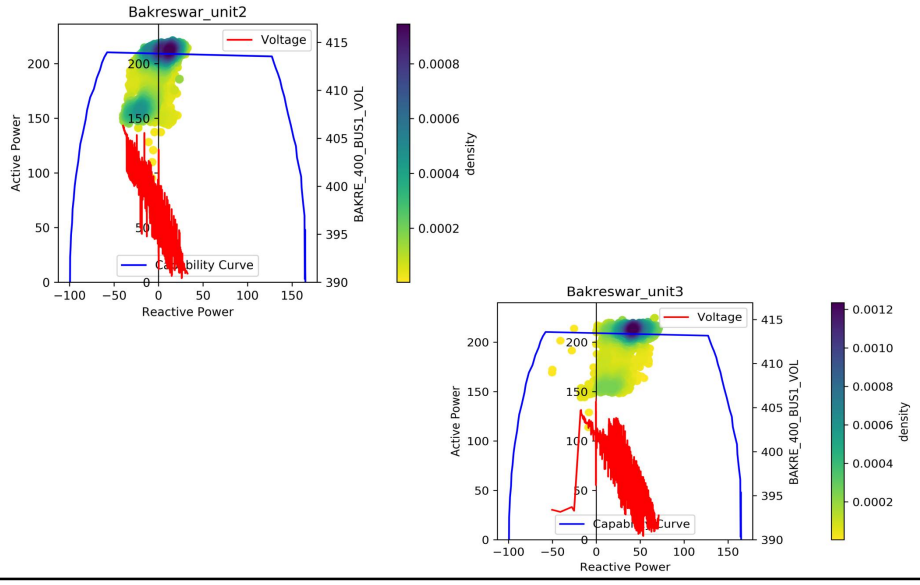
Sagardighi units (2 x 300 MW + 2 x 500 MW) operating points along with 400 kV bus voltage at Sagardighi



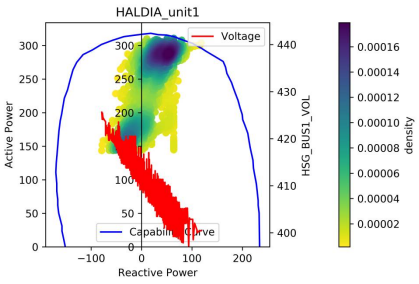
KTPP units (6 x 210 MW) operating points along with 400 kV bus voltage at KTPP

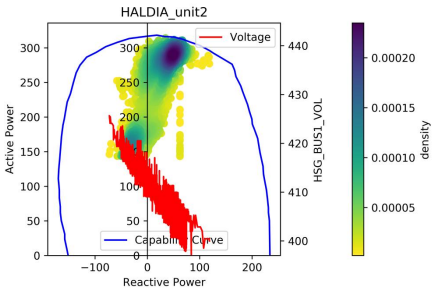


Bakreswar units (5 x 210 MW) operating points along with 400 kV bus voltage at Bakreswar

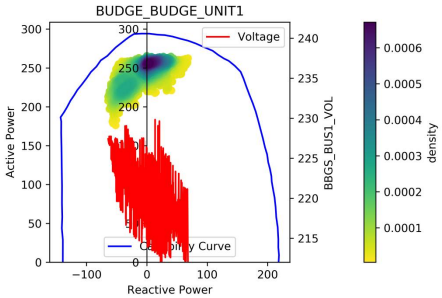


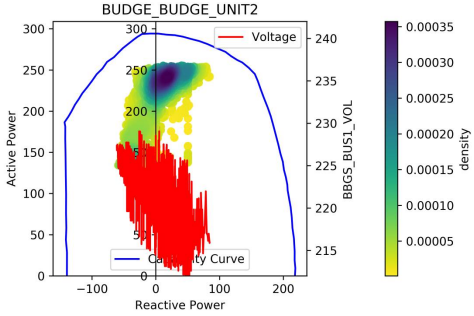
HEL units (2 x 300 MW) Operating points along with 400 kV bus voltage at HEL



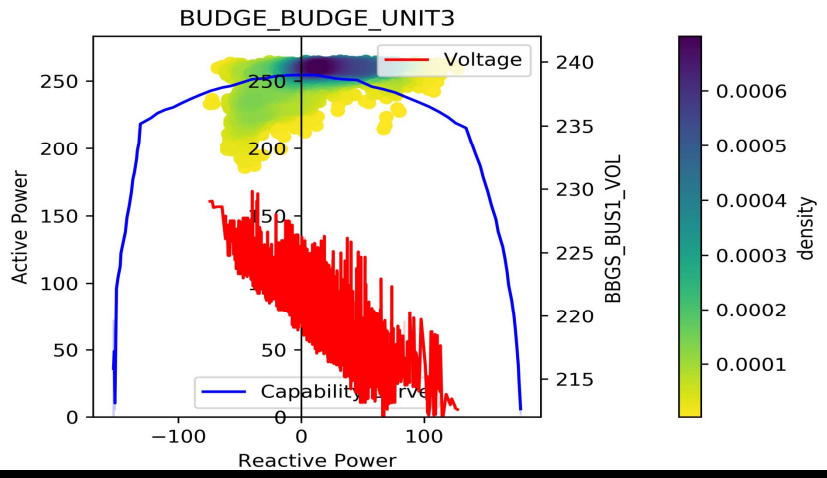


Budge Budge units (3 x 250 MW) operating points along with 220 kV bus voltage at Budge Budge





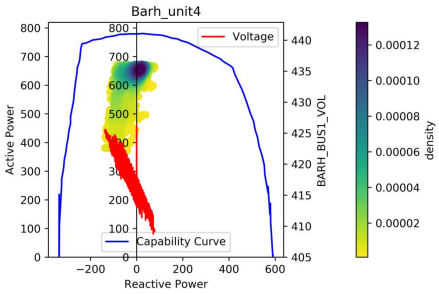
Budge Budge units (3 x 250 MW) operating points along with 220 kV bus voltage at Budge Budge

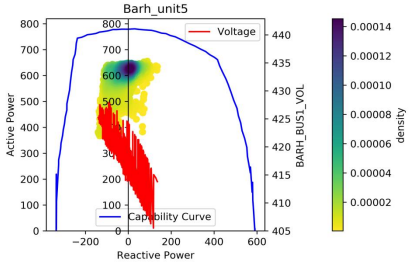


Capability curve corresponds to 3 Bar H2 pressure but at 4 Bar H2 pressure it would increase both in the upper and right hand side . Machine run beyond rated MW capacity encroachment into RGMO margin

- In the month of Feb, 2019, voltage at Patna and Barh was Higher than nominal value (400 kV) for considerable amount of time. MVAr injection/drawl by Barh units is plotted along with their bus voltage
  - MVAr absorption of all units of Barh were not fully satisfactory during high voltage condition.

Barh units (2 x 660 MW) operating points along with 400 kV bus voltage at Barh





Eastern Regional Power Committee, Kolkata

Minutes of Special Meeting on Power support at Manique GSS from DVC and at Kendposi GSS from OPTCL held at ERLDC, Kolkata on 1st March, 2019 (Friday) at 15: 00 hrs

OPTCL, SLDC Odisha, JUSNL and SLDC DVC attended the meeting through video conference.

At the start of the meeting, ERPC explained that in 154th OCC Meeting held on 21st February 2019, JUSNL informed that they needed around 35 MW power from Manique (DVC) and 40 MW power from Joda (OPTCL) S/s during the shutdown of 132kV Ramchandrapur-Adityapur D/C line for 31 days. OCC advised Member Secretary, ERPC to convene a special meeting at ERPC Secretariat to discuss the issue with JUSNL, DVC, OPTCL, ERPC and ERLDC to arrive at an acceptable solution. In line with OCC decision, this meeting had been called.

- OPTCL informed that 220/132kV ATRs at Joda are quite old and they are planning to augment one 100MVA 220/132kV ATR with 160 MVA. Power could be extended to JUSNL only after completion of the augmentation of ATR.
- OPTCL added that they are ready to take shutdown of one 100MVA 220/132kV ATR at Joda from next day to start the augmentation work and they needed 35 days to complete the work.
- DVC informed that unit #7 of Chandrapura TPS is under maintenance which would be in service from 20th March 2019 tentatively. DVC added that after bringing the unit #7 of Chandrapura into service they can give 35 MW during off peak and 25 MW during peak hours at Manique subjected to availability of unit #3 of Bokaro. DVC explained that at present unit #3 of Bokaro is in service but availability of the unit is uncertain.
- After detailed deliberation, the following were decided:
    1. OPTCL shall take shutdown of one 100MVA 220/132kV ATR at Joda from 2nd March 2019 to start the augmentation work
    2. After completion of augmentation of 220/132kV ATR at Joda, JUSNL shall avail the shutdown of 132kV Ramchandrapur-Adityapur D/C line tentatively from 6th April 2019.
    3. OPTCL shall provide additional 40 MW power from Joda (OPTCL) to fed Kendiposi loads during the shutdown period of 132kV Ramchandrapur-Adityapur D/C line
    4. DVC shall provide power support of 35 MW during off peak and 25 MW during peak hours at Manique subjected to availability of unit #3 of Bokaro during the shutdown period of 132kV Ramchandrapur-Adityapur D/C line

- OPTCL added that during shutdown of one 100MVA, 220/132kV ATR at Joda from 2nd March 2019, they can only give 20 MW power to Kendiposi during off peak hours and they cannot give any power during peak hours due to significant load growth in Joda area.
- Jharkhand agreed and requested to keep the 220kV Joda-Kendiposi line as idle charged condition so that they can draw railway power in case of any emergency.
- Odisha agreed but requested Jharkhand to avoid power drawal during peak hours.
- Jharkhand assured that they would draw power only during emergency after taking consent from OPTCL.
- It was opined that most of the JUSNL loads would be met by 220kV Chandil S/s during shutdown of 132kV Ramchandrapur-Adityapur D/C line. Jharkhand was advised to maintain the reliability of the 220kV Chandil S/s and ensure healthiness of the protection system at Chandil S/s.

****

Eastern Regional Power Committee, Kolkata

Minutes of SPS Review Meeting held at 15:00hrs on 8th March 2019 at ERPC, Kolkata

List of participants is at **Annexure-A.**

Member Secretary, ERPC chaired the meeting and he welcomed all the participants in the meeting.He informed that in 154th OCC Meeting held on 21st February 2019, OCC decided that a committee with members from Powergrid, Teesta-III, Teesta V, Dikchu, Dansenergy, Chuzachen, ERLDC and ERPC would study the requirement of SPS for safe evacuation of Sikkim hydro power and place the report in next OCC Meeting. He added that Powergrid has requested for shutdown of 400 KV Rangpo-Binaguri-D/C (Twin Moose) for conductor replacement work.

Committee members opined that no SPS is required for evacuation of Sikkim hydro power after completion of reconductoring work of 400 KV Rangpo-Binaguri-D/C (Twin Moose) with Twin HTLS conductor. However, SPS is required during the reconductoring of work of 400 KV Rangpo-Binaguri-D/Clinefor safe evacuation of Sikkim hydro power.

Teesta-III, Dikchu, Dansenergy and Chuzachen requested to complete the reconductoring work by April 2019 so that they could generate up to full capacity during maximum water availability from May 2019.

After detailed deliberation, Committee decided to allow the shutdown of 400 KV Rangpo-Binaguri-D/C (Twin Moose)line for the reconductoring work as per the following schedule:

- Powergrid shall avail the shutdown of both the circuits of 400 KV Rangpo-Binaguri-D/C (Twin Moose) line at the earliest to start the reconductoring work and complete the reconductring work of both the circuits in all the critical locations by 31st March 2019.
- In case of any severe contingency in healthy transmission network (400kV Rangpo-Kishanganj-Teesta III and 400kV Teesta-III-Dikchu-Rangpo line), Powergrid shall restore one circuit of 400 KV Rangpo-Binaguri-D/C line within 24 hours.
- From 1st April 2019, Powergrid shall carry out the reconductoring work in one circuit at a time. Other circuit would be under shutdown for the safety purpose. In case of tripping of 400kV Rangpo-Kishanganj and 400kV Teesta III- Kishanganj line Powergrid shall restore one circuit of 400 KV Rangpo-Binaguri-D/C line immediately.
- Powergridwill submit the detail work plan program along with a bar chart to ERPC and ERLDC.
- Powergridshall complete the reconductoring work of 400 KV Rangpo-Binaguri-D/C line by 9th May 2019.

Teesta III informed that cables have been used in some portion of 400kV Teesta III-Kishanganj line which would limit the total power flow in the line to 2000 A.

After detailed deliberation, Committee decided to implement the following SPS scheme during the shutdown of 400 KV Rangpo-Binaguri-D/C line for safe evacuation of evacuation of Sikkim hydro power:

- One unit of Teesta-III, Teesta V, Dikchu, Jorethang, Chujachen and Tashiding shall be tripped, in case of tripping of 400kV Teesta 3 – Kishanganj line.
- Two units of Teesta-III and one unit each at Teesta V, Dikchu, Jorethang, Chujachen and Tashiding shall be tripped, in case of tripping of 400kV Rangpo – Kishanganj line

Powergrid was advised to implement the SPS scheme within 15 days.

It was decided to review the work progress on reconductoring work of 400 KV Rangpo-Binaguri-D/C line and performance of SPS in monthly OCC Meetings.

Meeting ended with vote of thanks to the chair.

****

BRBCL

Annexure-B10.1

ERPC: KOLKATA

Minutes of the Special Meeting on issues related to COD of Unit#3 of Nabinagar TPP of BRBCL held at ERPC, Kolkata on 11.03.2019 at 11:00 Hrs.

Member Secretary, ERPC chaired the meeting and welcomed all the participants to the meeting. He informed that BRBCL vide letter dated 20th February 2019 had declared commercial operation of Unit#3(250 MW) of Nabinagar TPP(4*250 MW) of BRBCL w.e.f. 14:00 hrs of 20.02.2019. He also informed that the letter in this respect was received by ERPC secretariat in the evening of 22.02.2019. Member Secretary, ERPC also informed that a number of letters has been received from Railways regarding non-acceptance of the COD of the Unit#3 of Nabinagar TPP on the plea of noncompliance with the requirement of CERC regulations. In the letter, Railways have pointed out that BRBCL has declared commercial operation without giving any information on commissioning of auxiliaries and balance of the plant.

CEO, BRBCL clarified that a certificate as per CERC(IEGC)(4th Amendment) Regulation, 2016 have been issued by BRBCL wherein the readiness of the plant equipment and auxiliary systems including balance of plant such as Fuel Oil system, Coal Handling plant, DM plant, Pre-treatment plant, Fire fighting system, Ash Disposal system and any other site specific system have been commissioned. It has also been certified that the systems are capable of full load operation of the unit of the generating station on sustained basis. He also submitted that during the last few days the unit has been demonstrating in full capacity on sustained basis by selling Railways unscheduled power through IEX. Further he informed that the trial operation of the unit was conducted with advance notice to all the beneficiaries including ERLDC. In fact representative of Railways was also present during the demonstration of the successful trial operation.

In the meeting Railways observed that the issue in question is not full load operation demonstration for few days but "sustainability" which is not possible in absence of full coal handling capacity. Further Railways submitted that the Coal Handling plant and DM plant were not fully commissioned to cater to the full load on the sustained basis and each rake is taking approximately 17 hours to unload. Railways also pointed out that no FSA has been signed for Unit#3 and coal allocated for Unit#1 and #2 is being used for unit#3. Railways requested that DC of the Unit should not be accepted before coal for Unit#3 is received.

BRBCL denied all the above observations of Railways and stated that the very fact of sustained full capacity demonstration proves otherwise.

ERLDC informed that it has issued a certificate on the completion of Trial run operation of generating station vide letter dated 11.02.2019. It has been certified by ERLDC that Unit#3 (250 MW) of Nabinagar TPP (4*250 MW) of BRBCL has successfully completed the trial run operation.

After detailed deliberation the followings emerged:

1. Even though BRBCL declared COD of Unit#3 of Nabinagar TPP w.e.f. 14:00 hrs of 20.02.2019 the same was received to ERPC secretariat in the evening of 22.02.2019 (Friday). The revised share allocation was made effective from 00:00 hrs of 26.02.2019. Member Secretary, ERPC therefore proposed that the COD of the Unit# 3 of Nabinagar TPP should be taken w.e.f. 00:00 hrs of 26.02.2019 instead of 14:00 hrs of 20.02.2019.This proposal of Member Secretary ERPC was accepted by BRBCL, Bihar and ERLDC. However Railways expressed their reservation against acceptance of the COD of the Unit citing incomplete Coal Handling facility and DM plant.
2. Any generation prior to the COD (26.02.2019) shall be treated as infirm generation.
3. The DC of the station including the Unit#3 of Nabinagar TPP was made available by BRBCL w.e.f 00:00 hrs of 28.02.2019. Therefore DC for the unit #3 for 26.02.2019 and 27.02.2019 shall be treated as zero and no fixed charges shall be payable by the beneficiaries on account of this.
4. ERPC secretariat shall issue a letter to CEA confirming the COD of Unit#3 of Nabinagar TPP w.e.f. 00:00 hrs of 26.02.2019 for necessary action at their end.

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

(R. K. Goyal) 11/03/19
GM, REMCL

(C. Sivakumar)
CEO, BRBCL

(R. Bhattacharjee) 11/03/19
RE, BSPHCL

(G. Mitra) 11/03/19
Sr. GM, ERLDC

(J. Bandyopadhyay) 11/03/2019
Member Secretary, ERPC

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

Tel No.:033-24239651, 24239659 FAX No.:033-24239652, 24239653 Web: **www.erpc.gov.in**

No. ERPC/MS/ 2018-19/ 10203 – 204 **Date: 12.03.2019**

To

Chief Engineer,
Fuel Management Division,
Central Electricity Authority,
Sewa Bhavan, R.K. Puram,
New Delhi- 110066

Sub: Confirmation of Commercial Operation date (COD) in respect of Unit # 3 (250 MW) of Nabinagar TPP, BRBCL - regarding

Sir,

Nabinagar Thermal Power Project (4x250) of M/s BRBCL vide letter dated 20.02.2019 had declared their Unit #3 (250 MW) under Commercial Operation (COD) w.e.f. 14.00 hrs of 20.02.2019 and had submitted the certificate in accordance with Regulation 4 (1) (iii) of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (Copy enclosed).

ERLDC vide letter No.ERLDC/Trial run/2019/1 dated 11.02.2019 has ascertained that BRBCL had conducted Trial Operation for COD of Unit #3 from 01:30 hrs of 07.02.2019 to 03:30 hrs of 10.02.2019 (Copy of letter attached).

Further, in the special meeting held at ERPC, Kolkata on 11.03.2019 regarding the issues related to COD of Unit#3, it was accepted by ERPC, ERLDC, BRBCL and Bihar (except Railways) that the COD of Unit#3 would be considered w.e.f 00:00 hrs of 26.02.2019 instead of 20.02.2019. (Copy of MoM enclosed).

Accordingly, the COD of Unit-3 of 250 MW of Nabinagar TPP, BRBCL may accordingly be taken with effect from 00.00 hours of 26.02.2019.

Thanking you,

Yours faithfully,

12/3/19

(J. Bandyopadhyay)
Member Secretary

Copy to: **Chief Executive Officer**, BRBCL 1st Floor,Vidyut Bhavan II , Bailey Road, Patna-800001.

Annexure-B11

SIEMENS

ENERGY MANAGEMENT

To
Eastern Region Power Committee
14, Golf Club Road , Tollygunge
Kolkata-700033

Name: Archik Byabortta
Designation: RC IN EM S ER
(Energy Management – Sales)
Mobile: 8910894204
Email: Archik.byabortta@siemens.com

Kind Attention: Mr J. Bandyopadhyay
Member Secretary

Date: 20/03/2019

Subject: Request for coordination of Maintenance & support (AMC) renewal of PSS®E supplied Licenses through Power grid for state transmission utilities (STU's), State load dispatch center's for Eastern Region.

Reference PGCIL Contract No: NO. CC-CS/357-CC/ITSW-1900/3/G2/CA/4394 DATED 13.8.2012 FOR PROCUREMENT OF UPGRADED VERSION OF POWER SYSTEM ANALYSIS SOFTWARE (PSS/E), IMPARTING EXPERT PRODUCT TRAININGS AND PROVIDING MAINTENANCE & SUPPORT - MAINTENANCE & SUPPORT RENEWAL & CC-CS/357-CC/ITSW-1900/3/G2/CA/4394/AMEND-1 DATED 30.04.2013.

Dear Sir,

As you are aware, Power grid had done One-time Capacity Building exercise for different stake holders under which 249 no's of PSS®E Licenses were distributed to Power grid, STU's, SLDC's RLDC's, CEA, CERC, SERC etc. in the year 2012 that includes 6 years of maintenance & Support for supplied licenses which has ended on 30th Nov,2018.

In this regard, we would like to request Regional Power Committees (RPC's) to act as an coordinator/aggregator and get the maintenance & support renewed of all the existing supplied licenses for the entities falling under your jurisdiction so that all these licenses can be upgraded with new features and we can continue to support seamlessly **the way they have been doing it on annual basis since Dec, 2012**

With ERPC playing the role of a coordinator/aggregator, following challenges can be avoided;

- Supporting PGCIL/CEA/NLDC **to have a common platform of PSS®E across all states and seamless integration of network models**. If all stakeholders are not current on M&S then they will not have same version of PSS®E which would **create difficulties to PGCIL/CEA/NLDC to synchronize with other state utilities because of version mismatch issues.**
- STU's and SLDC's would find it **difficult to justify & purchase M&S separately** as original contract was not decided by them.
- M&S price approval at each state (even for the interested states) would be a long-time process.
- **Conducting PSS®E UGM every year would be difficult** as only few entities would be current on M&S.
- The implementation of a **country wide network model management centrally** (for e.g. Model on Demand (MOD) kind of application) for long term planning across India becomes more challenging if other stakeholders are not current in M&S with the latest version of the software
- **PTI supporting entities by providing free training sessions across all regions (on quarterly basis)** thus supporting them -in the implementation of updates as well as other PSS®E related topics would not be possible if some STU's do not renew the M&S.
- Conducting quarterly webinars to resolve PSS®E specific user issues or highlighting new features would be difficult if some STU's do not renew the M&S

SIEMENS

Role of Maintenance & Support Programme for supplied PSS®E licenses.

The M&S program has its goal to seamless usage of PSS®E at PGCIL and other stakeholders for productive use by all its engineers in more than one hundred different locations spread across the country. Siemens is firmly committed to this and the comprehensive program offered to PGCIL goes well beyond the standard M&S components of software support and product upgrades. It is a comprehensive program intended to address the specific requirements of PGCIL and other stakeholders so that the continuous usage of updated PSS®E is ensured at PGCIL and other stake holders in the country.

Please note Maintenance & support is a full featured programme that provides significant additional value to the end users and majorly include the following inherent benefits which shall be covered as part of these services.

- Free Software subscription: This keeps PSS®E users current with the most up-to-date PSS®E features and functions. With this service PSS®E users automatically get the latest release of PSS®E with all its new features, models, and bug fixes. In addition, to the latest version releases, users who have reported a bug that needs to be fixed can download software patches. All new releases during the maintenance & support (M&S) period, **two new versions are released every year free of cost with enhanced features based on customer feedback.**
- Technical Support: Specific features include **free unlimited 24-hour access to Siemens PTI Support website for 24-hour web-based reporting and case tracking**, 24/7 technical support by expert product engineers with guaranteed response within 24 hours.
- **Direct link to product managers & roadmaps** through access to PSS® Ideas Portal (www.siemens.com/pss-ideas) community for submitting, voting, and commenting on PSS® product ideas.
- Beta test participant: Licensee may be invited to participate in Beta testing of future releases.
- **Free updates and patches to the current and previous versions of the program.**
- Access to the "users-only" area of our World Wide Website where you get details of all the updates of the software and details recently added new models (e.g. renewable) which can be directly downloaded
- **Conducting the Indian Users Group Meetings (UGM)** and address the key topics, issues, performance review and best practice. The following is included.

  Performance Review: This will include a meeting with a senior PSS®E support engineer on site in India. It will be an open forum discussion on the PSS®E product roadmap, and any PSS®E operational topics. Engineers will be able to engage with the PSS®E support expert to get many of their questions and issues resolved instantaneously.

  Best practice Check: This is an appraisal of all aspects of STU's implementation of PSS®E by experienced Siemens technical staff. This program is intended to help utilities establish best-in-class operational procedures and optimal use of PSS®E
- **Free License support even in case of broken dongles**
- A reasonable amount of support in the installation and operation of the program for the current revision and last previous revision of the program. Support requests are accepted via telephone or email or personnel visit

Additional M&S Support: Siemens PTI would also conduct a survey on an all-India basis where every stakeholder would be approached for any support and training needs for PSS®E software. However, Siemens PTI is committed to support the stakeholders as following:

- Siemens PTI to conduct **one basic PSS®E training per quarter in all 4 regions** across the country to cater to the needs of various regions on planning & operational planning studies.
- Siemens PTI to support entities who are currently not using PSS®E by providing the required support to migrate to PSS®E.
- Siemens PTI would also be in touch with Power Grid on a quarterly basis for addressing any issues in PSS®E and provide possible resolutions to the issues

SIEMENS

We would once again request ERPC to lead the M&S Renewal Contract for jurisdiction entities (as per below) and exploit the benefit of bulk pricing discount from Siemens.

Upon the confirmation of ERPC, we would submit a maintenance & support price considering the discount of a bulk order for below 20 no's licenses for next 5 years.

The list of PSS®E Licenses which were distributed in ER States will be as following:

S.No	Entity Name	Number of PSS®E licenses
1	Damodar Valley Corporation	2
2	Damodar Valley Corporation (SLDC)	2
3	Jharkhand State Electricity Board	2
4	Jharkhand State Electricity Board (SLDC)	2
5	Odisha Power Transmission Company Ltd	2
6	Odisha Power Transmission Company Ltd (SLDC)	2
7	West Bengal State Electricity Transmission Company Ltd	2
8	West Bengal State Electricity Transmission Company Ltd (SLDC)	2
9	Bihar State Power Transmission Company Ltd	4
Total: 20 Licenses		

(Name) Brajesh Malviya
(Designation) Regional Head- Sales
Siemens Limited

ANNEXURE-B12

Presentation on

POLLUTION MAPPING WITH REFERENCE TO TRANSMISSION SYSTEM IN EASTERN REGION

Presented by

Dr N Vasudev

Additional Director & Group Head

CPRI

Introduction

- Electrical Insulation is the backbone of modern power system networks
- Increasing demand for electrical energy, necessitates its transmission at extra high voltages
- External insulation of transmission system is generally based upon switching over voltage and in some cases by lighting over voltage

Introduction

- The reliability of power system mainly depends on the pollution performance of insulators
- In recent years, tripping of High Voltage (HV) and Extra High Voltage (EHV) transmission line due to pollution flashover

Introduction

- Sources of pollution include :
  - Marine pollution
  - Industrial pollution
  - Bird droppings
  - Burning of agricultural wastes
  - Vehicular traffic
  - Increased construction activities

Pollution Deposits On Insulator Strings Due To Industrial Emissions

Fig-2: Burning of Agricultural Waste

1-3a: Smoke from Brick Kilns polluting Transmission Line

Fig-5: Deposits On Insulator Surface Due To Bird Droppings

Fig-4: Dust Accumulation On Insulators

- Pollution accumulation on the surface of the insulator is strongly environmental dependent

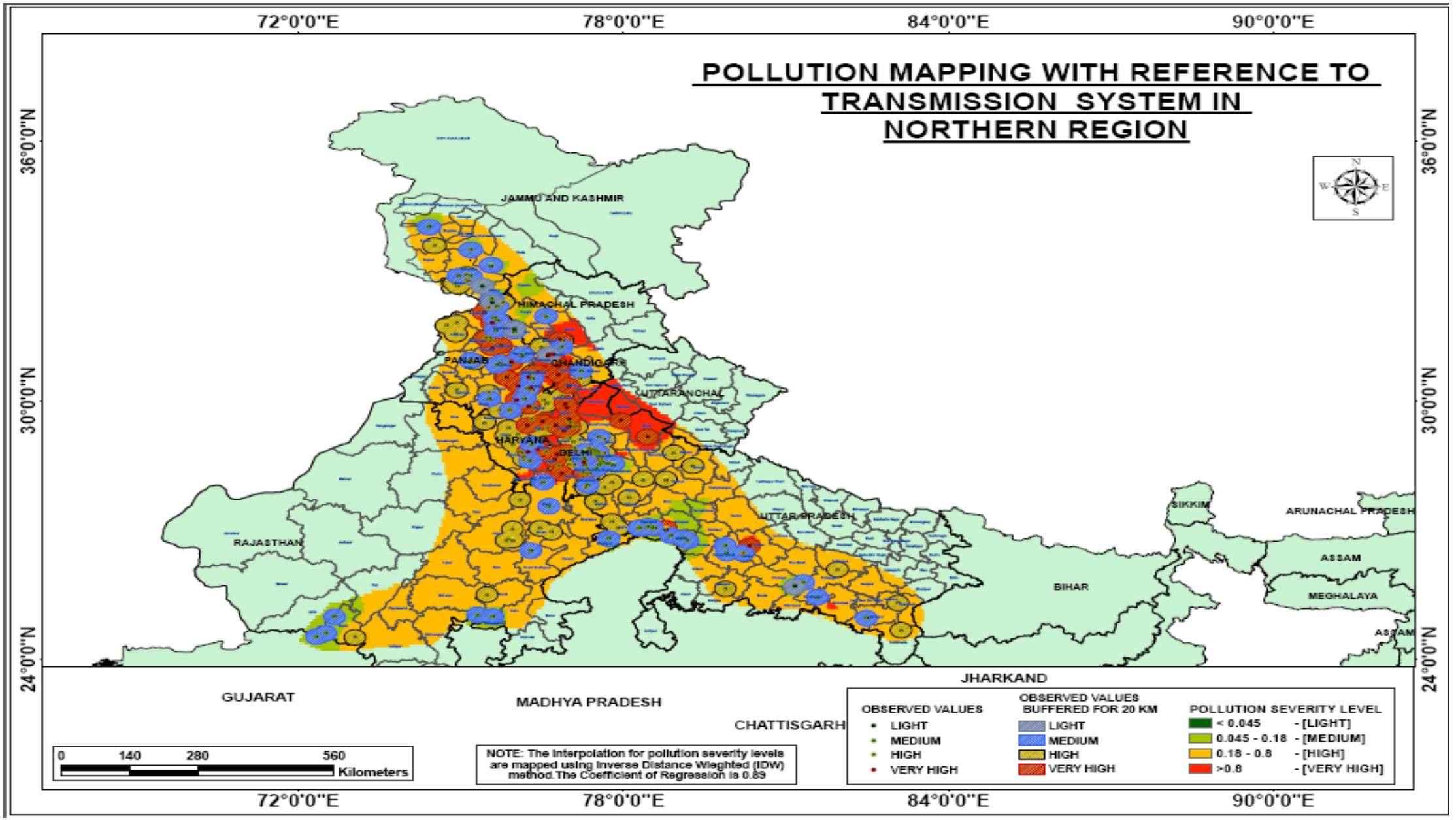
Background

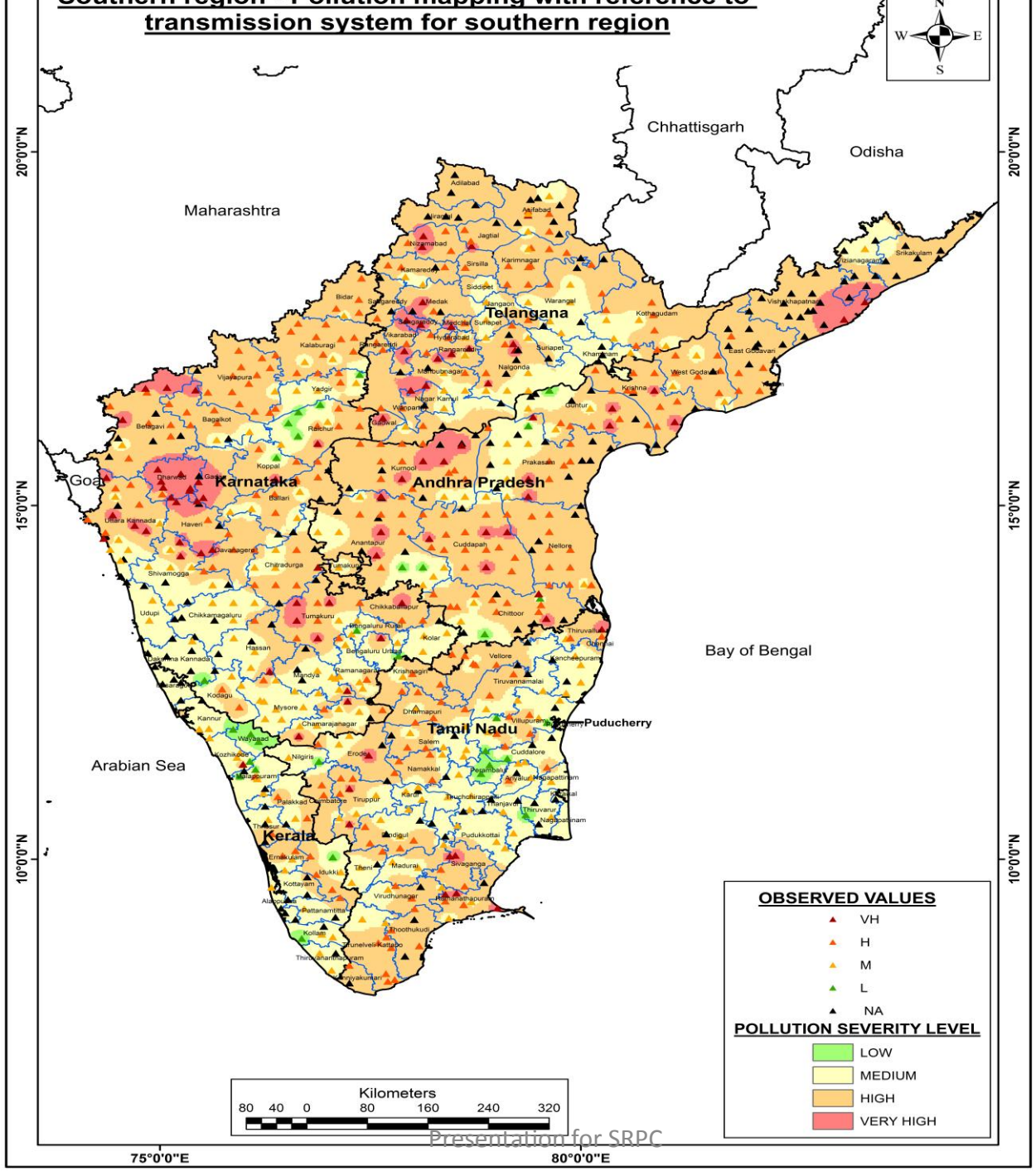
- Pollution flashover has been reported in various countries like the USA, Canada, Saudi Arabia, China and quiet recently in India
- Details of Trippings reported at Northern power corridor due to heavy fog
  - 27th January 2007 – 201 trippings
  - 7th March 2008 & 9th March 2008 – 345 trippings
  - 2nd January 2010 – 238 trippings

  CEA reports 2007 & 2008 suggests the need of Pollution Mapping of India

Background

- A contract agreement for "**Pollution Mapping with reference to Transmission systems in Northern Region**" was made on April, 2011 between CPRI and Power Grid Corporation
- Site Pollution Severity (SPS) measurements near towers carrying high voltage lines, performed chemical analysis on the pollutants, and generated a pollution map for the transmission system in the northern grid
- A brief report (which aids in the proper selection of outdoor insulation for HV and EHV lines) has been submitted by officials of CPRI in August 2015.


POLLUTION MAPPING WITH REFERENCE TO TRANSMISSION SYSTEM IN NORTHERN REGION
72°0'0"E
78°0'0"E
84°0'0"E
90°0'0"E
36°0'0"N
30°0'0"N
24°0'0"N
JAMMU AND KASHMIR
HIMACHAL PRADESH
PANJAB
CHANDIGARH
UTTARANCHAL
HARYANA
DELHI
RAJASTHAN
UTTAR PRADESH
BIHAR
SIKKIM
ARUNACHAL PRADESH
ASSAM
MEGHALAYA
GUJARAT
MADHYA PRADESH
CHATTISGARH
JHARKAND
0 140 280 560
Kilometers
NOTE: The interpolation for pollution severity levels are mapped using Inverse Distance Weighted (IDW) method.The Coefficient of Regression is 0.89
OBSERVED VALUES
LIGHT
MEDIUM
HIGH
VERY HIGH
OBSERVED VALUES BUFFERED FOR 20 KM
LIGHT
MEDIUM
HIGH
VERY HIGH
POLLUTION SEVERITY LEVEL
< 0.045 - [LIGHT]
0.045 - 0.18 - [MEDIUM]
0.18 - 0.8 - [HIGH]
>0.8 - [VERY HIGH]


Southern region - Pollution mapping with reference to transmission system for southern region
Chhattisgarh
Odisha
Maharashtra
Telangana
Karnataka
Andhra Pradesh
Goa
Tamil Nadu
Puducherry
Kerala
Bay of Bengal
Arabian Sea
OBSERVED VALUES
VH
H
M
L
NA
POLLUTION SEVERITY LEVEL
LOW
MEDIUM
HIGH
VERY HIGH
Kilometers
80 40 0 80 160 240 320
75°0'0"E
80°0'0"E
20°0'0"N
15°0'0"N
10°0'0"N

Significance

- Eastern Region of India covers the states of Bihar, Jharkhand, Sikkim, West Bengal and Orissa
- From the knowledge of earlier technical committee's and reports, it is clear that the design and selection of insulation should also be based on the pollution level prevailing on a particular site

Significance

- Detailed deliberation regarding the furnished details of coordinates from utilities and a clear map was spelt for interaction with the states
- A contract agreement for “Pollution Mapping with reference to Transmission systems in Eastern Region” was made between CPRI, Bangalore and Powergrid corporation of India Limited, Gurgaon on February 2014 with Contract No CC-CS/479-ER1/MISC-2482/3/G4/CA/4886 dated on 26.02.2014

Zones considered for Pollution Mapping in Eastern Region

Sl. No.	State Name	Number of Sites
01	Bihar	120
02	Jharkhand	83
03	Odisha	159
04	Sikkim	18
05	West Bengal	111

Details of Available Data & data not received

States	Total no of locations	Available Results	No Results
		ESDD	ESDD
West Bengal	111	101	10
Jharkhand	83	79	04
Odisha	159	155	04
Sikkim	18	18	0
Bihar	120	69	51
Total	**491**	**422**	**69**

Details of Training Programs Conducted by CPRI

Sl.No	Locations of Eastern Region	Date
1	Durgapur	19-20 May 2014
2	Ranchi	21-22 May 2014
3	Jamshedpur	23-24 May 2014
4	Siluguri	26-27 May 2014
5	Subashgram	29-30 May 2014
6	Patna	19-20 May 2014
7	Muzafferpur	21-22 May 2014
8	Bhuvaneshwar	20-21 May 2014
9	Rurkela	23-24 May 2014
10	Jeypore	26-27 May 2014

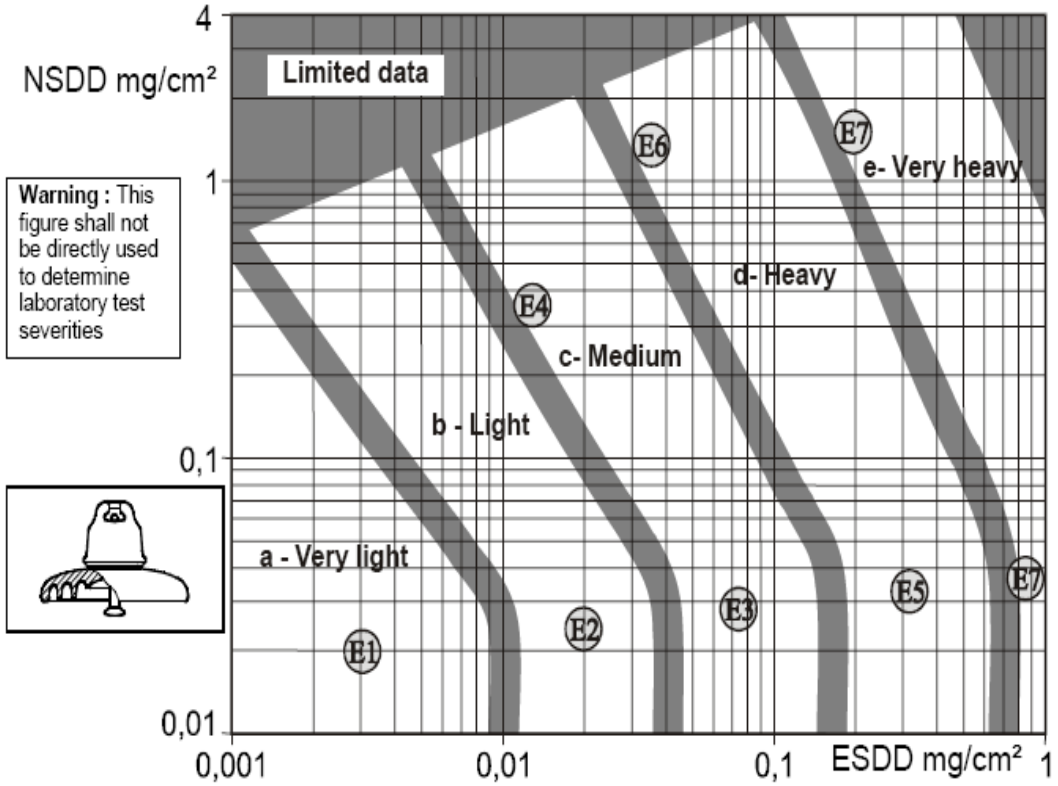
Photographs of Training Program conducted

Installation of dummy insulators at site

Pollution Measurement Procedure

- A dummy insulator string (comprising of 10 number of cap-and-pin insulators) were installed at testing station
- The selection of sites for the pollution measurements was brought out jointly on a mutual concern between CPRI and PGCIL
- Grids of 25kmx25km were formed across the entire geographic area of Eastern Region of India and towers closer to the center, to the extent possible, were selected for installation of dummy insulator
- Considering seasonal monsoon variations, Site Pollution Severity (SPS) measurements were carried out periodically at each testing site every four months for two years

Relation between ESDD/NSDD and SPS for the reference cap & pin insulator as per IEC 60815



ESDD – Equivalent Salt Deposit Density
NSDD – Non Soluble Deposit Density

Recommended specific creepage distance for various SPS level

Pollution level	Minimum Nominal Specific Creepage Distance (mm/kV)
Very Light	12
Light	16
Medium	20
High	25
Very High	31

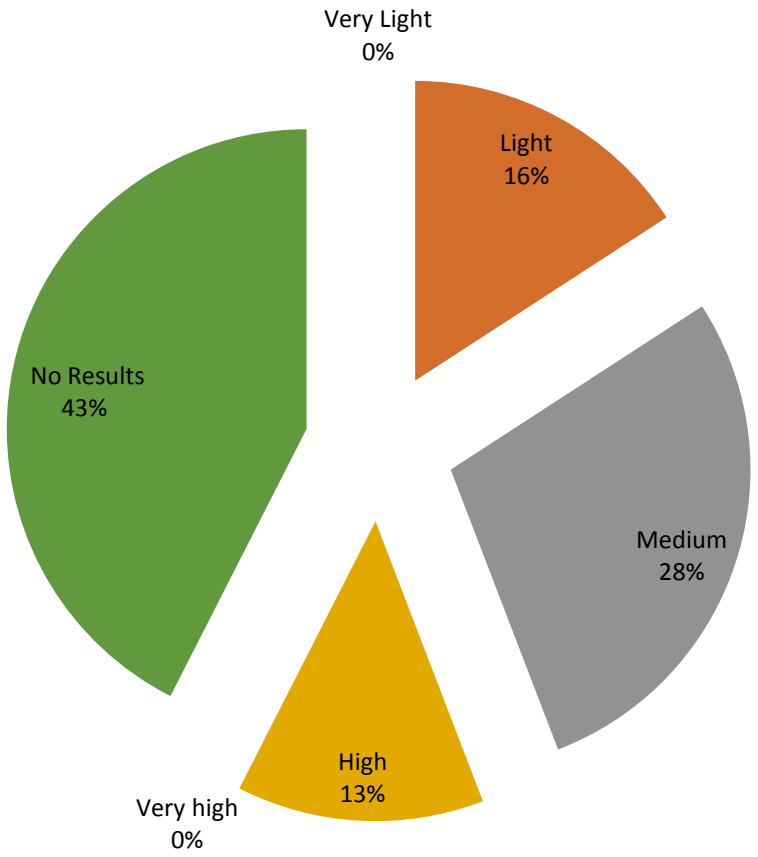
Methodology Adopted for Pollution Measurement

- For each identified site, the utilities were asked to send six set of measurements
- Each measurement possesses data's reflecting the conductivity of the pollutant (Top and Bottom surface of the insulator), NSDD and profile details of the dummy insulator
- Additional details of the testing site such as volume & temperature of water, conductivity of demineralized water, nature of the pollutant and site GPS co-ordinates were provided by the utility personnel
- Based on the data set received, ESDD calculations were made for corresponding site. Maximum of average ESDD value among six measurements was considered as the ESDD prevailing in the given site
- The corresponding NSDD pertaining to the maximum value of ESDD were utilized to arrive at the SPS classification

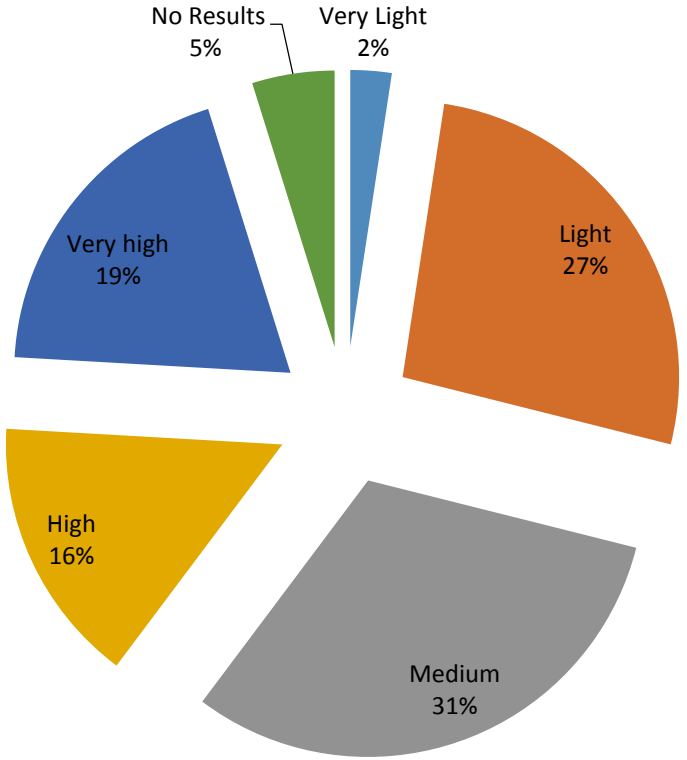
Methodology Adopted for Pollution Measurement

- It is to be noted that, the pollution measurements were taken on the surface of the dummy insulators. There is also a possibility that the SPS class reported on-site may increase, owing to increased number of pollution sources in future
- Considering the above observations, a pollution severity class one step higher than the reported site pollution severity is represented in the pollution mapping
- An interpolation map is developed portraying the pollution level in between the measured locations
- Chemical analysis and Layer conductivity measurement were carried out in selected locations to analyze the influence of contamination deposited on the insulator surface

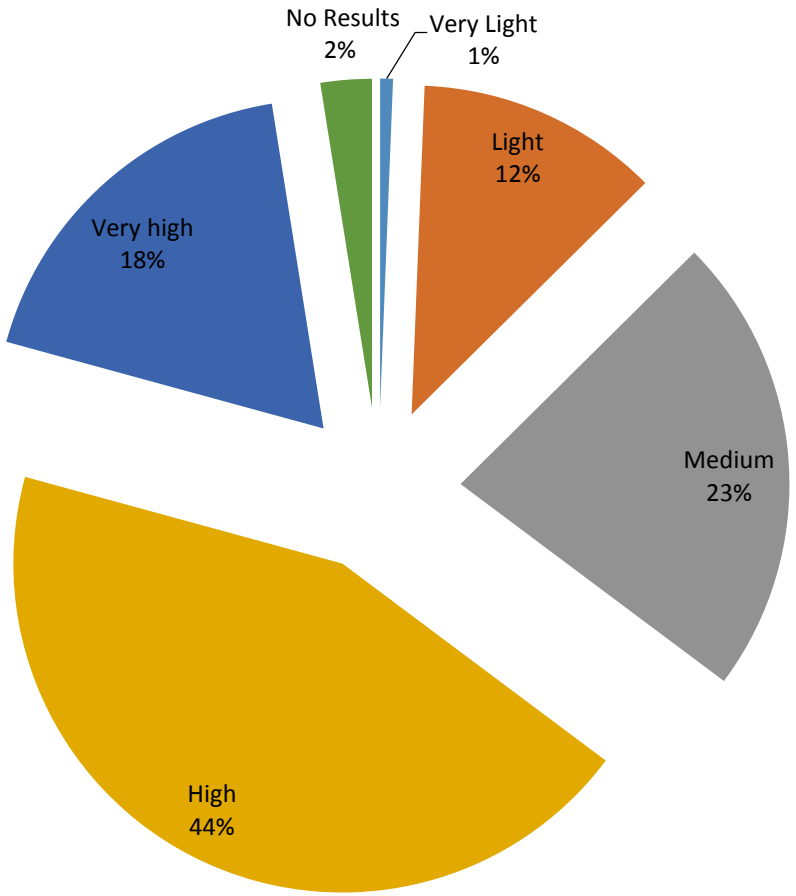
SPS Classification (considering Design & energization factor) - Bihar



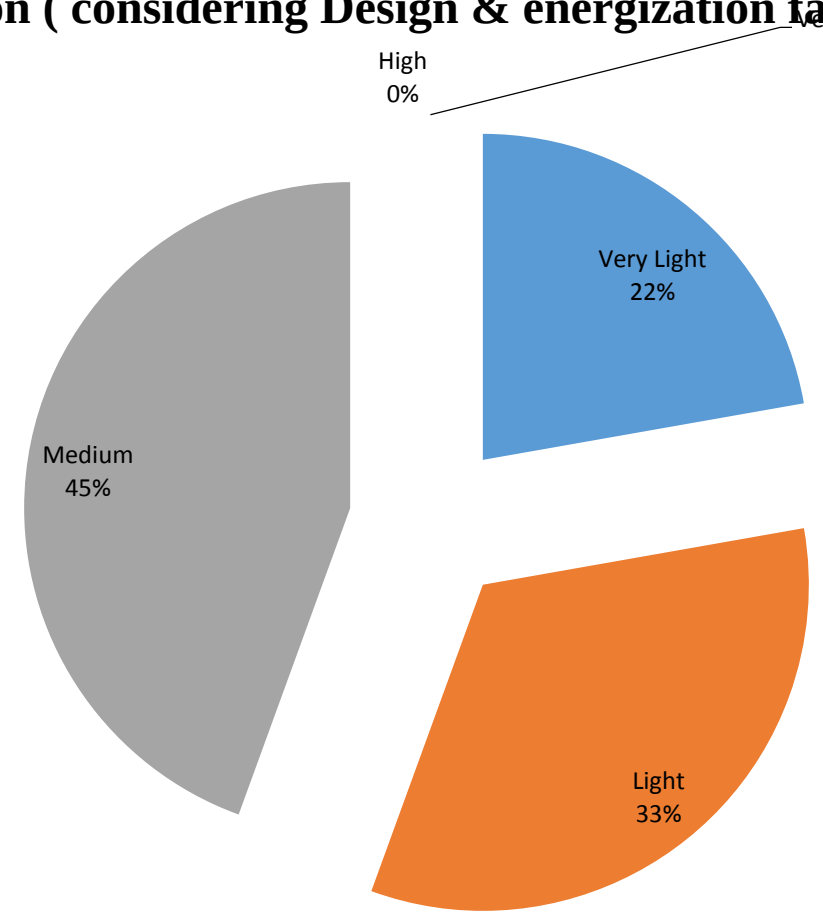
SPS Classification (considering Design & energization factor) - Jharkhand



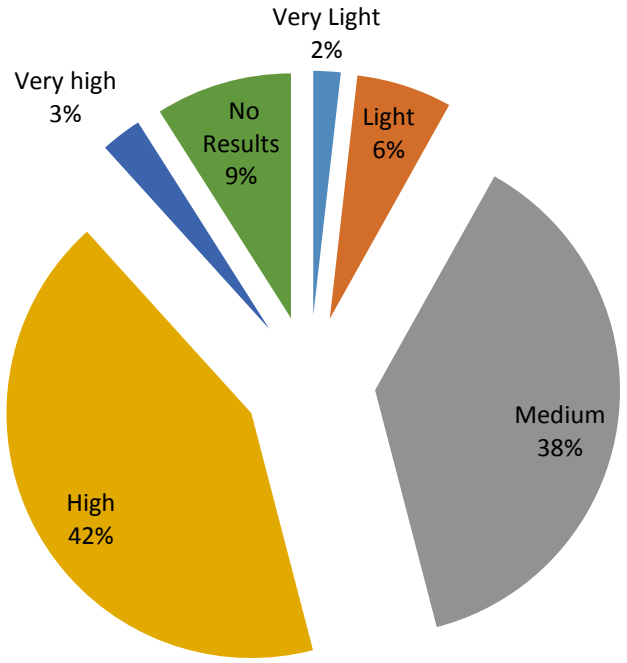
SPS Classification (considering Design & energization factor) - odisha



SPS Classification (considering Design & energization factor) - Sikkim



SPS Classification (considering Design & energization factor) - West Bengal

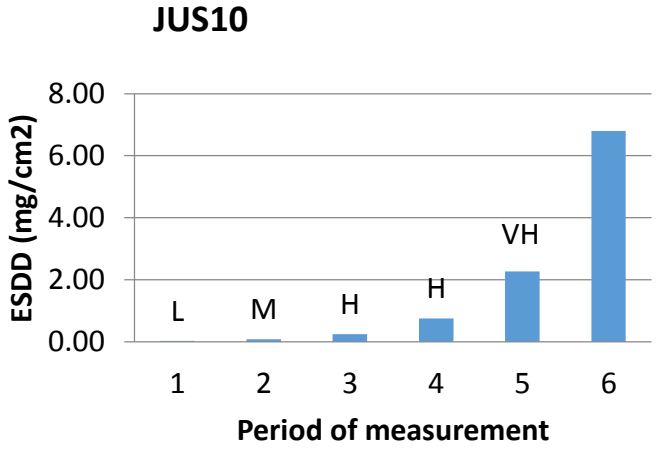


Seasonal Variation of Pollution Level

- Changes in the measured SPS class over a period of two years for selected location is depicted below. From the figure, it is evident that SPS level varies periodically

Transmission Line	Voltage	Tower Location Number	Unique ID
220KV D/C LOHARDAGA-LATEHAR	220kV	66	JUS10

Measurement No.	ESDD	Severity
1	0.027975	L
2	0.083924	M
3	0.251771	H
4	0.7553125	H
5	2.2659374	VH
6	6.7978121	VH



Chemical Analysis on NSDD congregated

Chemical Analysis Results

Sl. No.	Sample details		Chemical composition (Oxide %)								
	HV LAB	MTD	Na_2O	MgO	Al_2O_3	SiO_2	K_2O	CaO	TiO_2	Fe_2O_3	ZnO
1	132KV KHURDA PURI LINE	S0324	-	2.72	15.58	55.70	2.32	8.50	-	11.41	3.76
2	132/33 KV GRID SUBSTATION PATNAGARH	S0325	0.48	2.36	14.47	59.38	2.39	5.73	1.02	11.73	2.44
3	132/33 KV GRID SUBSTATION BASTA	S0326	0.36	2.20	15.93	58.06	2.37	10.71	1.19	9.18	-
4	400/220KV GRID S/S MENDHASAL	S0327	0.41	2.45	16.02	62.75	2.54	3.85	0.56	11.42	-
5	4132/33KV GRID-SUB STATION Karanjia	S0328	-	6.90	29.42	57.15	0.39	0.27	1.45	3.34	1.08
6	400KV BIHARSHARIF-MUZAFFARPUR	S0329	-	2.68	16.20	59.60	3.83	9.16	1.02	7.51	-

Chemical Analysis on NSDD congregated

Sl. No.	Sample details		Chemical composition (Oxide %)								
	HV LAB	MTD	Na_2O	MgO	Al_2O_3	SiO_2	K_2O	CaO	TiO_2	Fe_2O_3	ZnO
7	800KN HVDC-SAHARA-GOPALGUNG TL	S0330	0.72	3.01	15.75	53.48	4.10	14.53	0.65	7.66	-
8	400KV BIHARSHARIF-MUZAFFARPUR	S0331	0.68	3.20	17.54	56.43	4.35	9.17	0.64	7.99	-
9	800KV HVDC SAHARA-GOPALGUNJ TL	S0332	0.70	2.87	14.10	48.30	3.25	23.40	0.22	6.06	1.10
10	132KV BEHRAMPORE-GOKARNA D/C LINE	S0333	1.05	3.44	15.63	57.13	3.52	6.11	1.11	10.08	1.60
11	33KV JALANGI SUBSTATION	S0334	-	1.46	15.05	59.21	2.85	8.56	-	12.87	-
12	132KV GOKARNA-KULI & 132KV KULI-SAINTHIA	S0335	-	2.90	15.99	62.66	2.67	6.21	-	9.57	-

Chemical Analysis on NSDD congregated

Chemical Analysis Results –

Sl. No.	Sample details		Chemical composition (Oxide %)								
	HV LAB	MTD	Na_2O	MgO	Al_2O_3	SiO_2	K_2O	CaO	TiO_2	Fe_2O_3	ZnO
13	1132/33KV GRID S/S, KENDRAPARA	S0336	-	2.03	16.13	61.50	2.70	5.51	1.15	10.98	-
14	1TLSS, SAMBALPUR GRID SS	S0337	0.98	2.62	15.40	57.58	2.56	4.15	0.75	8.87	7.10
15	220KVGRID SUB-STATION, THERUBALI	S0338	-	-	18.09	54.37	-	6.06	-	11.91	9.57
16	32/33KV GRID-SUB STATION, KALARANGI	S0339	-	-	21.24	59.44	3.0	1.67	-	14.65	-
17	132/33KV GRID SUB-STATION, PATTAMUNDAI	S0340	-	2.53	14.01	56.06	2.50	12.46	-	10.85	1.60
18	132/33KV GRID S/S JAIPUR ROAD	S0341	-	2.86	15.94	54.53	2.33	6.83	1.21	11.91	5.12
19	220/132/33KV GRID S/S , DUBURI	S0342	0.45	2.61	16.47	55.78	2.22	6.21	1.69	10.11	4.46

Chemical Analysis on NSDD congregated

Chemical Analysis Results

20	132KV BEMANJPAL LINE	S0343	0.85	1.91	15.84	57.47	2.23	11.07	1.33	9.31	-
21	132KV AMTALA-NAZIRPUR CIRCUIT-I & II	S0344	-	2.62	15.42	62.25	2.52	4.21	1.14	11.83	-
22	1220KV D/C LOHARDAGA-LATEHAR	S0345	0.33	8.29	26.43	55.50	0.35	0.76	1.23	4.62	2.50
23	220KV D/C LOHARDAGA-LATEHAR	S0346	0.36	2.10	18.07	62.74	3.09	1.60	1.37	10.67	-
24	132KV HATIA PTPS	S0347	0.34	1.28	19.62	61.51	2.69	1.21	1.23	11.55	0.57
25	132KV LINE BAY NO. 01(132/33KV GSS SIMDEGA)	S0348	-	1.51	17.41	62.83	3.72	1.99	1.15	11.39	-
26	132KV S/C KAMDARA-GUMLA	S0349	-	1.89	18.43	63.23	3.24	1.73	0.88	10.60	-
27	132KV S/C KAMDARA-GUMLA	S0350	-	2.09	17.57	59.71	2.92	1.77	1.17	11.33	3.44
28	NIMAPARA GRID SUBSTATION	S0351	-	2.40	15.83	64.73	3.17	4.19	0.67	9.01	-

Discussions on Chemical Analysis of pollutants

- Based on the observations from chemical analysis, the content of Silica (Silicon Oxide) and Alumina (Aluminium Oxide) were predominantly present in most parts. The presence of silica and alumina is an outcome of dust collected on the insulator.

- Substantial amounts of Iron oxide and Calcium oxide were also present. Small quantities of oxides of Sodium, Magnesium, Potassium, Titanium and Zinc were observed in the pollutant samples.

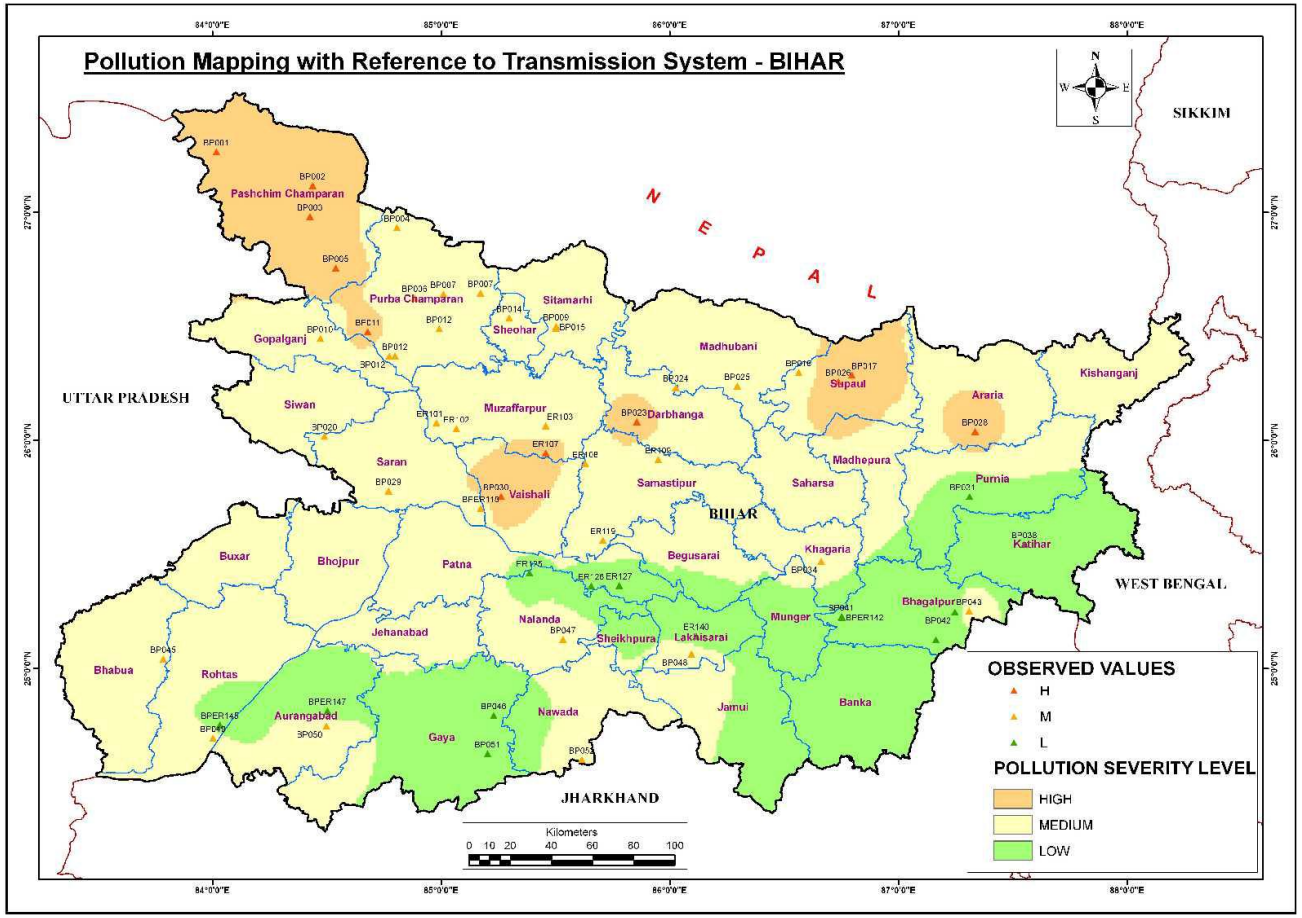
- In few pollutant samples, chlorine, oxides of sulphur, nickel oxide, phosphorous and copper presence was observed.

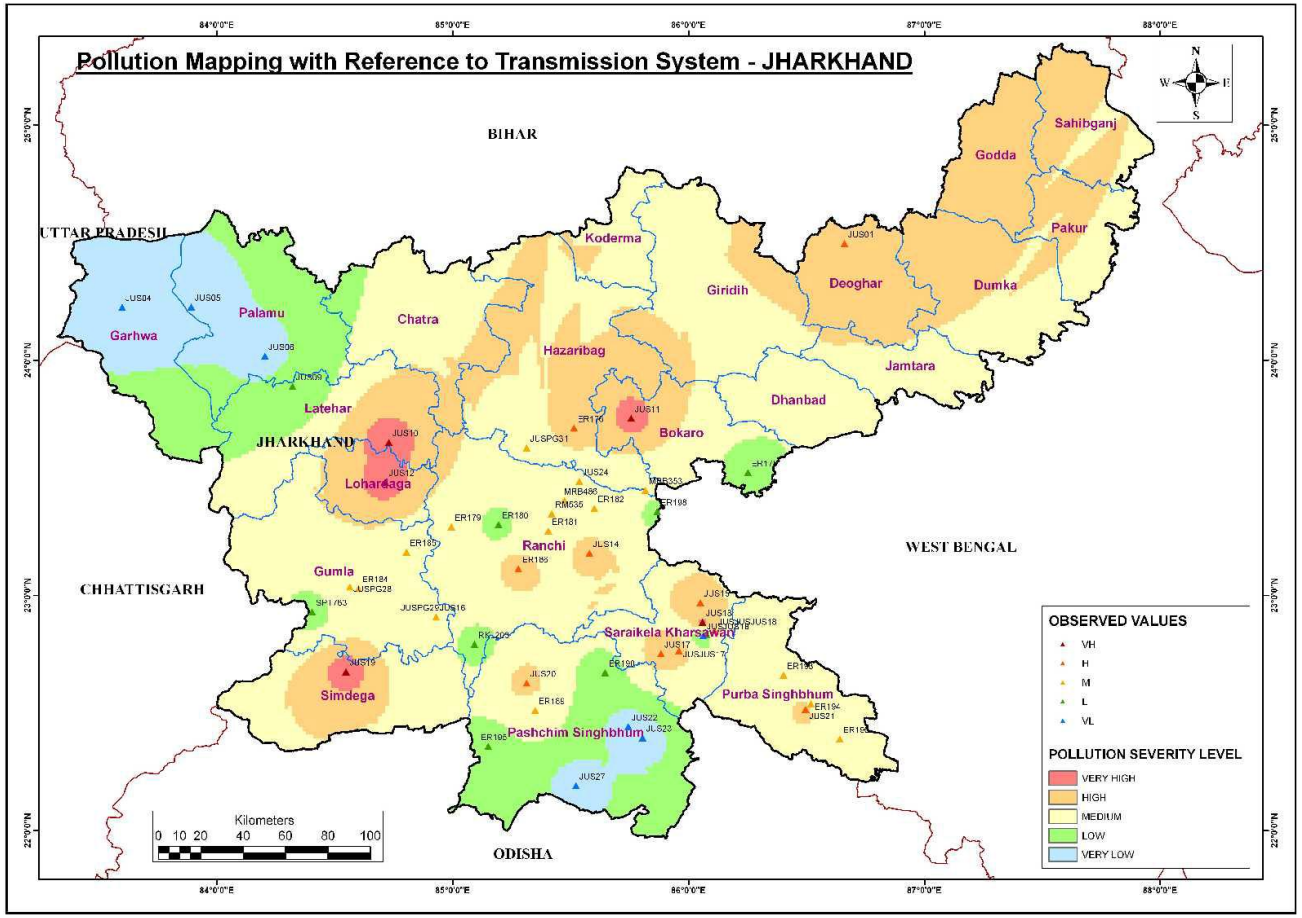
- It is advised to enforce strict regulations to refrain establishment of pollution sources near transmission towers.

Pollution Mapping

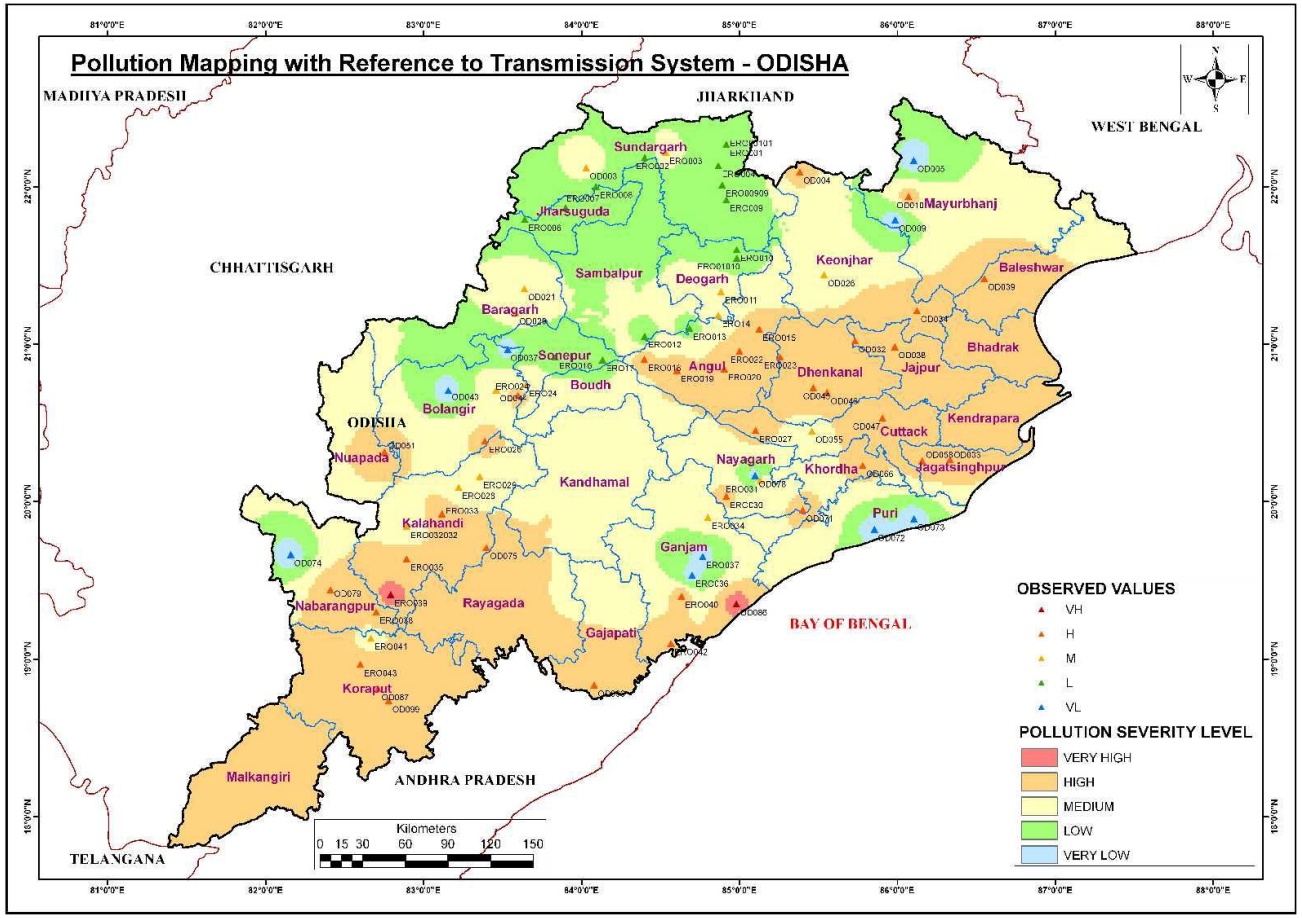
- The pollution severity levels measured at the on-field condition were portrayed on the geographical map of India. It is to be noted that the displayed severity class in the map is a step higher than the actual site severity measured. The above methodology is adopted to avoid un-wanted disturbances in the EASTERN grid.

POLLUTION MAPPING WITH REFERENCETO TRANSMISSION SYSTEM - BIHAR

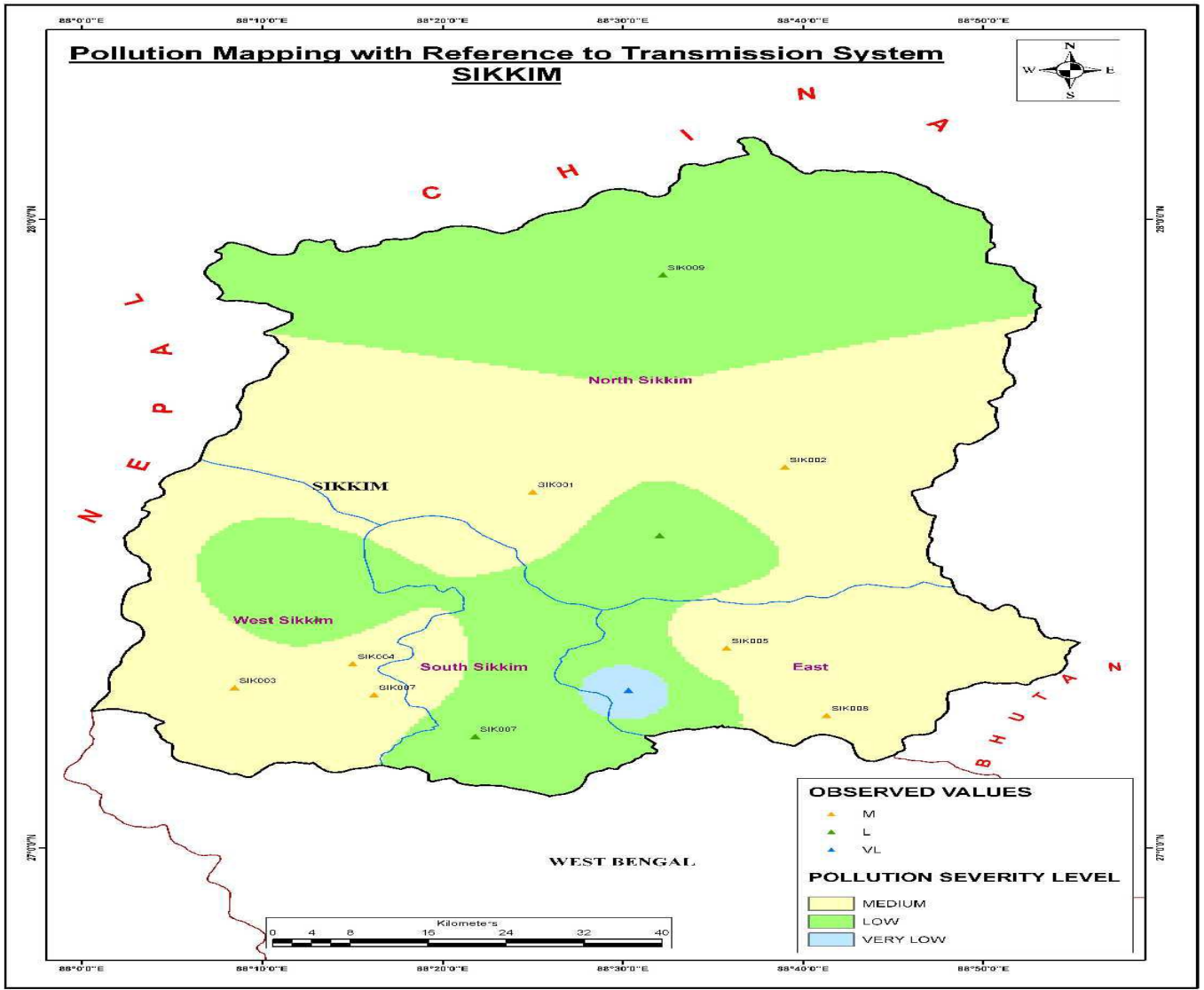



Pollution Mapping with Reference to Transmission System - JHARKHAND
BIHAR
UTTAR PRADESH
JHARKHAND
WEST BENGAL
CHHATTISGARH
ODISHA
Sahibganj
Godda
Pakur
Dumka
Deoghar
Koderma
Giridih
Chatra
Palamu
Garhwa
Latehar
Hazaribag
Jamtara
Dhanbad
Bokaro
Lohardaga
Ranchi
Gumla
Simdega
Saraikela Kharsawan
Purba Singhbhum
Pashchim Singhbhum
Kilometers
0 10 20 40 60 80 100
OBSERVED VALUES
VH
H
M
L
VL
POLLUTION SEVERITY LEVEL
VERY HIGH
HIGH
MEDIUM
LOW
VERY LOW

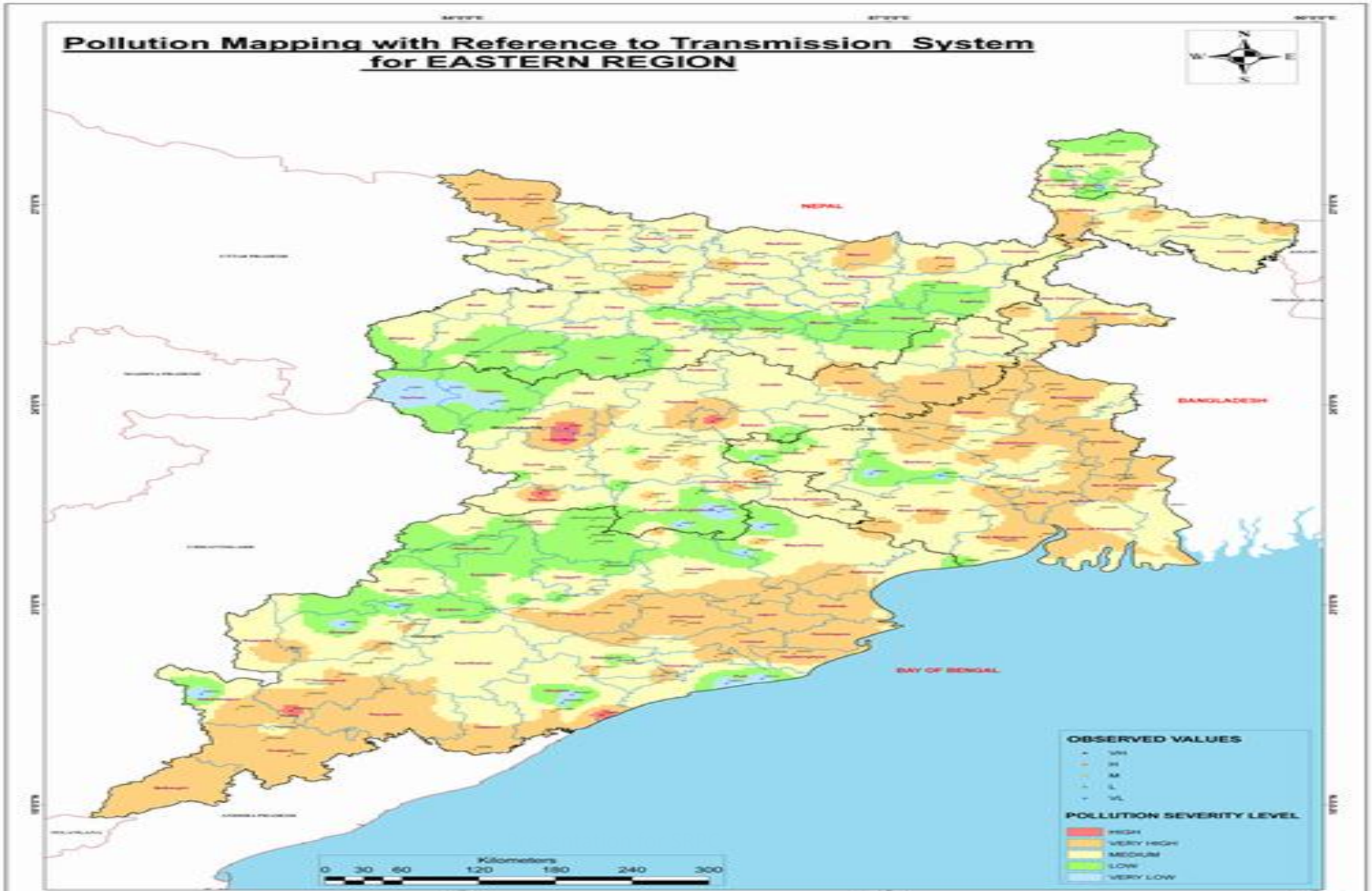
POLLUTION MAPPING WITH REFERENCETO TRANSMISSION SYSTEM - ODISHA



POLLUTION MAPPING WITH REFERENCETO TRANSMISSION SYSTEM - SIKKIM



POLLUTION MAPPING WITH REFERENCETO TRANSMISSION SYSTEM – EASTERN REGION



Conclusion

- Site severity measurements were carried out near towers carrying HV lines. The procedure is repeated for two years covering varying seasonal changes. It is witnessed that the pollution levels reported from sites vary from low to very high in the EASTERN region of India. It is recommended to design and select insulators corresponding to the minimum specific creepage distance. minimum specific creepage distance recommended based upon the pollution severity obtained.

Percentile Variation of Site Pollution Severity and Minimum Creepage Distance required

Site Name	Pollution Severity in Percentile (Design Factor)						Minimum Specific Creepage Distance Required (mm/kV)
	VH	H	M	L	VL	No Results	
West Bengal	0	47	42	7	5	10	28 – 31
Jharkhand	5	13	26	22	13	04	25 – 31
Odisha	0	70	36	5		04	20 – 28
Sikkim	2	16	33	13		0	20 – 28
Bihar	0	16	34	19	0	51	20 - 28

Conclusion

- Results obtained from chemical analysis shows oxides of Sodium, Magnesium, Potassium, Titanium, Zinc, Silica and Aluminum which may not have any effect the performance of insulator on dry condition. However on foggy weather conditions, they may pave way to scintillations on the surface of insulators.
- In case of polymeric insulators, these chemical pollutants may have adverse effects on the surface characteristics. Therefore, it is also recommended to analyze the pollution withstand characteristics of polymeric insulators in online condition over a considerable period of time.
- The effect of increased NSDD content and their non-uniform distribution effects on the surface of insulator have to be analyzed. Such analysis should be carried out by considering profile of insulator and varied T/B (Top to Bottom ratio) NSDD ratio which represent actual field conditions.

Conclusion

- Interpolation technique (Inverse Distance Weighted) is deployed to create the pollution map for the southern region of India. The maps were generated (scale of map 1:250000) state wise and the entire southern region. In this methodology the pollution level prevailing in between each site is generated.
- The hard copies of the pollution map generated by CPRI are attached as a separate file along with the report.

Thank You

Existing Substations (220 KV and above) as on 31st December 2018

1. Intra- State:

S.no.	State	Name of Transmission Utility / Tr. Service Provider (TSP)	Substation name	Highest system voltage level (kV)	Transformation voltage Ratio (s)	Transformation Capacity (MVA) at each transformation level	Line reactors (in MVAR)			Bur Reactors (in MVAR)		
							765kV	400kV	220kV / 132kV	765kV	400kV	220kV / 132kV

For Example

1	*AP*	*APTRANSCO*	*X*	*765kV*	*765/400kV* *400/220kV*	*1500* *1000*	*480*	*126*	*-*	*660*	*205*	-

2. Inter-State

S.no.	State	Name of Transmission Utility / Tr. Service Provider (TSP)	Substation name	Highest system voltage level (kV)	Transformation voltage Ratio (s)	Transformation Capacity (MVA) at each transformation level	Line reactors (in MVAR)			Bur Reactors (in MVAR)		
							765kV	400kV	220kV / 132kV	765kV	400kV	220kV / 132kV

Existing Transmission Lines (220 KV & above) as on 31st December 2018

1. Intra- State:

s.no.	State	Transmission Utility	Transmission Line		Voltage Level (KV)	Length of Transmission Lines (**in Circuit Kms**)	S/C or D/C or S/C line on D/C towers or multi-circuit & multi voltage	No. of conducter(s)/ phase	Type & Name of conductor (ACSR/AAAC/AL59/ any other; Bersimis/ Lapwing/ Moose/ Zebra/Panther/ Dog/any other)
			From (End 1)	To (End 2)					

For example:

1	*Assam*	*AEGCL*	*A*	*B*	*220*	*150*	*D/C*	*1*	*ACSR Zebra*

2. Inter- State:

s.no.	From State	To State	Transmission Utility	Transmission Line		Voltage Level (KV)	Length of Transmission Lines **(in Circuit Kms)**	S/C or D/C or S/C line on D/C towers or multi-circuit & multi voltage	No. of conducter(s)/ phase	Type & Name of conductor (ACSR/AAAC/AL59/ any other; Bersimis/ Lapwing/ Moose/ Zebra/Panther/ Dog/any other)
				From (End 1)	To (End 2)					

PSS Tuning Status

A. The list of generators where PSS is not tuned however kept in service and no details have been provided for PSS tuning:

Power Plant	Unit No	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Timeline and Plan for PSS tuning Activity
Kolaghat-WBPDCL	1	No	Yes	
Kolaghat-WBPDCL	2	No	Yes	
Kolaghat-WBPDCL	3	No	Yes	
Kolaghat-WBPDCL	4	No	Yes	
Kolaghat-WBPDCL	5	No	Yes	
DPL	8	No	Yes	
PPSP	1	No	Yes	
PPSP	2	No	Yes	
PPSP	3	No	Yes	
PPSP	4	No	Yes	
Bokaro A1	500 MW	No	Yes	

B. Generating Power Plants whose Excitation details or PSS tuning status or both have not been received at ERLDC/ ERPC:

Generating Utility	Unit		Generating Utility	Unit
WBSEDCL			**OHPC**	
TLDP III	4 x 33		Upper Indravati	1,2,3,4
TLDP IV	4 X 44		Balimela	6 X 60
DVC			Balimela	2 X 75
Bokaro -DVC	500 MW		Upper Kolab	4 X 80
Bokaro	3 X 210 MW		Rengali	4 X 50
Waria	4		**Orissa SLDC**	
Chandrapura B	2 X 250 MW		Sterlite	4 X 600
ISGS			**Jharkhand**	
Talcher Stage 1	1,2 (PSS tuning Received)		Tenughat	1,2
Nabinagar NPGC	1		Subarnrekha	2 X 65
BRBCL	1,2,3		**Bhutan**	
KBUNL	1,2,3,4		Tala	6 X 170
Rangit	3 x 20		Chukha	4 X 84
			IPP	
			GMR	350 X 2

C. Generating Power Plants where PSS is tuned and kept in service however, PSS Tuning report/plots/data have not been submitted to ERLDC/ERPC is as following:

Power Plant	Unit No		Power Plant	Unit No
Sagardighi-WBPDCL	3		Farakka NTPC	6
Sagardighi-WBPDCL	4		Talcher Stage 2	4
Budge Budge-CESC	3		Talcher Stage 2	5
HEL-CESC	1		Talcher Stage 2	6
HEL-CESC	2		Teesta-III	1
Mejia-DVC	4		Teesta-III	2
Mejia-DVC	5		Teesta-III	4
Mejia-DVC	6		Teesta-III	5
Mejia-DVC	7		Teesta-III	6
Mejia-DVC	8		Tashiding	1
Durgapur-DVC	1		Maithon Power Limited	1
Durgapur-DVC	2		Maithon Power Limited	2
Koderma-DVC	1		ADHUNIK	1
Koderma-DVC	2		ADHUNIK	2
Farakka NTPC	1		GMR	1

Farakka NTPC	2		GMR	2
Farakka NTPC	3		GMR	3
Farakka NTPC	4		IB TPS	1
Farakka NTPC	5		IB TPS	2

D. Generators where PSS tuning has been done more than 3 years back :

Power Plant	Unit No	Last PSS Tuning Date	Whether Done in Last 3 Years	Timeline for Next PSS Tuning
Sagardighi-WBPDCL	4	Commissioning	No	
Budge Budge-CESC	1	2015	No	
Budge Budge-CESC	2	2015	No	
Budge Budge-CESC	3	2010	No	
HEL-CESC	1	2015	No	
HEL-CESC	2	2015	No	
Mejia-DVC	4			
Mejia-DVC	7	2010	No	
Mejia-DVC	8	2011	No	
Koderma-DVC	1			
Koderma-DVC	2			
Kahalgaon NTPC	4	2015	No	
Kahalgaon NTPC	5	2009	No	
Kahalgaon NTPC	6	2009	No	
Kahalgaon NTPC	7	2010	No	
Farakka NTPC	1	2008	No	
Farakka NTPC	2	2008	No	
Farakka NTPC	3	2008	No	
Farakka NTPC	4	2008	No	
Farakka NTPC	5	2008	No	
Farakka NTPC	6	2015	No	
Talcher Stage 1	1	2015	No	
Talcher Stage 1	2	2014	No	
Talcher Stage 2	3	No Details		
Talcher Stage 2	4	No Details		
Talcher Stage 2	5	No Details		
Talcher Stage 2	6	No Details		
Teesta V	1	2008	No	
Teesta V	2	2008	No	
Teesta V	3	2008	No	
Jorethang	1	2015	No	
Jorethang	2	2015	No	
Chuzachen HEP	1	2013	No	
Chuzachen HEP	2	2013	No	
ADHUNIK	1	2013	No	
ADHUNIK	2	2013	No	
IB TPS	1	2011	No	
IB TPS	2	2012	No	

E. Generators where PSS tuning has been done and have submitted the report and the observation

Name of the Unit	Intra Plant Mode (Hz)	Step Size of U_{ref}	Oscillation periodwith out PSS	Oscillation period with PSS	Whether PSS is effective as per step response test	Year of Tuning	Whether Recommended for Tuning
Kahalgaon Unit 1		**3 %**	**3 cycle**	**1 cycle**	**Yes**	**2017**	**Yes after Bus Split**
Kahalgaon Unit 2	**1.5 Hz**	**3 %**	**3 cycle**	**1 cycle**	**Yes**	**2016**	**Yes after Bus Split**

Kahalgaon Unit 3		6 %	-	-	Provided picture not clear to analyze response	2016	To be decided after explanation by NTPC, Also after bus split, returning is required
Kahalgaon Unit 4	1.876	3 %	5 cycle	3 Cycle	Yes	2015	Yes after Bus Split
Kahalgaon Unit 5		4 %			No Appreciable Response	2009	To be decided after explanation by NTPC, Yes after Bus Split
Kahalgaon Unit 6		4 %			No Appreciable Response	2019	
Kahalgaon Unit 7		2 %			Provided picture not clear to analyze response	2010	
Teesta V Unit 1		2 %	5 cycle	2 cycle	Yes	2008	Yes in view of changes in network
Teesta V Unit 2		2 %	5 cycle	1 cycle	Yes	2008	
Teesta V Unit 3		2 %	5 cycle	1 cycle	Yes	2008	
Talcher Unit 3		3 %	-	-	PSS is showing response but active power plant is not providing appreciable change.		NTPC may explain the details after which requirement of retuning to be decided.
Talcher Unit 6		3 %	3 cycle	2 cycle	Yes	2008	No
Budge Budge 1		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
Budge Budge 2		2 %	5 cycle	1 cycle	Yes (Tuned for various contingency)	2015	No
JITPL Unit 1		5 %	-	-	No Appreciable Response	2016	JITPL to explain the response based on which it will be decided.
JITPL Unit 2		5 %	-	-	No Appreciable Response	2016	
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	Yes in view of changes in network
Chujachen Unit 1		2 %	6 cycle	1 cycle	Yes	2013	
Tashiding Unit 2	1.5 Hz	4 %	5 Cycle	1 Cycle	Yes	2017	Yes in view of changes in network
Bandel Unit 5	1.5 Hz	5 %	6 Cycle	3 cycle	Yes	2019	Adequate
Teesta 3 Unit 5		2 % and 3 %	3 Cycle	2 Cycle	Yes	2017	Retuning to be done due to network change
Talcher Unit 1		1 %	2 cycle	2 cycle	No Appreciable Response	2015	Yes (Either NTPC explain why there is no appreciable change in damping or better resolution data to be submitted if damping has been observed)
Talcher Unit 2		3 %	4 cycle	2 Cycle	Yes	2014	Adequate
Bakreshwar Unit 1		3 %	3 cycle	2 cycle	Yes	2019	Adequate

Bakreshwar Unit 2		**3 %**	**4 cycle**	**4 cycle**	**No Appreciable Response**	**2019**	**Yes, Returning required as PSS signal is in phase with disturbance which is not good for unit.**
Bakreshwar Unit 3		**3 %**	**3 Cycle**	**4 cycle**	**Negative Response**	**2019**	**Yes, PSS response is negative which is highly undesirable**
Bakreshwar Unit 4		**3 %**	**No Change in Power**	**No Change in Power**	**No Response**	**2019**	**Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.**
Bakreshwar Unit 5		**3 %**	**No Change in Power**	**No Change in Power**	**No Response**	**2019**	**Yes, tuning to be done at reduced power level as at full load transient response is not observed which also need to be checked.**
Santaldih Unit 5		**3 %**	**3 cycle**	**2 cycle**	**Yes (more observable in Excel Data)**	**2019**	**Adequate**
Santaldih Unit 6		**3 %**	**3 cycle**	**2 cycle**	**Yes (more observable in Excel Data)**	**2019**	**Adequate**

Power Plant	Unit No	Type of Exciter	Exciter Model and Vendor	IEEE Model of Exciter	PSS Model	PSS single input or dual input	PSS tuned (Yes/No)	PSS in Service (Yes/No)	Last PSS Tuning Date	Whether Done in Last 3 Years	Report Submitted (Yes/No)
Kolaghat-WBPDCL	1	Static	BHEL	ST5A	PSS 3B		No	Yes	Long Back	No	No
Kolaghat-WBPDCL	2	Static	BHEL	ST5A	PSS 3B		No	Yes	Long Back	No	No
Kolaghat-WBPDCL	3	Static	BHEL	ST5A	PSS 3B		No	Yes	Long Back	No	No
Kolaghat-WBPDCL	4	Static	ABB Unitrol 6800		PSS 2B	Dual	No	Yes	2014	No	No
Kolaghat-WBPDCL	5	Static	ABB Unitrol 6800		PSS 2B	Dual	No	Yes	2014	No	No
Sagardighi-WBPDCL	3	Brushless	BHEL		PSS 3B		Yes	Yes	2018	Yes	No
Sagardighi-WBPDCL	4	Brushless	BHEL		PSS 3B		Yes	Yes	Commissioning	No	No
Santhaldih-WBPDCL	5	Brushless	BHEL	AC3A	PSS 3B		Yes	Yes	2019	Yes	Yes
Santhaldih-WBPDCL	6	Brushless	BHEL	AC3A	PSS 3B		Yes	Yes	2019	Yes	Yes
Bandel-WBPDCL	5	Static	BHEL				Yes	Yes	2019	Yes	Yes
Bakreshwar-WBPDCL	1	Brushless	BHEL-Unitrol		PSS-3B		Yes	Yes	2019	Yes	Yes
Bakreshwar-WBPDCL	2	Brushless	BHEL- THYRISIEM-04				Yes	Yes	2019	Yes	Yes
Bakreshwar-WBPDCL	3	Brushless	BHEL- THYRISIEM-04				Yes	Yes	2019	Yes	Yes
Bakreshwar-WBPDCL	4	Brushless	BHEL-Unitrol		PSS-3B		Yes	Yes	2019	Yes	Yes
Bakreshwar-WBPDCL	5	Brushless	BHEL-Unitrol		PSS-3B		Yes	Yes	2019	Yes	Yes
DPL	8	Brushless	WBS NO CE/0800-SH8-48-01 BHEL		UN0662	Dual	No	Yes	No		No
PPSP	1	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	Not available	Not available	Single	No	Yes	No		Not App.
PPSP	2	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	Not available	Not available	Single	No	Yes	No		Not App.
PPSP	3	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	Not available	Not available	Single	No	Yes	No		Not App.
PPSP	4	Thyristor type, full bridge	Digital AVRTOSATEX100, Vendor- Toshiba	Not available	Not available	Single	No	Yes	No		Not App.
Budge Budge-CESC	1	Static	R-R Industrial Controls Limited			Dual	Yes	Yes	2015	No	Yes
Budge Budge-CESC	2	Static	R-R Industrial Controls Limited			Dual	Yes	Yes	2015	No	Yes
Budge Budge-CESC	3	Static	BHEL			Dual	Yes	Yes	2010	No	No
HEL-CESC	1	Static	Unitrol 5000	ST1A	PSS-2A	Dual	Yes	Yes	2015	No	No
HEL-CESC	2	Static	Unitrol 5000	ST1A	PSS-2A	Dual	Yes	Yes	2015	No	No
Bokaro A1	500 MW	Brushless					No	Yes			No
Mejia-DVC	4	STATIC	BHEL		OTHER	Dual	Yes	Yes			No
Mejia-DVC	5	Brushless	BHEL		OTHER	Dual	Yes	Yes	2008	Yes	No
Mejia-DVC	6	Brushless	BHEL		OTHER	Dual	Yes	Yes	2008	Yes	No
Mejia-DVC	7	Brushless	BHEL		OTHER	Dual	Yes	Yes	2010	No	No
Mejia-DVC	8	Brushless	BHEL		OTHER	Dual	Yes	Yes	2011	No	No
Durgapur-DVC	1	Brushless	BHEL		OTHER	Dual	Yes	Yes	2016	Yes	No
Durgapur-DVC	2	Brushless	BHEL		OTHER	Dual	Yes	Yes	2016	Yes	No
Koderma-DVC	1	Brushless	BHEL			Dual	Yes	Yes			No
Koderma-DVC	2	Brushless	BHEL			Dual	Yes	Yes			No
Kahalgaon NTPC	1	Semi-Static	ABB 6800			Dual	Yes	Yes	2017	Yes	Yes
Kahalgaon NTPC	2	Semi-Static	ABB 6800			Dual	Yes	Yes	2016	Yes	Yes
Kahalgaon NTPC	3	Semi-Static	ABB 6800			Dual	Yes	Yes	2016	Yes	Yes
Kahalgaon NTPC	4	Semi-Static	BHEL			Dual	Yes	Yes	2015	No	Yes
Kahalgaon NTPC	5	Brushless	BHEL			Dual	Yes	Yes	2009	No	Yes

Kahalgaon NTPC	6	Brushless	BHEL			Dual	Yes	Yes	2009	No	Yes
Kahalgaon NTPC	7	Brushless	BHEL			Dual	Yes	Yes	2010	No	Yes
Farakka NTPC	1	Static	BHEL			Dual	Yes	Yes	2008	No	No
Farakka NTPC	2	Static	BHEL			Dual	Yes	Yes	2008	No	No
Farakka NTPC	3	Static	BHEL			Dual	Yes	Yes	2008	No	No
Farakka NTPC	4	Brushless	Siemens			Dual	Yes	Yes	2008	No	No
Farakka NTPC	5	Brushless	Siemens			Dual	Yes	Yes	2008	No	No
Farakka NTPC	6	Brushless	BHEL			Dual	Yes	Yes	2015	No	No
Talcher Stage 1	1						Yes	Yes	2015	No	Yes
Talcher Stage 1	2						Yes	Yes	2014	No	Yes
Talcher Stage 2	3	Brushless	BHEL			Dual	Yes	Yes	No Details		Yes
Talcher Stage 2	4	Brushless	BHEL			Dual	Yes	Yes	No Details		No
Talcher Stage 2	5	Brushless	BHEL			Dual	Yes	Yes	No Details		No
Talcher Stage 2	6	Brushless	BHEL			Dual	Yes	Yes	No Details		No
Teesta V	1	Static	ALSPA P320 Alstom	ST7B	PSS2A	Dual	Yes	Yes	2008	No	Yes
Teesta V	2	Static	ALSPA P320 Alstom	ST7B	PSS2A	Dual	Yes	Yes	2008	No	Yes
Teesta V	3	Static	ALSPA P320 Alstom	ST7B	PSS2A	Dual	Yes	Yes	2008	No	Yes
Teesta-III	1	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	No
Teesta-III	2	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	No
Teesta-III	3	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	Yes
Teesta-III	4	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	No
Teesta-III	5	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	No
Teesta-III	6	Static	Thyne 5 , ELIN		PSS2A	Dual	Yes	Yes	2017	Yes	No
Jorethang	1	Static Excitation System	ALSPA CONTOGEN V3 P320 AVR, VENDOR - ALSTOM	IEEE 421.5	PSS2A	Dual	Yes	Yes	2015	No	Yes
Jorethang	2	Static Excitation System	ALSPA CONTOGEN V3 P320 AVR, VENDOR - ALSTOM	IEEE 421.5	PSS2A	Dual	Yes	Yes	2015	No	Yes
Tashiding	1	Brushes	Unitrol 6080		PSS2B	Dual	Yes	Yes	2017	Yes	No
Tashiding	2	Brushes	Unitrol 6080		PSS2B	Dual	Yes	Yes	2017	Yes	Yes
Chuzachen HEP	1	Static	P320 AVR, ALSTOM	**ST7B**	PSS2A	Dual	Yes	Yes	2013	No	Yes (issue with Time scale)
Chuzachen HEP	2	Static	P320 AVR, ALSTOM	**ST7B**	PSS2A	Dual	Yes	Yes	2013	No	Yes (issue with Time scale)
Dikchu	1	Static	AC7B,ALSTOM	AC7B	PSS2A/2B	Dual	yes	yes	2017	Yes	Yes (Time scale is not clear)
Dikchu	2	Static	AC7B,ALSTOM	AC7B	PSS2A/2B	Dual	yes	yes	2017	Yes	Yes (Time scale is not clear)
Maithon Power Limited	1	Brushless	EAR 50/15-30/8-3 BHEL	ESST1A	BHEL	Dual	Yes	Yes	2017	Yes	No
Maithon Power Limited	2	Brushless	EAR 50/15-30/8-3 BHEL	ESST1A	BHEL	Dual	Yes	Yes	2017	Yes	No
ADHUNIK	1	Brushless	ST5B	IEEE 421.5	PSS2B	Dual	Yes	YES	2013	No	No
ADHUNIK	2	Brushless	ST5B	IEEE 421.5	PSS2B	Dual	Yes	YES	2013	No	No
JITPL	1	Brushless	BHEL			Dual	Yes	Yes	2016	Yes	Yes
JITPL	2	Brushless	BHEL			Dual	Yes	Yes	2016	Yes	Yes
GMR	1	Static	ABB-Unitrol	ESST1A	PSS2B	Dual	Yes	Yes	2013	No	No
GMR	2	Static	ABB-Unitrol	ESST1A	PSS2B	Dual	Yes	Yes	2013	No	No
GMR	3	Static	ABB-Unitrol	ESST1A	PSS2B	Dual	Yes	Yes	2013	No	No
IB TPS	1	Static	Model: Unitrol 5, BHEL	ST5B	PSS2B	Dual	Yes	Yes	2011	No	No
IB TPS	2	Static	Model: Unitrol 5, BHEL	ST5B	PSS2B	Dual	Yes	Yes	2012	No	No

ANNEXURE-E

CESC **CAPACITORS DETAILS**

List if 6/11kV Capacitor Bank

STATION	CAPACITY (MVAR)	STATION	CAPACITY (MVAR)
Alipur	3	Kamarhati	4
Amherst Street	4.5	Kankurgachi	4.8
Auckland	3	Kasba	4.482(11kV)
Akra	4	Kuthighat	4
Baranagar	4.84	Kidderpore	4.5
Bhatpara	4	Liloah	4
Bally	3	Majerjat	3
Barisha	4.5	Maheshtala	4
Barrackpore	6	New Ballygunge East	4
BBD Bag	4	Princep Street	4
Belur	3	Patuli	4(11kV)
Budge Budge	1.5	Rabindra Sadan	4
Budge Budge South	4.8	Rashbehari	4(11kV)
Canal	4.5	Ritchie	4.8
Central Avenue	4	Srerampur	4
Dhakuria	3	Science City	4.8(11kV)
Dum Dum	4.5	Shalimar	3(2x1.5)
Entally D/S	1+3	Sinthia	4.5
Foreshore	3	Southern (Voltas)	6
Fort Gloster	1.59	Southern (Voltas)	4.5
Gourhati	4	South City	4.8
Grey Street	3.6	Strand South	4.842
Howrah Central	3	Strand North	6
Howrah South	4.842	Talpukur	4
Howrah West	4.5	Taratala	4
Jessore West	3	Tollygunge	4.8 (11kV)
Jadavpur	4	**Total**	**215.656**
Jadavpur	4.8(11kV)		

List of 132kV Capacitor Bank

STATION	CAPACITY (MVAR)
Taratala	50
East Calcutta	50
Chakmir	50
Total	**150**

List of 33kV Capacitor Bank

STATION	CAPACITY (MVAR)	STATION	CAPACITY (MVAR)
BBD Bag	15	NCGS	2x10
KRS 33 KV ODY	30	SRS	2x15
KRS M1 SECTION	30	MAJ	2x15
KRS M3 SECTION	30	JAD M1 SECTION	2x15
MSS	20	JAD M2 SECTION	2x10
BRS	15	**Total**	**315**
PRS	30		
PLN	15		

Planned Installation of Capacitor Banks in 2010-11

STATION	CAPACITY (MVAR)	LEVEL
EMSS	50	132kV
Botanical Gardens S/s	30	33kV
6 and 11 KV Distribution Stations	15-20	6/11 kV

Connected Total MVAR = 680.656

BSEB

Capacitor Bank installation at different Grid sub-station of BSEB

Sl. No.	Name of Grid S / Stn.	No. of Capacitor Bank	Capacity
1	Jakkanpur	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR
2.	Fatuah	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR
3.	Khagaul	I	2x 12000 KVAR
		II	2x 12000 KVAR
		III	2x 12000 KVAR

WBSEDCL

Present Capacitor			Future Plan of Capacitive Compensation		
Sl. No.	Name of EHV S/Stn.	Exist Comp (MVAR)	Sl. No.	Name of EHV S/Stn.	Exist Comp (MVAR)
1	Adisaptagram	10.0	1	Adisaptagram	10.0
2	Bankura	10.0	2	Arambag	10.0
3	Barasat	10.0	3	Asokenagar	10.0
4	Joka	10.0	4	Balurghat	5.0
5	Berhampur	20.0	5	KLC	10.0
6	Bishnupur	10.0	6	Barasat	20.0
7	Bolpur	20.0	7	Basirhat	10.0
8	Ch. Kona Road	10.0	8	Joka	10.0
9	Debogram	20.0	9	Berhampur	10.0
10	Dharampur	10.0	10	Bongaon	10.0
11	Egra	10.0	11	Chanditala	10.0
12	Falta	20.0	12	Coochbehar	5.0
13	Gangarampur	14.4	13	Dalkhola	10.0
14	Gokarna	10.0	14	Dharampur	10.0
15	Kalyani	10.0	15	Domjur	10.0
16	Katwa	20.0	16	Haldia	5.0
17	Kolaghat	10.0	17	Jangipara	5.0
18	Krishnagar	28.8	18	Khanyan	5.0
19	Liluah	20.0	19	Lakhikantapur	5.0
20	Midnapur	10.0	20	Liluah	10.0
21	Moinaguri	10.0	21	Malda	10.0
22	NBU	10.0	22	Midnapur	5.0
23	Raghunathgunj	10.0	23	New Haldia	5.0
24	Rishra	30.0	24	Pingla	10.0
25	Sainthia	20.0	25	Purulia	10.0
26	Salt Lake	45.0	26	Raigunj	10.0
27	Samsi	10.0	27	Raina	10.0
28	Satgachia	20.0	28	Rampurhat	10.0
29	Titagarh	25.0	29	Ranaghat	10.0
	Total	463.2	30	Siliguri	10.0
			31	Sonarpur	10.0
			32	Tamluk	10.0
			33	Tarakeswar	5.0
			34	Titagarh	10.0
			35	Ukhra	10.0
			36	Uluberia	10.0
				Total	325

OPTCL

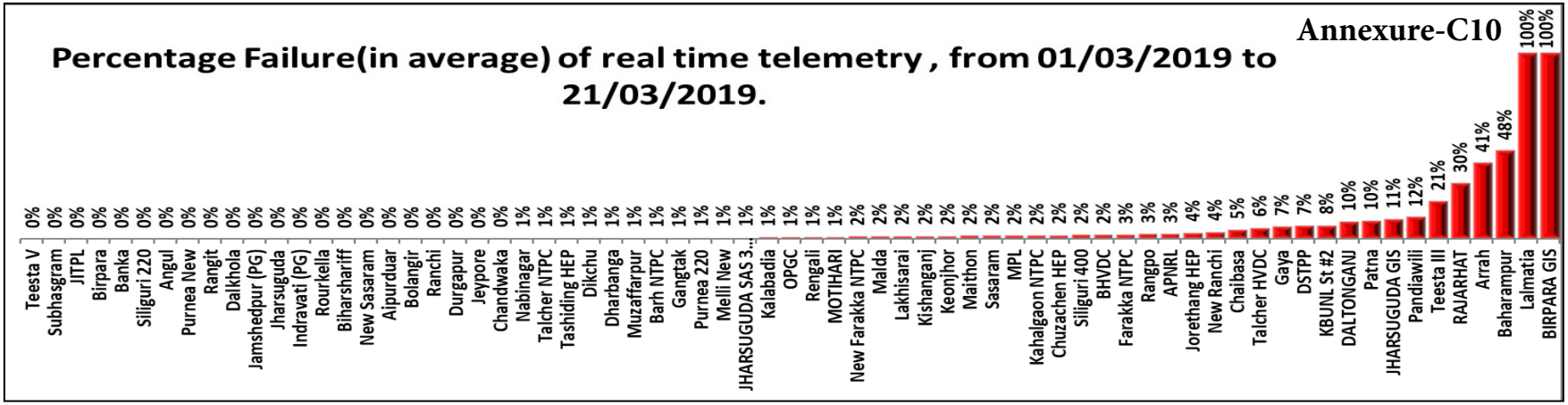
Annexure III

2 of 2

List of Capacitor Banks installed at different Grid S/Ss and proposed installation programme

Name of Sub Station	S/S Capacity (MVA)	Rating of capacitor units (MVAR)	No of units	Total installed Capacity (MVAR)
Aska	2x40	5	1	5
Balugaon	2x20	5	1	5
Berhampur	1x12.5+1x40+1x20	10	1	10
Bolangir	2x40+1x12.5	5	2	10
Bhubaneswar	3x40	5	1	5
Cuttack	2x40	5	2	10
Kendrapara	1x40+1x20+1x12.5	5	2	10
Khurda	3x40	5	2	10
Puri	2x31.5	5	1	5
Balasore	2x40+1x12.5	10	1	10
Baripada	2x31.5	5	2	10
Bhadrak	2x40	5	2	10
Jajpur Road	1x40+2x20	5	2	10
Total installed capacity				**110**
Proposed for installation				
Sonepur	2x12.5			10
Pattamundei	1x20+1x12.5			15
Kendrapara	1x40+1x20+1x12.5			20
Kharior	2x20			10
Jajpur Tpwn	1x40+2x20			20
Rairangapur	1x20+1x12.5			10
Puri	2x31.5			10
Ransingpur	2x40			10
Chandikhol	2x20			10
Choudwar	1x20+1x40+1x10			10
Cuttack	2x40			5
Nuapatna	1x12.5+1x20			15
Sunabeda	2x12.5+1x12.5			10
Jaleswar	2x20+1x12.5			10
Bhadrak	2x40			15
Paradeep	2x20			15
Balugaon	2x20			10
Berhampur	1x12.5+1x40+1x20			10
Khurda	3x40			10
Jagatsingpur	2x20			15
Balasore	2x40+1x12.5			15
Junagarh	2x12.5			10
Phulabani				10
Total capacity (Proposed)				**275**

Annexure-C10



Percentage failure in SAS/RTU data reporting for Central sector stations ▼

	21-Mar-19	20-Mar-19	19-Mar-19	18-Mar-19	17-Mar-19	16-Mar-19	15-Mar-19	14-Mar-19	13-Mar-19	12-Mar-19	11-Mar-19	10-Mar-19	9-Mar-19	8-Mar-19	7-Mar-19	6-Mar-19	5-Mar-19	4-Mar-19	3-Mar-19	2-Mar-19	1-Mar-19
APNRL	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	58%	4%	0%	0%	0%	0%	0%
Jorethang HEP	0%	0%	3%	3%	0%	2%	0%	0%	2%	1%	0%	0%	0%	0%	0%	0%	3%	2%	0%	55%	4%
New Ranchi	4%	4%	4%	4%	3%	4%	4%	3%	4%	4%	4%	4%	4%	6%	4%	4%	4%	4%	4%	3%	4%
Chaibasa	3%	5%	5%	5%	26%	3%	3%	3%	3%	2%	0%	0%	0%	1%	0%	0%	1%	0%	0%	41%	5%
Talcher HVDC	0%	0%	0%	0%	0%	76%	51%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Gaya	5%	7%	7%	8%	7%	7%	7%	7%	7%	8%	7%	7%	7%	7%	7%	7%	6%	7%	6%	5%	5%
DSTPP	1%	0%	1%	0%	0%	19%	1%	0%	0%	0%	0%	0%	0%	1%	0%	0%	40%	42%	45%	0%	0%
KBUNL St #2	3%	7%	3%	6%	7%	8%	12%	10%	10%	16%	9%	8%	12%	8%	11%	10%	3%	6%	1%	5%	5%
DALTONGANJ	100%	90%	7%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	1%	0%	0%	0%	0%
Patna	100%	1%	0%	1%	0%	47%	58%	0%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
JHARSUGUDA GIS	12%	9%	11%	10%	11%	9%	11%	8%	8%	12%	20%	23%	22%	8%	12%	2%	4%	8%	9%	8%	10%
Pandiawili	11%	11%	13%	12%	12%	11%	10%	12%	10%	15%	23%	20%	22%	9%	11%	0%	10%	11%	9%	10%	12%
Teesta III	0%	0%	0%	0%	0%	0%	0%	64%	100%	100%	100%	62%	0%	0%	0%	0%	0%	0%	8%	0%	0%
RAJARHAT	95%	67%	96%	100%	100%	54%	1%	40%	10%	64%	0%	0%	0%	2%	1%	0%	1%	0%	0%	0%	0%
Arrah	100%	100%	100%	100%	100%	100%	100%	100%	59%	0%	1%	1%	0%	1%	0%	1%	1%	0%	1%	1%	1%
Baharampur	0%	0%	0%	54%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	0%	0%	0%	0%	0%	0%	0%
Lalmatia	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Birpara GIS SAS	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Talcher STPS related matter

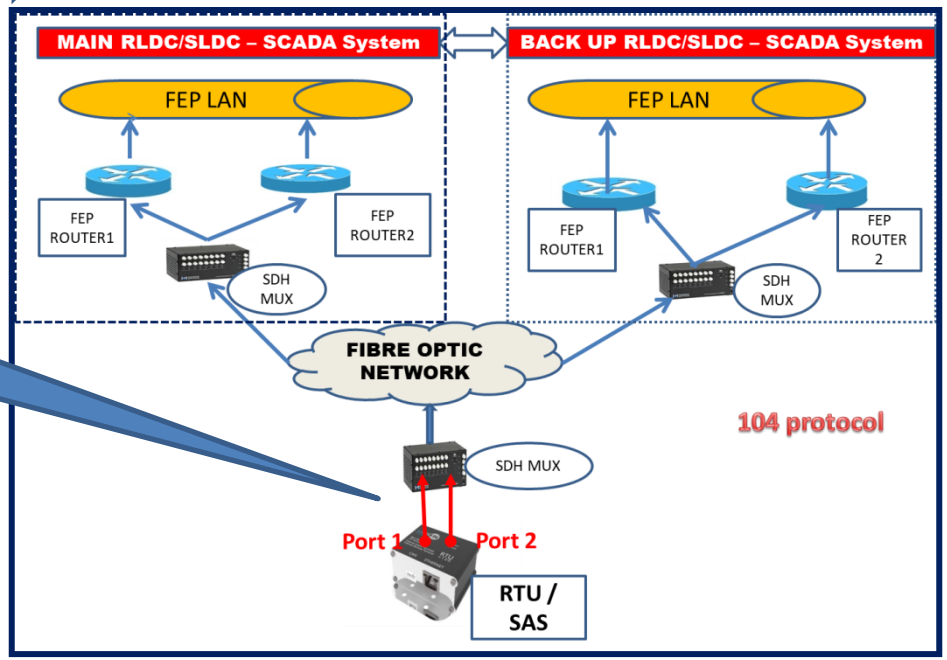
1. Non availability of elementary SCADA data

Sl No.	Feeder Name	Measurement	
1	400kv Rourkela -1	MVAr	
2	400/11 kV Station transformer #3	MVAr	→ Pending
3	400/11 kV Station transformer #4	MVAr	
4	400kvV Bus Sectionalizer of Bus 2 of stage 1 and Bus 2 of stage 2	MW & MVAr	
5	GT - 6 (UNIT-6)	MVAr	→ Pending

2. Stand by channel configuration.

Resolution:

1. **Port 1 & Port 2 should be dedicated for reporting to ERLDC Main CC and ERLDC Back up CC**



Non availability of SCADA data above 220 kV Level

WBSETCL

- Following 220 kV station data not available:
  - TLDP 4 220kV : Communication link failure.
  - Dharampur 220kV : Communication link issue.
  - Egra 220 : Communication link issue.
  - Bantala 220kV : Communication link issue.
  - Alipurduar 220kV: Communication link yet to be established.
  - Vidyasagar 220kV
  - Rishra 220kV

Non availability of SCADA data above 220 kV Level &132kV Station having tie lines

- **BIHAR**
  - Barauni TPS 220kV
  - Baisi 132kV.
- **Odisha**
  - Narsingpur 220kV Station commissioned on 24-08-2018. SCADA data yet to be integrated at Odissa SLDC end.
  - Nalco 220kV : Most of CB and Isolator data are not available
  - Jindal Steel and Power Limited (JSPL) 400kV: Most of CB and Isolator data are not available
- **JHARKHAND**
  - Hatia New 220 : RTU not reporting to SLDC.
  - Dumka 220 : RTU not yet integrated at Jharkhand SLDC.
  - Jamtara 132kV
  - Dalbhumgarh 132kV
  - Garwa 132kV
  - Deoghar 132kV
  - Kendposi 132 kV

Power Supply Position for April 2019

SL.NO	PARTICULARS	Apr-19 in MW	Apr-19 in MU
1	BIHAR		
i)	NET MAX DEMAND	4850	2600
ii)	NET POWER AVAILABILITY- Own+KBUNL	311	207
	Central Sector+Bi-Lateral	3550	2104
iii)	SURPLUS(+)/DEFICIT(-)	-990	-288
2	JHARKHAND		
i)	NET MAX DEMAND	1410	810
ii)	NET POWER AVAILABILITY- Own Source	321	237
	Central Sector+Bi-Lateral+KBUNL	887	503
iii)	SURPLUS(+)/DEFICIT(-)	-202	-69
3	DVC		
i)	NET MAX DEMAND (OWN)	3000	1880
ii)	NET POWER AVAILABILITY- OWN SOURCE	5475	3305
	- Central Sector+MPL+KBUNL	508	264
	BI-LATERAL EXPORT BY DVC	1675	1206
iii)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	1307	483
4	ODISHA		
i)	NET MAX DEMAND	4445	2660
ii)	NET POWER AVAILABILITY- OWN+IPP+CPP	3843	2371
	- Central Sector+KBUNL	1637	991
iii)	SURPLUS(+)/DEFICIT(-)	1035	703
5	WEST BENGAL		
5.1	WBSEDCL		
i)	NET MAX DEMAND (OWN)	6600	3630
ii)	IPCL DEMAND	85	61
iii)	TOTAL WBSEDCL's DEMAND (incl.B'Desh+Sikkim+IPCL)	7165	3839
iv)	NET POWER AVAILABILITY- Own Source	3740	2460
	- Import from DPL	170	110
	- Central Sector+Bi-lateral+IPP&CPP+TLDP+IPCL	2402	1305
v)	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-853	37
vi)	EXPORT (TO B'DESH & SIKKIM)	205	148
5.2	DPL		
i)	NET MAX DEMAND	0	0
ii)	NET POWER AVAILABILITY	465	310
iii)	SURPLUS(+)/DEFICIT(-)	0	0
5.3	CESC		
i)	NET MAX DEMAND	2050	980
ii)	NET POWER AVAILABILITY - OWN SOURCE	820	498
	IMPORT FROM OTHER SOURCE	690	115
	IMPORT FROM HALDIA ENERGY LTD.	540	367
iii)	TOTAL AVAILABILITY	2050	980
iv)	SURPLUS(+)/DEFICIT(-)	0	0
6	WEST BENGAL (WBSEDCL+DPL+CESC+IPCL) (excluding DVC's supply to WBSEDCL's command area)		
i)	NET MAX DEMAND OWN (Excl. Export)	8735	4671
ii)	NET POWER AVAILABILITY- Own Source	5025	3269
iii)	CS SHARE+BILETARAL+IPP/CPP+TLDP+HEL	3632	1787
iv)	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXP.	-78	385
v)	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXP.	-283	237
7	SIKKIM		
i)	NET MAX DEMAND	100	50
ii)	NET POWER AVAILABILITY- Own Source	8	3
	- Central Sector	169	83
iii)	SURPLUS(+)/DEFICIT(-)	77	37
8	EASTERN REGION At 1.03 AS DIVERSITY FACTOR		
i)	NET MAX DEMAND	22317	12670
ii)	BI-LATERAL EXPORT BY DVC	1675	1206
iii)	EXPORT BY WBSEDCL	205	148
iv)	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING CS ALLOCATION +BILATERAL+CPP+HEL)	25365	15126
v)	PEAK SURPLUS(+)/DEFICIT(-) OF ER AFTER EXPORT (v = iv - i -ii - iii)	1168	1101

ERPC/LGBR 19-20

Annexure-D2

ERLDC, KOLKATA

TRANSMISSION ELEMENTS OUTAGE APPROVED IN 155th OCC MEETING OF ERPC

		FROM		TO						
SL. No	**NAME OF THE ELEMENTS**	**DATE**	**TIME**	**DATE**	**TIME**	**REMARKS**	**S.D availed BY**	**Reason**	**SUBJECT TO CONSENT FROM AGENCY**	**COMMENT**
1	**125MVAR BR- I AT ALIPURDUAR**	**22/04/19**	**08:00**	**23/04/19**	**18:00**	**OCB**	Powergrid, ER-II	Modification of HVW supply line to accommodate erection activity of Jigmeling bay.		
2	**125MVAR BR- II AT ALIPURDUAR**	**25/04/19**	**08:00**	**26/04/19**	**18:00**	**OCB**	Powergrid, ER-II	Attending Oil leakage (Oil lekage from Conservator tank) and Associated Bay AMP work		
3	**125MVAR BUS REACTOR at Baharampore**	**10/04/19**	**09:00**	**10/04/19**	**17:00**	**ODB**	Powergrid, ER-II	For balance construction activity (Fire fighting ring modification) pertaining to ERSS-XV.		
4	**80MVAR BUS REACTOR at Baharampore**	**11/04/19**	**09:00**	**11/04/19**	**17:00**	**ODB**	Powergrid, ER-II	For Reactor AMP		
5	**400KV BERHAMPORE-SAGARDIGHI-1**	**12/04/19**	**09:00**	**13/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Line Maintenance	WB	
6	**400KV MAIN BAY OF BUS REACTOR-1 (403 MAIN BAY) at Baharampore**	**16/04/19**	**09:00**	**16/04/19**	**17:00**	**ODB**	Powergrid, ER-II	BAY AMP		
7	**400KV TIE BAY OF BHERAMARA-2/BUS REACTOR-1 (402 TIE BAY) at Alipurduar**	**17/04/19**	**09:00**	**17/04/19**	**17:00**	**ODB**	Powergrid, ER-II	BAY AMP		
8	**400KV BERHAMPORE-SAGARDIGHI-1**	**18/04/19**	**09:00**	**18/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Line Maintenance	WB	
9	**400KV BERHAMPORE-SAGARDIGHI-2**	**20/04/19**	**09:00**	**20/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Line Maintenance	**WB**	
10	400KV BERHAMPORE-BHERAMARA-1	22/04/19	09:00	23/04/19	17:00	ODB	Modified SPS scheme implementation	Powergrid, ER-II	NLDC	Power order of Bheramara poles shall be restricted to 800MW.
11	400KV BERHAMPORE-BHERAMARA-2	24/04/19	09:00	25/04/19	17:00	ODB	Modified SPS scheme implementation	Powergrid, ER-II	NLDC	
12	**400KV SAGARDIGHI-JEERAT LINE**	**24/04/19**	**09:00**	**25/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Live line defects attending and defective isulator replacement in line..	WB	
13	**400KV SAGARDIGHI-SUBHASGRAM LINE**	**29/04/19**	**09:00**	**30/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Live line defects attending and defective isulator replacement in line.	WB	
14	**400KV MAIN BAY OF SAGARDIGHI-FARAKKA-2 at Sagardighi**	**09/04/19**	**09:00**	**09/04/19**	**17:00**	**ODB**	Powergrid, ER-II	CT OIL SAMPLING	WB	
15	**400KV MAIN BAY OF SAGARDIGHI-JEERAT at Sagardighi**	**08/04/19**	**09:00**	**08/04/19**	**17:00**	**ODB**	Powergrid, ER-II	CT OIL SAMPLING	WB	

16	**400KV RAJARHAT-JEERAT**	**25/03/19**	**10:00**	**25/03/19**	**18:00**	**ODB**	Powergrid, ER-II	For erection of Bus Pipe of Gokarna Bay coming below Jeerat Line , shutdown require due to Clearance issue with Jeerat Line. Live line defects attending and defective isulator replacement in line.	**WB**	
17	**400KV RAJARHAT SUBHASGRAM**	**28/03/19**	**10:00**	**29/03/19**	**18:00**	**ODB**	Powergrid, ER-II	For Termination of Farakka Line at Gantry Tower , Clearance issue with Subhashgram Line R-Ph LA Rlacement AT Subhasgram end and live line defects attending and defective isulator replacement in line.	WB	
18	**500MVA ICT-I AT RAJARHAT**	**06/04/19**	**10:00**	**06/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For attending LA Counter Jumper Connection i.e to attend BALANCE CONSTRUCTON WORK	**WB**	
19	**220kV Rajarhat Newtown-III Ckt-I**	**02/04/19**	**10:00**	**02/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For attending Wave Trap Jumper	WB	
20	**220kV Rajarhat Newtown-III Ckt-2**	**02/04/19**	**10:00**	**02/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For attending Jumper inside Substation	**WB**	
21	**220kV Rajarhat Jeerat Ckt-I**	**04/04/19**	**10:00**	**04/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For attending Jumper inside Substation	WB	
22	**220kV Rajarhat Jeerat Ckt-II**	**04/04/19**	**10:00**	**04/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For attending Jumper inside Substation	WB	
23	**403 ICT#1 Main Bay at Subhasgram SS**	**01/04/19**	**09:00**	**01/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work		
24	**406 ICT#2 Main Bay at Subhasgram SS**	**02/04/19**	**09:00**	**02/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work		
25	**409 ICT#3 Main Bay at Subhasgram SS**	**03/04/19**	**09:00**	**03/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work		
26	**412 ICT#4 Main Bay at Subhasgram SS**	**04/04/19**	**09:00**	**04/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work		
27	**415 ICT#5 Main Bay at Subhasgram SS**	**05/04/19**	**09:00**	**05/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP Work		
28	**315 MVA ICT#1 at Subhasgram S/s**	**06/04/19**	**09:00**	**06/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical REF Relay	WB	CONSENT OF CESC NEEDS TO BE TAKEN BY WBSEB
29	**315 MVA ICT#2 at Subhasgram S/s**	**08/04/19**	**09:00**	**08/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical REF Relay	WB	CONSENT OF CESC NEEDS TO BE TAKEN BY WBSEB
30	**315 MVA ICT#3 at Powergrid,Subhasgram**	**09/04/19**	**09:00**	**09/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP of 315 MVA ICT#3.	WB	CONSENT OF CESC NEEDS TO BE TAKEN BY WBSEB
31	**315 MVA ICT#4 at Powergrid,Subhasgram**	**10/04/19**	**09:00**	**10/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP of 315 MVA ICT#4.	WB	CONSENT OF CESC NEEDS TO BE TAKEN BY WBSEB
32	**500 MVA ICT#5 at Powergrid,Subhasgram**	**11/04/19**	**09:00**	**11/04/19**	**17:00**	**ODB**	Powergrid, ER-II	CSD Commissioing in 414 Bay	WB	CONSENT OF CESC NEEDS TO BE TAKEN BY WBSEB
33	**50 MVAR Sagardighi Line Reactor at Subhasgram S/s**	**12/04/19**	**09:00**	**12/04/19**	**17:00**	**ODB**	Powergrid, ER-II	VT Section Work		

34	**220KV CESC CKT#2 (Bay No.203) at Powergrid,Subhasgram**	**13/04/19**	**09:00**	**13/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work	WB	
35	**220KV CESC CKT#1 (Bay No.202) at Powergrid,Subhasgram**	**14/04/19**	**09:00**	**14/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work	**WB**	
36	**220KV NEWTOWN LINE (Bay No.205) at Powergrid,Subhasgram**	**15/04/19**	**09:00**	**15/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work	WB	
37	**220KV KLC Bantala Line (Bay No.206) at Powergrid,Subhasgram**	**16/04/19**	**09:00**	**16/04/19**	**17:00**	**ODB**	Powergrid, ER-II	AMP work	WB	
38	**402 Tie Bay of 315 MVA ICT#1 and 400 KV Subhasgram Sagardighi Line**	**17/04/19**	**09:00**	**17/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of A/R Relay in 402 Bay		
39	**405 Tie Bay of 315 MVA ICT#2 and 400 KV Subhasgram Jeerat Line**	**18/04/19**	**09:00**	**18/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of A/R Relay in 405 Bay		
40	**401 Main Bay of Subhasgram Sagardighi Line at Subhasgram SS**	**19/04/19**	**09:00**	**19/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of A/R Relay in 401 Bay		
41	**404 Main Bay of Subhasgram Rajarhat Line at Subhasgram SS**	**20/04/19**	**09:00**	**20/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Retrofitting of A/R Relay in 404 Bay		
42	**414 Tie Bay of 500 MVA ICT#5 and 400 KV Subhasgram Haldia Line-2**	**21/04/19**	**09:00**	**23/04/19**	**17:00**	**OCB**	Powergrid, ER-II	Pole Inspection of 414 Breaker		
43	**220 KV Birpara-Siliguri Ckt-I**	**08/04/19**	**08:00**	**08/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical Distance Relay and Various shutdown related TLM works		
44	**220 KV Birpara-Siliguri Ckt-I**	**09/04/19**	**08:00**	**09/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Various Shutdown related TLM works		
45	**220 KV Birpara-Siliguri Ckt-II**	**10/04/19**	**08:00**	**10/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical Distance Relay and Various shutdown related TLM works		
46	**220 KV Birpara-Siliguri Ckt-II**	**11/04/19**	**08:00**	**11/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Various Shutdown related TLM works		
47	**220KV Birpara-Chukha Ckt-I**	**12/04/19**	**08:00**	**12/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical Distance Relay		
48	**220KV Birpara-Chukha Ckt-II**	**13/04/19**	**08:00**	**13/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Retrofitting of Numerical Distance Relay	NLDC	
49	**220KV Birpara-Malbase Line**	**16/04/19**	**08:00**	**16/04/19**	**17:30**	**ODB**	Powergrid, ER-II	New Arching Horn fixing work at different Tension Towers	NLDC	
50	**400 KV Binaguri-Tala Ckt-III**	**17/04/19**	**08:00**	**17/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Broken Insulator Replacement,Line defect rectification & Line AMP works.	NLDC	
51	**400 KV Binaguri-Tala Ckt-IV**	**18/04/19**	**08:00**	**18/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Broken Insulator Replacement,Line defect rectification & Line AMP works.	NLDC	

52	**220KV SILIGURI-KISHENGUNJ # I & II**	**03/04/19**	**08:00**	**04/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For shorting at Anch-I tower (M/C)to by-pass the LILO portion of 220KV SLG-KNE-DLK -I&II line terminating Kishanganj S/S . This arrangement required for tower erection on new Pile foundation near Kishanganj S/S. After shoring line will be established as 220KV SLG-DLK line . Antipacted outage duration of LILO M/C portion feeding Kishanganj S/S 40 days.		
53	**220KV DALKHOLA-KISHENGUNJ # I & II**	**03/04/19**	**08:00**	**04/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For shorting at Anch-I tower (M/C)to by-pass the LILO portion of 220KV SLG-KNE-DLK -I&II line terminating Kishanganj S/S . This arrangement required for tower erection on new Pile foundation near Kishanganj S/S. After shoring line will be established as 220KV SLG-DLK line . Antipacted outage duration of LILO M/C portion feeding Kishanganj S/S 40 days.		
54	**220KV Main Bus-I at Dalkhola**	**22/04/19**	**08:00**	**22/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Jumper Replacement Work	WB	
55	**400 KV Malda-New Purnea -I**	**10/04/19**	**08:00**	**11/04/19**	**17:00**	**ODB**	Powergrid, ER-II	S/D required for rectification of OPGW Peak Bend,CT replacement at Malda end	NLDC	
56	**132 KV kurseong-Rangit**	**01/04/19**	**09:00**	**03/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Sag/Tension correction between Loc 51-52, due to land slide. Complete release of tension required.	WB	
57	**132 KV siliguri Melli**	**04/04/19**	**09:00**	**05/04/19**	**17:00**	**ODB**	Powergrid, ER-II	For 3-Ph A/R implementation.	SIKKIM	
58	**132 KV siliguri kurseong**	**06/04/19**	**09:00**	**08/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Line defect rectification & Line AMP works.	WB	
59	400KV Binaguri Rangpo Ckt-1&2	01/04/19	09:00	30/04/19	17:00	OCC	Line reconductoring job	Powergrid, ER-II	NLDC	**Due to High hydro , SD may not be Feasible. If SD required consent from Teesta & Dickchu other shall be obtained.**
60	**220 KV Bus 1&2 with siliguri 1&2, Birpara1&2, Bus sectionalizer 1&2**	**13/04/19**	**09:00**	**13/04/19**	**15:00**	**ODB**	Powergrid, ER-II	for stringing of Jackbus of 315 MVA ICT#3(Construction package-Techno) under ERSS-XVII	WB	**MAY BE AVOIDED ON ELECTION DAYS**
61	**220 KV Bus #1 at Binaguri**	**15/04/19**	**09:00**	**15/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Equipment erection of 220 KV ICT#3 bay under ERSS-XVII	WB	
62	**220 KV Bus #2 at Binaguri**	**16/04/19**	**09:00**	**16/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Equipment erection of 220 KV ICT#3 bay under ERSS-XVII	WB	
63	**400KV Bus#1 at Binaguri**	**17/04/19**	**09:00**	**17/04/19**	**17:00**	**ODB**	Powergrid, ER-II	GIS bushing erection under 400KV Bus#1under ERSS-XVII	NLDC	
64	**400KV Bus#2 at Binaguri**	**18/04/19**	**09:00**	**18/04/19**	**17:00**	**ODB**	Powergrid, ER-II	GIS bushing erection under 400KV Bus#2 under ERSS-XVII	NLDC	
65	**50 MVA ICT 132/66 KV at Powergrid,Gangtok**	**04/04/19**	**09:00**	**04/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For AnnualAMp Works	SIKKIM	
66	**50 MVA ICT 132/66KV at Powergrid,Gangtok**	**09/04/19**	**09:00**	**09/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For AnnualAMp Works	SIKKIM	
67	**132KV Gangtok-Rangpo Line**	**11/04/19**	**09:00**	**11/04/19**	**12:00**	**ODB**	Powergrid, ER-II	Line A/R implementation	SIKKIM	

68	**66 KV Gangtok-Tadong Line**	**16/04/19**	**09:00**	**16/04/19**	**12:00**	**ODB**	Powergrid, ER-II	For AnnualAMp Works	**SIKKIM**	
69	**66 KV Gangtok-LLHP Line**	**18/04/19**	**09:00**	**18/04/19**	**17:00**	**ODB**	Powergrid, ER-II	For AnnualAMp Works & Relay replacement	SIKKIM	
70	**132kv Rangit -Rangpo Ckt**	**04/04/19**	**09:00**	**05/04/19**	**17:30**	**OCB**	Powergrid, ER-II	LOC 52 & 53 balance porcelain insulator replacement work due to power line crossing	**SIKKIM**	
71	**Rangpo - Teesta -V Line 2**	**04/04/19**	**08:00**	**08/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work		
72	**220KV BUS-1 at Rangpo**	**09/04/19**	**08:00**	**11/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work(both Shutdown needed on same dates) & TLM insulator changing work		
73	**220KV Rangpo NEW MELLI line**	**09/04/19**	**08:00**	**13/04/19**	**17:00**	**OCB**	Powergrid, ER-II			
74	**400\220kV 315 MVA ICT-2 at Rangpo**	**12/04/19**	**08:00**	**15/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work,		
75	**220\132 Kv 100 MVA ICT-2 at Rangpo**	**16/04/19**	**08:00**	**19/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work,		
76	**400\220kV 315 MVAICT -4 at Rangpo**	**20/04/19**	**08:00**	**24/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work,		
77	**400\220kV 315 MVAICT -3 at Rangpo**	**25/04/19**	**08:00**	**29/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For rectification of SF6 gas leakage repair work,		
78	**132KV Rangpo-Chuzachen line**	**14/04/19**	**09:00**	**14/04/19**	**18:00**	**ODB**	Powergrid, ER-II	Line A/R implementation		
79	**132KV Rangpo Melli**	**18/04/19**	**09:00**	**21/04/19**	**18:00**	**ODB**	Powergrid, ER-II	Sag adjustment work in Span LILO 84 - LILO85 - LILO86 under Sikkim Govt. jurisdiction	SIKKIM	
80	**132kV BUS-1 at Rangpo**	**02/04/19**	**09:00**	**12/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For Bus extension to new Chuzachen bays (Construction works)	SIKKIM	
81	**132kV BUS-2 at Rangpo**	**14/04/19**	**09:00**	**24/04/19**	**17:00**	**OCB**	Powergrid, ER-II	For Bus extension to new Chuzachen bays (Construction works)	SIKKIM	
82	**132kV Rangpo Chuzachen and 132kV Rangpo Melli**	**28/04/19**	**08:00**	**28/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For new Chuzachen bays LILO (Construction works)	SIKKIM	
83	**220 KV TBC at Malda**	**01/04/19**	**08:00**	**30/04/19**	**17:00**	**OCB**	Powergrid, ER-II	ERSS-XVII-B Constructional work	WB	**DALKHOLA BUS COUPLER SHALL BE OPENED**
84	**400KV TBC at Malda**	**01/04/19**	**08:00**	**30/04/19**	**17:00**	**OCB**	Powergrid, ER-II	ERSS-XVII-B Constructional work	WB	**DALKHOLA BUS COUPLER SHALL BE OPENED**
85	**400 KV Malda-Purnea-II at Malda**	**17/04/19**	**08:00**	**17/04/19**	**17:00**	**ODB**	Powergrid, ER-II	CT Replacement at Malda end	NLDC	
86	**400KV BUS-I at Malda**	**02/04/19**	**08:00**	**02/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Isolator opening(ERSS-XVII-B Constructional work)	WB	

87	**400KV BUS-II at Malda**	**03/04/19**	**08:00**	**03/04/19**	**17:00**	**ODB**	Powergrid, ER-II	Isolator opening(ERSS-XVII-B Constructional work)	**WB**	
88	**400KV BUS-I at Malda**	**23/04/19**	**08:00**	**24/04/19**	**17:00**	**OCB**	Powergrid, ER-II	Isolator closing(ERSS-XVII-B Constructional work)	WB	
89	**400 KV BUS-II at Malda**	**25/04/19**	**08:00**	**26/04/19**	**17:00**	**OCB**	Powergrid, ER-II	Isolator closing(ERSS-XVII-B Constructional work)	WB	
90	**220KV BUS-I at Malda**	**04/04/19**	**08:00**	**04/04/19**	**16:00**	**ODB**	Powergrid, ER-II	To conect isolator jumper(ERSS-XVII-B Constructional work)	WB	
91	**220KV BUS-II at Malda**	**05/04/19**	**08:00**	**05/04/19**	**17:00**	**ODB**	Powergrid, ER-II	To conect isolator jumper(ERSS-XVII-B Constructional work)	WB	
92	**220 KV MALDA-DALKHOLA-I**	**10/04/19**	**08:00**	**10/04/19**	**17:00**	**ODB**	Powergrid, ER-II	A/R Retrofitting,LA base insulator change in R-ph at Dlkhola	WB	
93	**220 KV MALDA-DALKHOLA-II**	**11/04/19**	**08:00**	**11/04/19**	**17:00**	**ODB**	Powergrid, ER-II	A/R Retrofitting	WB	
94	**A/R OF 400 KV Farakka- Sagradighi-II**	**01/04/19**	**09:00**	**31/04/19**	**18:00**	**ODB**	Powergrid, ER-II	Auto reclose to be kept on Non auto mode from both end for PID testing of insulator.	WB	
95	**400 KV BUS-I of NTPC Farakka**	**01/04/19**	**09:00**	**01/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For disconnecting BUS isolator of bay no-22 from BUS-I (For augmentation of BUS Isolator from 2000A to 3150 A rating under ERSS-XV projects).		
96	**400 KV Farakka- Berhampur-II with Reactor at Farakka**	**02/04/19**	**09:00**	**03/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For balance protection scheme checking of bay-23 (Tie bay of 400 KV Fkk- Bhp-II and 400 KV Fkk- Khg-I) with respect with bay-24 & to carry out punch point works in TL		
97	**400 KV Farakka- Berhampur-I**	**04/04/19**	**09:00**	**05/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For protection scheme checking of Bay-34 with respect of bay-33 after upgradation of bay-34 under ERSS-XV projects		
98	**400 KV Farakka- Kahalgaon-III line**	**08/04/19**	**09:00**	**09/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For Jumper coonnection, relay setting change & Bay stability between Bay- 34 & 35 after upgradation of bay-34 under ERSS-XV projects.		
99	**400 KV BUS-I of NTPC Farakka**	**10/04/19**	**09:00**	**10/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For connecting BUS isolator of bay no-22 to BUS-I (After augmentation of BUS Isolator from 2000A to 3150 A rating under ERSS-XV projects).		
100	**400 KV Farakka- Kahalgaon-I line**	**11/04/19**	**09:00**	**11/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For connecting bay-22 (Main Bay of 400 KV Farakka-Kahalgaon-I) after augmentation of Isolator & CT from 2000A to 3150 A rating under ERSS-XV projects & bay		
101	**400 KV Farakka-Gokarna-I**	**12/04/19**	**09:00**	**13/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For Event Logger commissioning (Integration with NTPC system) under ERSS-V.	WB	
102	**400 KV Farakka-Gokarna-II**	**15/04/19**	**09:00**	**16/04/19**	**18:00**	**ODB**	Powergrid, ER-II	For Event Logger commissioning (Integration with NTPC system) under ERSS-V.	WB	
103	**400 KV Farakka- Sagradighi-II**	**11/04/19**	**09:00**	**12/04/19**	**18:00**	**ODB**	Powergrid, ER-II	Reactification of damage earthpeak at loc no-15 & 103	WB	
104	**400KV BUS 3 at Durgapur**	**01/04/19**	**09:30**	**01/04/19**	**17:30**	**ODB**	Powergrid, ER-II	ICT -3 jumper connection		
105	**220 KV BUS -2 at Durgapur**	**02/04/19**	**09:30**	**02/04/19**	**17:30**	**ODB**	Powergrid, ER-II	ICT -3 jumper connection	DVC	

106	**400KV BUS 1 at Durgapur**	**04/04/19**	**09:30**	**04/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORKS		
107	**400KV BUS 2 at Durgapur**	**05/04/19**	**09:30**	**05/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORKS		
108	**220 KV Durgapur DVC-1**	**06/04/19**	**09:30**	**06/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Line CT Tan Delta test	DVC	
109	**400KV BUS 4 at Durgapur**	**08/04/19**	**09:30**	**08/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORKS		
110	**220 KV Durgapur DVC-II**	**24/04/19**	**09:30**	**24/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Line CT Tan Delta test	DVC	
111	**418 bay (ICT-II main Bay) at Durgapur**	**08/04/19**	**09:30**	**10/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Interrupter replacement of main CB		
112	**420 Bay (Mithon-II & Future Tie bay) at Durgapur**	**11/04/19**	**09:30**	**13/04/19**	**17:30**	**ODB**	Powergrid, ER-II	Gasket replace in main pole		
113	**408 bay (ICT-I & B'nagar -1 tie Bay) at Durgapur**	**15/04/19**	**09:30**	**15/04/19**	**17:30**	**ODB**	Powergrid, ER-II	CT Replace & AMP WORK		
114	**409 bay (ICT-I Main Bay) at Durgapur**	**16/04/19**	**09:30**	**16/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
115	**404 bay (B'Nagar-2 Main Bay) at Durgapur**	**17/04/19**	**09:30**	**17/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
116	**417 bay (ICT-2 & FUTURE TIE Bay) at Durgapur**	**18/04/19**	**09:30**	**18/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
117	**400KV BUS SECTION -2 (BS-2) BAY at Durgapur**	**20/04/19**	**09:30**	**20/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
118	**220KV BUS SECTION BAY (205) at Durgapur**	**22/04/19**	**09:30**	**22/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
119	**400KV BUS SECTION -1 (BS-1) BAY at Durgapur**	**23/04/19**	**09:30**	**23/04/19**	**17:30**	**ODB**	Powergrid, ER-II	AMP WORK		
120	**220 KV S/C STPS - Chandil TL-(TL-229-230)-WBSETCL**	**09/04/19**	**00:00**	**10/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 83/0 (DD+9)-84/0(DD+9). Span Length-160 mtr	WB	
121	**400 KV D/C Maithan - Jamshedpur(TATA) (TL -(316-317)**	**11/04/19**	**00:00**	**12/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 85/0 (DD+25)-86/0(DD+25+1.5 RC). Span Length-262 mtr		
122	132 KV D/C Purulia - Jamshedpur (TL 104- MBE-DA+0—TL 105-MBE-DA+0))	17/04/19	00:00	18/04/19	00:00	ODB	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 95/0 (DD+9)-96/0(DD+18). Span Length-258 mtr	DVC	AFTER 15/04/19 CHANDIL ASSISTENCE
123	**400 KV D/C Durgapur - Jamshedpur (TL-286-287)**	**25/04/19**	**00:00**	**26/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 101/0 (DD+25+1.5 RC)-102/0(DD+25+1.5 RC). Span Length-208 mtr		
124	**400 KV S/C Durgapur - Jamshedpur TL- (TL-329-330)**	**23/04/19**	**00:00**	**24/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 102/0 (DD+25+1.5 RC)-103/0(DD+9). Span Length-208 mtr		

125	**132 KV D/C Bishnupur - Khatra (TL-180-181)**	**26/04/19**	**00:00**	**27/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 134/4 (DD+9+3 RC)-135/0(DD+9). Span Length-320 mtr	WB	
126	**132 KV D/C CK Road - Medinipur TL**	**11/04/19**	**00:00**	**12/04/19**	**00:00**	**ODB**	Powergrid, ER-II	For Powerline crossing of 765 KV RMTL-AP 162/0 (DD+9)-163/0(DD+9). Span Length-265 mtr	WB	
127	**Tapping point of 400 KV D/C MID-KGP-CHANDITALA LILO LINE-(TL-56/0 &55/0)**	**28/04/19**	**00:00**	**30/04/19**	**00:00**	**OCB**	Powergrid, ER-II	For TAPPING of 400 KV CKTL-Loop In AP-1/0(DD+0) SPAN-200 MTR and LOOP OUT AP-29/0-(DD+0)- - SPAN 200 MTR-- Subject to approval of ENGG and AM DEPT	WB	
128	Maithon-Mejia #1 Line	**01/04/19**	**10:00**	**01/04/19**	**11:00**	ODB	Powergrid, ER-II	For oil sampling of line CT	DVC	
129	Maithon-Kahalgaon-2 Line	**03/04/19**	**09:00**	**04/04/19**	**18:00**	ODB	Powergrid, ER-II	Replacement of Main Bay and Line Bay CT		
130	500MVA ICT-1 at Maithon SS.	**05/04/19**	**07:00**	**06/04/19**	**18:00**	ODB	Powergrid, ER-II	Rectification of MOG, CT replacement Main and X-mer bay, and AMP	DVC	
131	400 kV Bus-3 at Maithon SS.	**08/04/19**	**10:00**	**08/04/19**	**14:00**	ODB	Powergrid, ER-II	Project Work under ERSS-XVII (Dismentling of Jumpers)		
132	400 kV Bus-4 at Maithon SS.	**09/04/19**	**10:00**	**09/04/19**	**14:00**	ODB	Powergrid, ER-II	Project Work under ERSS-XVII (Dismentling of Jumpers)		
133	220KV Maithon-Dhanbad#1 Line	**10/04/19**	**09:00**	**10/04/19**	**17:00**	ODB	Powergrid, ER-II	Bay AMP works	DVC	
134	400KV Maithon-Mejia #3 line	**11/04/19**	**09:00**	**12/04/19**	**17:00**	ODB	Powergrid, ER-II	For power line crossing work i.r.o ERSS-XVII.	DVC	
135	400KV Bus-2 at Maithon SS.	**13/04/19**	**09:00**	**13/04/19**	**17:00**	ODB	Powergrid, ER-II	For Bus CVT replacement work		
136	400 kV Bus-3 at Maithon SS.	**22/04/19**	**10:00**	**22/04/19**	**14:00**	ODB	Powergrid, ER-II	Project Work under ERSS-XVII (Reconnection of Jumper)		
137	400 kV Bus-4 at Maithon SS.	**22/04/19**	**10:00**	**22/04/19**	**14:00**	ODB	Powergrid, ER-II	Project Work under ERSS-XVII (Reconnection of Jumper)		
138	400KV Maithon-Right Bank # 2 line	**01/04/19**	**08:00**	**08/04/19**	**18:00**	Continous basis	Powergrid, ER-II	Re conductoring work under ERSS-XVII.		
139	400KV Maithon-Right Bank # 2 line	**24/04/19**	**08:00**	**30/04/19**	**18:00**	Continous basis	Powergrid, ER-II	Re conductoring work under ERSS-XVII.		
140	400KV Maithon-Right Bank # 1 line	**09/04/19**	**08:00**	**23/04/19**	**18:00**	Continous basis	Powergrid, ER-II	Re conductoring work under ERSS-XVII.		
141	400KV Maithon-Jamshedpur line.	**08/04/19**	**09:00**	**09/04/19**	**18:.00**	ODB	Powergrid, ER-II	Insulator replacement work.		
142	400KV Mejia-Jamshedpur line	**10/04/19**	**09:00**	**11/04/19**	**18:.00**	ODB	Powergrid, ER-II	Insulator replacement work.	DVC	
143	400KV Maithon-Durgapur# 2 line	**15/04/19**	**09:00**	**15/04/19**	**18:.00**	ODB	Powergrid, ER-II	Jumper rectification .		
144	400KV PATNA-BALIA-I	**10/04/19**	**08:00**	**10/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer	**NLDC**	

145	400KV PATNA-BALIA-II	**11/04/19**	**08:00**	**11/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer	NLDC	
146	400KV PATNA-BALIA-III	12/04/19	08:00	13/04/19	17:00	ODB	Power line crossing work of 400 kV Patna - Nabinagar line	POWERGRID ER-I	NLDC	Subject to availability all other lines in ER-NR corridor.
147	400KV PATNA-BALIA-IV	12/04/19	08:00	13/04/19	17:00	ODB	Power line crossing work of 400 kV Patna - Nabinagar line	POWERGRID ER-I	NLDC	
148	765 kV New Ranchi - Dharamjaygarh CKT-II	**23/04/19**	**09:00**	**27/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of broken Glass insulators damaged by miscreants about 140 nos. locations	**NLDC**	
149	400KV BIHARSHARIFF-BALIA-I	**23/04/19**	**08:00**	**24/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
150	400KV BIHARSHARIFF-BALIA-II	**25/04/19**	**08:00**	**26/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
151	400KV PATNA-BALIA-I	**27/04/19**	**08:00**	**27/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
152	400KV PATNA-BALIA-II	**28/04/19**	**08:00**	**28/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
153	765KV GAYA-BALIA-S/C	26/03/19	08:00	10/04/19	18:00	ODB	POWERGRID ER-I	FOR TOWER STRENGTHENING WORK.	NLDC	Subject to availability all other lines in ER-NR corridor.
154	400KV BIHARSHARIFF - VARANASI - I	01/04/19	08:00	29/04/19	18:00	OCB	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV	POWERGRID ER-I	NLDC	After return of 400kv Biharsariff-Sasaram D/C
155	400KV BIHARSHARIFF - VARANASI - II	01/04/19	08:00	29/04/19	18:00	OCB	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV	POWERGRID ER-I	NLDC	
156	400KV BIHARSHARIFF - SASARAM- I	**01/04/19**	**08:00**	**25/04/19**	**18:00**	OCB	POWERGRID ER-I	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV Biharsharif - Sasaram Line due to Construction of New Railway Line by ECR from Natesar to Islampur. HVDC SASARAM WILL BE OUT OF SERVICE	NLDC	
157	400KV BIHARSHARIFF - SASARAM- II	**01/04/19**	**08:00**	**25/04/19**	**18:00**	OCB	POWERGRID ER-I	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV Biharsharif - Sasaram Line due to Construction of New Railway Line by ECR from Natesar to	NLDC	
158	765 KV S/C Sasaram-Fatehpur	15/04/19	07:00	30/04/19	19:00	ODB	POWERGRID ER-I	FOR TOWER STRENTHENING WORK	NLDC	Subject to availability all other lines in ER-NR corridor.
159	765 KV S/C Gaya-Varanasi-II	11/04/19	07:00	12/04/19	18:00	ODB	for rectification of defects identified	POWERGRID ER-I	NLDC	Subject to availability all other lines in ER-NR corridor.
160	400 KV RANCHI-SIPAT-1 LINE AND ITS 80 MVAR LINE REACTOR AT RANCHI	**22/04/19**	**10:00**	**22/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP & Replacement of defective CAPTHOR in FSC AND To attend oil leakage in Line Reactor	NLDC	
161	765 kV Gaya-Varanasi-2	**23/04/19**	**09:00**	**24/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.	NLDC	
162	220 kV Pusauli - Sahupuri	**02/04/19**	**09:00**	**05/04/19**	**18:00**	OCB	POWERGRID ER-I	TO FACILITATE THE SHUT DOWN OF ICT - I AT PUSAULI SS	NLDC	
163	400kV JAMSHEDPUR -DURGAPUR LINE	**02/04/19**	**09:30**	**02/04/19**	**17:30**	ODB	POWERGRID ER-I	Static Auto reclose relay to be replaced with numerical relay		

164	400kV Ranchi - Rourkela -II	**04/04/19**	**09:30**	**04/04/19**	**17:30**	ODB	POWERGRID ER-I	Defective Insulator replacement work Loc no300		
165	400kV JAMSHEDPUR - Mejia LINE	**06/04/19**	**09:30**	**06/04/19**	**17:30**	ODB	POWERGRID ER-I	Static Auto reclose relay to be replaced with numerical relay	DVC	
166	400kV JAMSHEDPUR - Maithon Line	**08/04/19**	**09:30**	**08/04/19**	**17:30**	ODB	POWERGRID ER-I	Static Auto reclose relay to be replaced with numerical relay		
167	400kV JAMSHEDPUR - Chaibasa-I	**10/04/19**	**09:30**	**10/04/19**	**17:30**	ODB	POWERGRID ER-I	Static Auto reclose relay to be replaced with numerical relay		
168	400kV JAMSHEDPUR - Chaibasa-II	**12/04/19**	**09:30**	**12/04/19**	**17:30**	ODB	POWERGRID ER-I	Static Auto reclose relay to be replaced with numerical relay		
169	400KV MAIN BAY OF ANDAL -I AT JAMSHEDPUR	**17/04/19**	**09:30**	**17/04/19**	**17:30**	ODB	POWERGRID ER-I	Maintenance of CB Catch gear unit		
170	400KV MAIN BAY OF ANDAL -II AT JAMSHEDPUR	**18/04/19**	**09:30**	**18/04/19**	**17:30**	ODB	POWERGRID ER-I	Maintenance of CB Catch gear unit		
171	400kV JSR - Baripada S/C	**19/04/19**	**09:30**	**19/04/19**	**17:30**	ODB	POWERGRID ER-I	Defective Insulator replacement work Loc no 241		
172	765KV 240MVAR B/R-2 AT NEW RANCHI	**02/04/19**	**09:00**	**03/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
173	765/400KV, 1500MVA ICT-2 AT NEW RANCHI	**04/04/19**	**09:00**	**05/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
174	765/400 KV, 1500MVA ICT-1 AT NEW RANCHI	**06/04/19**	**09:00**	**06/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
175	765KV Bus-1 AT NEW RANCHI	**08/04/19**	**09:00**	**08/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
176	50MVAR L/R-1 (Non Switchable) of 400KV New Purulia -1 AT NEW RANCHI	**11/04/19**	**09:00**	**11/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP WORK The mentioned line will be out for 10min each time for taking out and taking in the L/R	**WB**	
177	400KV BUS-1 AT NEW RANCHI	**15/04/19**	**09:00**	**15/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	JSEB	
178	765KV Tie bay of 240MVAR B/R-1 and Future AT NEW RANCHI	**16/04/19**	**09:00**	**16/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
179	400KV BUS-2 AT NEW RANCHI	**20/04/19**	**09:00**	**20/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	JSEB	
180	765 KV MAIN BAY 1500MVA ICT-2 AT NEW RANCHI	**22/04/19**	**09:00**	**22/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
181	765KV BUS-2 AT NEW RANCHI	**29/04/19**	**09:00**	**29/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	**NLDC**	
182	765KV , 240MVAR B/R-1 AT NEW RANCHI	**30/04/19**	**09:00**	**31/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP	NLDC	
183	VSC-1 (+/- 150MVAR) OF STATCOM AT NEW RANCHI	**22/04/19**	**09:00**	**25/04/19**	**17:00**	ODB	POWERGRID ER-I	Connector tightening of Bus Duct		

184	VSC-2 (+/- 150MVAR) OF STATCOM AT NEW RANCHI	**15/04/19**	**09:00**	**18/04/19**	**17:00**	ODB	POWERGRID ER-I	Connector tightening of Bus Duct		
185	400KV New Ranchi- Ranchi -1	**09/04/19**	**09:00**	**09/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulator changing work, tightning of keeper, CC ring, Jumper etc.		
186	400KV New Ranchi- Ranchi -2	**10/04/19**	**09:00**	**10/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulator changing work, tightning of keeper, CC ring, Jumper etc.		
187	400KV New Ranchi- Ranchi Ckt-3	**12/04/19**	**09:00**	**12/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulation sleeve installation work at Loc 054-055 OF 400 kV Ranchi-New Ranchi CKT-3 & 4.		
188	400KV New Ranchi- Ranchi Ckt-4	**12/04/19**	**09:00**	**12/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulation sleeve installation work at Loc 054-055 OF 400 kV Ranchi-New Ranchi CKT-3 & 4.		
189	400kv Ranchi-Maithan(PG) -s/c	**12/04/19**	**09:00**	**12/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulation sleeve installation work at Loc 054-055 OF 400 kV Ranchi-New Ranchi CKT-3 & 4.		
190	400 kv Ranchi-Raghunathpur -I	**12/04/19**	**09:00**	**12/04/19**	**18:00**	ODB	POWERGRID ER-I	For Insulation sleeve installation work at Loc 054-055 OF 400 kV Ranchi-New Ranchi CKT-3 & 4.		
191	400 kV Chandwa-Gaya CKT-I	**18/04/19**	**09:00**	**18/04/19**	**18:00**	ODB	POWERGRID ER-I	For shifting of 33 kV under crossing line of JUSNL (400 kV Chandwa-Gaya T/L Line tripped due to less clearence).	**NLDC**	
192	400 kV Chandwa-Gaya CKT-II	**18/04/19**	**09:00**	**18/04/19**	**18:00**	ODB	POWERGRID ER-I	For shifting of 33 kV under crossing line of JUSNL (400 kV Chandwa-Gaya T/L Line tripped due to less clearence).	NLDC	
193	765 kV New Ranchi - Dharamjaygarh CKT-II	**23/04/19**	**09:00**	**27/04/19**	**18:00**	ODB	POWERGRID ER-I	for replacement of broken Glass insulators damaged by miscreants about 140 nos. locations	NLDC	
194	400KV BUS-1 AT DALTANAGNJ	**07/04/19**	**09:30**	**07/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	**JSEB**	
195	400kV BUS-2 AT DALTANAGNJ	**08/04/19**	**09:30**	**08/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	JSEB	
196	400 KV DALTANGNAJ-SASARAM -1	**11/04/19**	**09:30**	**11/04/19**	**17:30**	ODB	POWERGRID ER-I	BAY AMP		
197	400 KV DALTANGNAJ-SASARAM -2	**12/04/19**	**09:30**	**12/04/19**	**17:30**	ODB	POWERGRID ER-I	BAY AMP		
198	132kV DALTONGANJ- DALTONGANJ-1	**13/04/19**	**09:30**	**13/04/19**	**17:30**	ODB	POWERGRID ER-I	BAY AMP		
199	132kV DALTONGANJ- DALTONGANJ-2	**14/04/19**	**09:30**	**14/04/19**	**17:30**	ODB	POWERGRID ER-I	BAY AMP		
200	400KV TIE BAY OF SASARAM L-1 AND ICT-I AT DALTANAGNJ	**18/04/19**	**09:30**	**18/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
201	220kV BUS-1 AT DALTANAGNJ	**25/04/19**	**09:30**	**25/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	JSEB	
202	220kV BUS-2 AT DALTANAGNJ	**26/04/19**	**09:30**	**26/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	JSEB	

203	132KV BUS AT ARA	03/04/19	10:00	03/04/19	16:00	ODB	POWERGRID ER-I	AMP and Corona ring installation in bus isolator. ALL 132KV LINE WILL BE OUT	BSEB	
204	132KV ARA-ARA-S/C	04/04/19	10:00	04/04/19	16:00	ODB	POWERGRID ER-I	Isolator current carrying assembly replacement	BSEB	
205	400KV BIHARSHARIFF-BALIA-I	23/04/19	08:00	24/04/19	18:00	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
206	400KV BIHARSHARIFF-BALIA-II	25/04/19	08:00	26/04/19	18:00	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
207	400KV PATNA-BALIA-I	27/04/19	08:00	27/04/19	18:00	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
208	400KV PATNA-BALIA-II	28/04/19	08:00	28/04/19	18:00	ODB	POWERGRID ER-I	for replacement of porcelain insulator by polymer insulator	NLDC	
210	400/220KV 500MVA ICT-II AT NEW PURNEA.	05/04/19	09:30	05/04/19	18:00	ODB	POWERGRID ER-I	For upgradation of transformer Isolator	BSEB	
211	400/220KV 500MVA ICT-I AT NEW PURNEA.	08/04/19	09:30	08/04/19	18:00	ODB	POWERGRID ER-I	For upgradation of transformer Isolator	BSEB	
212	220kV BUS-II AT NEW PURNEA.	18/04/19	09:30	18/04/19	18:00	ODB	POWERGRID ER-I	AMP WORK	BSEB	
213	220kV BUS-I AT NEW PURNEA.	23/04/19	09:30	23/04/19	18:00	ODB	POWERGRID ER-I	AMP WORK	BSEB	
214	132 KV MAIN BAY OF PURNEA(PG)- PURNEA (BSPTCL)-I AT PURNEA(PG)	02/04/19	09:30	02/04/19	18:00	ODB	POWERGRID ER-I	FOR NTAMC WORK	BSEB	
215	133 KV MAIN BAY OF PURNEA(PG)- PURNEA (BSPTCL)-II AT PURNEA(PG)	03/04/19	09:30	03/04/19	18:00	ODB	POWERGRID ER-I	FOR NTAMC WORK	BSEB	
216	134 KV MAIN BAY OF PURNEA(PG)- PURNEA (BSPTCL)-III AT PURNEA(PG)	04/04/19	09:30	04/04/19	18:00	ODB	POWERGRID ER-I	FOR NTAMC WORK	BSEB	
217	132 KV MAIN BAY OF PURNEA(PG)- KISHANGANJ (BSPTCL)-I AT PURNEA(PG)	06/04/19	09:30	06/04/19	18:00	ODB	POWERGRID ER-I	FOR NTAMC WORK	BSEB	
218	200MVA,400/132KV ICT-1 at Banka	25/04/19	10:00	25/04/19	13:00	ODB	POWERGRID ER-I	To install insulation tape on dome & connector of tertiary bushing of ICT-1.	BSEB	
219	200MVA,400/132KV ICT-2 at Banka	26/04/19	10:00	26/04/19	13:00	ODB	POWERGRID ER-I	To install insulation tape on dome & connector of tertiary bushing of ICT-2.	BSEB	
220	400KV MAIN BAY OF 80 MVAR B/R AT RANCHI	03/04/19	10:00	03/03/19	17:00	ODB	POWERGRID ER-I	AMP		
221	400KV TIE BAY OF NEW RANCHI-IV AND FUTURE AT RANCHI	04/04/19	10:00	04/04/19	17:00	ODB	POWERGRID ER-I	AMP		

222	400KV MAIN BAY OF 400KV NEW RANCHI-IV AT RANCHI	**05/04/19**	**10:00**	**05/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP		
223	400 KV MAIN BUS-1 AT RANCHI	**09/04/19**	**10:00**	**09/04/19**	**17:00**	ODB	POWERGRID ER-I	Errection & Commisssioning of Jack bus for Tie Bay of Ranchi-New Ranchi-I & II) & fixing of CVT Stool	JSEB	
224	400 KV MAIN BUS-2 AT RANCHI	**11/04/19**	**10:00**	**11/04/19**	**17:00**	ODB	POWERGRID ER-I	Fixing of stool on Bus CVT Yph .400 KV RNC-NRNC-I & CKT-II WILL BE OUT OF SERVICE DUE TO NON AVAILABILITY OF TIE BAY	JSEB	
225	400 KV RANCHI-SIPAT-1 LINE AND 80 MVAR LINE REACTOR AT RANCHI	**22/04/19**	**10:00**	**22/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP & Replacement of defective CAPTHOR in FSC AND To attend oil leakage in Line Reactor	NLDC	
226	400KV RANCHI-ROURKELA-I	**16/04/19**	**09:30**	**16/04/19**	**17:00**	ODB	POWERGRID ER-I	for insulator replacement work damaged by miscreants		
227	400KV RANCHI-ROURKELA-II	**17/04/19**	**09:30**	**17/04/19**	**17:00**	ODB	POWERGRID ER-I	for insulator replacement work damaged by miscreants		
228	220KV SIDE BAY OF 400/220KV ICT-I AT CHAIBASA.	**02/04/19**	**09:30**	**02/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK .		
229	400 KV Chaibasa- KHARAGRPUR-I	**04/04/19**	**09:30**	**05/03/19**	**17:30**	ODB	POWERGRID ER-I	Auto reclose checking/testing at Chaibasa end	WB	
230	400 KV Chaibasa- KHARAGRPUR-II	**05/04/19**	**09:30**	**06/03/19**	**17:30**	ODB	POWERGRID ER-I	Auto reclose checking/testing at Chaibasa end	WB	
231	400KV Tie Bay of 400KV KAHALGAON-2 & 80 MVAR B/R AT LAKHISARAI	**01/04/19**	**10:00**	**01/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP WORK		
232	400/132KV 200 MVA ICT-1 AT LAKHISARAI	04/04/19	09:00	05/04/19	17:00	OCB	POWERGRID ER-I	Checking of Air Cell & AMP works. 33 kV Tretiary bay will also remain out of service.	BSEB	AFTER 29/04/19(ELECTION DATE)
233	400/132KV 200 MVA ICT-2 AT LAKHISARAI	06/04/19	09:00	07/04/19	17:00	OCB	POWERGRID ER-I	Checking of Air Cell & AMP works.	BSEB	AFTER 29/04/19(ELECTION DATE)
234	400KV Main Bay of 80 MVAR Bus Reactor AT LAKHISARAI	**08/04/19**	**10:00**	**08/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP WORK		
235	400KV Main Bay of 400 Kv kahalgaon-1 AT LAKHISARAI	**11/04/19**	**10:00**	**11/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP WORK		
236	400KV Tie Bay of 400 kV KAHALGAON-1 & Future Bay AT LAKHISARAI	**13/04/19**	**10:00**	**13/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP WORK		
237	50 MVAR L/R (NON SWITCHABLE) OF KAHALGAON-I AT LAKHISARAI	**18/04/19**	**09:00**	**18/04/19**	**17:00**	ODB	POWERGRID ER-I	AMP WORK		
238	400KV KAHALAGOAN-LAKHISARAI-I	**18/04/19**	**09:00**	**18/04/19**	**09:10**	ODB	POWERGRID ER-I	for taking 50 MVAR Line Reactor-II out of service for AMP works.		
239	400KV KAHALAGOAN-LAKHISARAI-I	**18/04/19**	**16:50**	**18/04/19**	**17:00**	ODB	POWERGRID ER-I	for taking 50 MVAR Line Reactor-II in service after AMP works.		
240	132 kV LAKHISARAI-LAKHISARAI-I	**25/04/19**	**10:00**	**25/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP works of Bay Equipments.	BSEB	

241	132 kV LAKHISARAI-LAKHISARAI-II	**27/04/19**	**10:00**	**27/04/19**	**14:00**	ODB	POWERGRID ER-I	AMP works of Bay Equipments.	BSEB	
243	220KV SIDE MAIN BAY OF 400/220KV 315MVA ICT-1 AT MUZAFFARPUR	**12/04/19**	**09:30**	**12/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK	BSEB	
244	220KV SIDE MAIN BAY OF 400/220KV 315MVA ICT-2 AT MUZAFFARPUR	**13/04/19**	**09:30**	**13/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK	BSEB	
245	220KV SIDE MAIN BAY OF 400/220KV 500MVA ICT-3 AT MUZAFFARPUR	**15/04/19**	**09:30**	**15/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK	**BSEB**	
246	400KV Biharsarif - Koderma CKT -I	**23/04/19**	**09:00**	**24/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.	DVC	
247	400KV Biharsarif - Koderma CKT -II	**25/04/19**	**09:00**	**26/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.	DVC	
248	400kV Koderma - Bokaro CKT -I	**03/04/19**	**09:00**	**03/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.	**DVC**	
249	400kV Koderma - Bokaro CKT -II	**04/04/19**	**09:00**	**04/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.	DVC	
250	400 /220 kV 500MVA ICT-III AT GAYA	18/04/19	09:00	19/04/19	18:00	ODB	POWERGRID ER-I	for commisssioning of CSD work	BSEB	AFTER 13/04/19(ELECTION DATE)
251	400 /220 kV 315MVA ICT-II AT GAYA	08/04/19	09:00	10/04/19	18:00	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.	BSEB	AFTER 13/04/19(ELECTION DATE)
252	400 KV 125 MVAR BR-I AT GAYA	**01/04/19**	**09:00**	**03/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.		
253	400 KV 125 MVAR BR-II AT GAYA	**04/04/19**	**09:00**	**06/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.		
254	400 KV BUS-I AT GAYA	**01/04/19**	**09:00**	**06/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.	**BSEB**	
255	400 KV BUS-I AT GAYA	**08/04/19**	**09:00**	**10/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.	BSEB	
256	400 KV BUS-II AT GAYA	**11/04/19**	**09:00**	**12/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.	BSEB	
257	400 KV GAYA-NABINAGAR -1	**14/04/19**	**09:00**	**14/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.		
258	400 KV GAYA-NABINAGAR -2	**15/04/19**	**09:00**	**15/04/19**	**18:00**	ODB	POWERGRID ER-I	For uprating of bay equipment under Nabinagar -2 Project.		
259	400 kV Chandwa-Gaya-2	**09/04/19**	**09:00**	**10/04/19**	**18:00**	ODB	POWERGRID ER-I	For Replacement of Insulators Damaged by Miscreant.		
260	400 kV Maithon-Gaya-1	**02/04/19**	**09:00**	**28/04/19**	**18:00**	OCB	POWERGRID ER-I	Destringing, erection & re-stringing of multi ckt. Tower Loc. 80	NLDC	

261	400 kV Maithon-Gaya-2	**02/04/19**	**09:00**	**28/04/19**	**18:00**	OCB	POWERGRID ER-I	Destringing, erection & re-stringing of multi ckt. Tower Loc. 80	NLDC	
262	400 kV Koderma-Gaya-1	**02/04/19**	**09:00**	**28/04/19**	**18:00**	OCB	POWERGRID ER-I	Destringing, erection & re-stringing of multi ckt. Tower Loc. 80	**NLDC**	
263	400 kV Koderma-Gaya-2	**02/04/19**	**09:00**	**28/04/19**	**18:00**	OCB	POWERGRID ER-I	Destringing, erection & re-stringing of multi ckt. Tower Loc. 80	NLDC	
264	400 KV Biharsharif Banka Ckt - 1	**16/04/19**	**10:00**	**16/04/19**	**18:00**	ODB	POWERGRID ER-I	LINE bay AMP Work		
265	400KV Biharsharif Banka Ckt - 2	**17/04/19**	**10:00**	**17/04/19**	**18:00**	ODB	POWERGRID ER-I	LINE bay AMP Work		
266	400/220KV 315 MVA ICT - 3 AT BIHARSHARIFF	**26/04/19**	**10:00**	**26/04/19**	**18:00**	ODB	POWERGRID ER-I	AMP work	BSEB	
267	400KV BIHARSHARIFF - SASARAM- I	**01/04/19**	**08:00**	**25/04/19**	**18:00**	OCB	POWERGRID ER-I	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV Biharsharif - Sasaram Line due to Construction of New Railway Line by ECR from Natesar to	**NLDC**	
268	400KV BIHARSHARIFF - SASARAM- II	**01/04/19**	**08:00**	**25/04/19**	**18:00**	OCB	POWERGRID ER-I	Realingmnet works of 400KV Biharsharif - Varanasi & 400KV Biharsharif - Sasaram Line due to Construction of New Railway Line by ECR from Natesar to	NLDC	
269	400KV Barh- Motihari CKT-1	01/04/19	08:00	29/04/19	18:00	OCB	Realingmnet works of 400KV Barh- Motihari Line due to Construction of Barh Bypass by NHAI	POWERGRID ER-I	NLDC	Shutdown requset shall be submitted along with work schedule & Sketch of line diversion work & after return of 400KV BSF-SASARAM D/C
270	400KV Barh- Motihari CKT-II	01/04/19	08:00	29/04/19	18:00	OCB	Realingmnet works of 400KV Barh- Motihari Line due to Construction of Barh Bypass by NHAI	POWERGRID ER-I	NLDC	
271	400KV BARH- PATNA CKT - 3 & 4	**04/04/19**	**08:00**	**06/04/19**	**18:00**	ODB	POWERGRID ER-I	Realingmnet works of 400KV Barh- Motihari Line due to Construction of Barh Bypass by NHAI	NLDC	
272	400KV BARH - PATNA CKT 3 & 4	**27/04/19**	**08:00**	**29/04/19**	**18:00**	ODB	POWERGRID ER-I	Realingmnet works of 400KV Barh- Motihari Line due to Construction of Barh Bypass by NHAI	NLDC	
273	400KV Bus -I AT PATNA	**01/04/19**	**09:30**	**03/04/19**	**17:30**	ODB	POWERGRID ER-I	Stringing of Sky bus under SS03 package of Patna Nabinagar Ckt 1	BSEB	
274	400KV Bus 2 AT PATNA	**04/04/19**	**09:30**	**06/04/19**	**17:30**	ODB	POWERGRID ER-I	Stringing of Sky bus under SS03 package of Patna Nabinagar Ckt 1	BSEB	
275	416 bay Ballia -2 Main bay AT PATNA	**07/04/19**	**09:30**	**09/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
276	420 Tie bay of Barh 3 and ballia 3 AT PATNA	**07/04/19**	**09:30**	**07/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
277	422 Main bay OF Ballia 4 AT PATNA	**08/04/19**	**09:30**	**08/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		

278	423 bay Tie bay of Barh 4 and Ballia 4 AT PATNA	**09/04/19**	**09:30**	**09/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
279	424 Main bay OF Barh 4 AT PATNA	**10/04/19**	**09:30**	**10/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
280	205 bay Bus coupler AT PATNA	**12/04/19**	**09:30**	**14/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling	BSEB	
281	207 bay 220KV SIDE MAIN BAY of 500 MVA ICT 3 AT PATNA	**01/04/19**	**09:30**	**01/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
282	208 bay main bay OF sipara 1 AT PATNA	**02/04/19**	**09:30**	**03/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
283	210 bay main bay OF sipara 2 AT PATNA	**04/04/19**	**09:30**	**06/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
284	220 KV Ara khagaul line 1	**07/04/19**	**09:30**	**07/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK	BSEB	
285	220 KV Ara Khagaul line 2	**08/04/19**	**09:30**	**08/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP WORK	BSEB	
286	125 MVAR Bus reactor 1 AT PATNA	**12/04/19**	**09:30**	**12/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
287	500 MVA ICT 3 AT PATNA	**18/04/19**	**09:30**	**18/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	BSEB	
288	220 Kv Patna Sipara 3	**19/04/19**	**09:30**	**19/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP AT PATNA END	BSEB	
292	204 bay Main BAY OF Sipra 3 AT PATNA	**20/04/19**	**09:30**	**20/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP		
293	213 main bay 220KV Fatuha line AT PATNA	**21/04/19**	**09:30**	**23/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
294	400KV Bus -I AT PATNA	**22/04/19**	**09:30**	**23/04/19**	**17:30**	ODB	POWERGRID ER-I	Jumper connection of Bus isolaor and Bus stability	BSEB	
295	400KV Bus 2 AT PATNA	**24/04/19**	**09:30**	**25/04/19**	**17:30**	ODB	POWERGRID ER-I	Jumper connection of Bus isolaor and Bus stability	BSEB	
296	214 Main bay ICT 1 AT PATNA	**26/04/19**	**09:30**	**27/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
297	400 KV Patna Barh line 1	**01/04/19**	**09:30**	**15/04/19**	**17:30**	OCB	POWERGRID ER-I	Under SS03 package for commissioning of 80 MVAR Bus reactor as switchable line reactor		
298	409 Main bay ICT 2 AT PATNA	**24/05/19**	**09:30**	**25/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
299	417 Tie bay Ballia 2 & Barh 2 AT PATNA	**16/04/19**	**09:30**	**18/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
300	418 Main bay Barh 1 AT PATNA	**30/04/19**	**09:30**	**31/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		

301	412 Main bay Of ICT 1 AT PATNA	**16/04/19**	**09:30**	**28/04/19**	**17:30**	OCB	POWERGRID ER-I	Equipment uprating under SS03 package for Patna Nabinagar Bay		
302	220Kv Bus 1 AT PATNA	**14/04/19**	**09:30**	**15/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	BSEB	
303	220KV Bus 2 AT PATNA	**16/04/19**	**09:30**	**17/04/19**	**17:30**	ODB	POWERGRID ER-I	AMP	**BSEB**	
304	413 Main Bay Ballia 1 AT PATNA	**22/04/19**	**09:30**	**25/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
305	414 bay Tie of Ballia 1 & Barh 2 AT PATNA	**26/04/19**	**09:30**	**27/04/19**	**17:30**	OCB	POWERGRID ER-I	AMP & CB Overhauling		
306	400KV PATNA-BALIA-I	**10/04/19**	**08:00**	**10/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer	NLDC	
307	400KV PATNA-BALIA-II	**11/04/19**	**08:00**	**11/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer	NLDC	
310	400KV PATNA-BARH-I	**15/04/19**	**08:00**	**15/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer		
311	400KV PATNA-BARH-II	**16/04/19**	**08:00**	**16/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer		
312	400 kV BARH-KAHALGAON-I	**17/04/19**	**08:00**	**17/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer		
313	400 kV BARH-KAHALGAON-II	**18/04/19**	**08:00**	**18/04/19**	**17:00**	ODB	POWERGRID ER-I	Replacement of Porcelain Insulator with polymer		
316	400 KV D/C Nabinagar-Sasaram-I & II	**20/04/19**	**08:00**	**30/04/19**	**18:00**	OCB	POWERGRID ER-I	for replacement of bend leg at loc no.170(DD+0).		
317	220kV Main Bus-I at Pusauli	**11/04/19**	**09:00**	**11/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	BSEB	
318	220kV Pusauli-Sahapuri	**12/04/19**	**09:00**	**12/04/19**	**13:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	NLDC	
319	220kV Pusauli-Ara	**05/04/19**	**08:00**	**05/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	BSEB	
320	220kV Main Bus-II at Pusauli	**13/04/19**	**08:00**	**13/04/19**	**20:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	BSEB	
322	220kV Pusauli-Dehri	**15/04/19**	**13:00**	**15/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	BSEB	
323	400kV East Side Bus-I at Pusauli	**18/04/19**	**08:00**	**18/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	NLDC	
324	400kV East Side Bus-II at Pusauli	**19/04/19**	**08:00**	**19/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	NLDC	
325	400kV North Side Bus-I at Pusauli	**21/04/19**	**08:00**	**21/04/19**	**18:00**	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	NLDC	

326	220kV Bus Coupler at Pusauli	22/04/19	08:00	22/04/19	18:00	ODB	POWERGRID ER-I	AMP work	NLDC	
327	400kV North Side Bus-II at Pusauli	25/04/19	08:00	25/04/19	18:00	ODB	POWERGRID ER-I	To attend Isolator Misalignment Problem & Reley retrofitting Job	NLDC	
328	132kV Pusauli-Dehri	16/04/19	09:00	16/04/19	18:00	ODB	POWERGRID ER-I	To attend Isolator Problem and Relay retrofitting Job	BSEB	
329	132kV Pusauli-Karmanasha	17/04/19	09:00	17/04/19	18:00	ODB	POWERGRID ER-I	To attend Isolator Problem and Relay retrofitting Job	NLDC	
330	400kV Varanasi Main Bay (East Side) at Pusauli	26/04/19	09:00	26/04/19	18:00	ODB	POWERGRID ER-I	AMP work		
331	765KV,125MVAR Bus Reactor Main Bay at Pusauli	27/04/19	09:00	27/04/19	18:00	ODB	POWERGRID ER-I	AMP work	NLDC	
334	400KV D/C Farakka - Gokarna Ckt-I & II	04/04/19	08:00	05/04/19	18:00	OCB	POWERGRID ER-I	for termination with Farakka & Gokarna line of 400KV D/C Rajarhat-Purnea Line (Bihar Section)	WB	
335	400KV Kahalgaon - Maithan - I	08/04/19	09:00	14/04/19	17:00	ODB	POWERGRID ER-I	for Replacement of PID detected defect insulator with Polymer Insulator		
336	400KV Kahalgaon - Maithan - II	15/04/19	09:00	21/04/19	17:00	ODB	POWERGRID ER-I	for Replacement of PID detected defect insulator with Polymer Insulator		
337	400 KV BIHARSARIF - BANKA - II	01/03/19	08:00	31/03/19	18:00	ODB	POWERGRID ER-I	A/R FOR OPGW INSTALLATION WORK		
338	400 KV BIHARSARIF - KODERMA - II	01/03/19	08:00	31/03/19	18:00	ODB	POWERGRID ER-I	A/R FOR OPGW INSTALLATION WORK	DVC	
341	220 kV Sasaram - Sahupuri	02/04/19	09:00	05/04/19	18:00	OCB	POWERGRID ER-I	TO FACILITATE THE SHUT DOWN OF ICT - I AT PUSAULI SS	NLDC	
342	**Maintenance work for BUS Reactor**	08/04/19	09:30	19/04/19	18:00	OCB	BARH	Annual Maintenance & Testing of BUS Reactor		
343	**Maintenance work for BUS Reactor Bay**	08/04/19	09:30	19/04/19	18:00	OCB	BARH	Annual Maintenance & Testing of Bays Equipments		
344	**Barh Kahalgaon LINE # 1**	23/04/19	09:30	24/04/19	18:00	OCB	BARH	For Leveling of Land & Annual Maintenance & Testing of Bays Equipments		
345	**New 400KV Bus#2 & 400 KV Bus#4**	03/04/19	08:00	03/04/19	18:30	ODB	KAHALGAON	For 400 KV Bus Sectionalizer Bay#2 commissioning		
346	**400KV Kh-Barh#1**	10/04/19	09:30	10/04/19	17:30	ODB	KAHALGAON	PM works and Relay Testing		
347	**400KV Kh-Barh#2**	17/04/19	09:30	17/04/19	17:30	ODB	KAHALGAON	PM works and Relay Testing		
348	**400KV Bus Reactor-1**	18/04/19	09:00	19/04/19	17:00	ODB	FARAKKA	Reactor & CB test		

349	**400KV FKK-Kahalgaon Line#4**	**22/04/19**	**09:00**	**23/04/19**	**17:00**	**ODB**	**FARAKKA**	**CB and Relay test**		
350	**400KV FKK-Kahalgaon Line#3**	**25/04/19**	**09:00**	**26/04/19**	**17:00**	**ODB**	**FARAKKA**	**CB and Relay test**		
351	**400KV FKK-Kahalgaon Line#1**	**29/04/19**	**09:00**	**30/04/19**	**17:00**	**ODB**	**FARAKKA**	**CB,CT and Relay test**		
354	400kV D/C lB OPGC Jharsuguda - 1	**23/04/19**	**09:00**	**23/04/19**	**18:00**	ODB	OGPTL	AMP Work		
355	4OOkV D/C lB OPGC-Jharsuguda- 2	**24/04/19**	**09:00**	**24/04/19**	**18:00**	ODB	OGPTL	AMP Work		
356	400KV Bus Reactor-1	**18/04/19**	**09:00**	**19/04/19**	**17:00**	ODB	FARAKKA	Reactor Test & CB Test		
357	400KV FKK-Kahalgaon Line-4	**22/04/19**	**09:00**	**23/04/19**	**17:00**	ODB	FARAKKA	CB & Relay Test		
358	400KV FKK-Kahalgaon Line-3	**25/04/19**	**09:00**	**26/04/19**	**17:00**	ODB	FARAKKA	CB & Relay Test		
359	400KV FKK-Kahalgaon Line-1	**29/04/19**	**09:00**	**30/04/19**	**17:00**	ODB	FARAKKA	CB & CT & Relay Test		
360	Maithon-Mejia #1 Line	**22/04/19**	**09:00**	**23/04/19**	**17:00**	ODB	DVC	Replacement of broken insulators damaged by miscreants		
361	Maithon-Mejia #2 Line	**24/04/19**	**09:00**	**25/04/19**	**17:00**	ODB	DVC	Replacement of Main Bay and Line Bay CT		
362	400KV KTPS-GAYA Line#1	**08/04/19**	**09:00**	**08/04/19**	**17:00**	ODB	DVC	for preventive maintenance job		
363	400KV KTPS-GAYA Line#2	**10/04/19**	**09:00**	**10/04/19**	**17:00**	ODB	DVC	for preventive maintenance job		
364	ICT-I (3x 105 MVA) at Jeypore	04/04/19	08:00:00	04/04/19	20:00:00	ODB	ER-II/Odisha /Jeypore	For changing ICT-I combination form Unit-I,III, IV to Unit-I , II & IV for charging Unit-II & To carry Insulation sleeves work Teritiry side of ICT 1 , For Isolator Retrofitting works (220KV ICT I TBC Isolator) ,Testing of Back Up Impedance relay and testing of 33KV auxilliary Bay & Transformer by contractor as per contractual agreement for starting of 5 years warranty period..	GRIDCO	
365	ICT-I (3x 105 MVA) at Jeypore	05/04/19	10:00:00	05/04/19	13:00:00	ODB	ER-II/Odisha /Jeypore	For Change over of ICT-I, from TBC CB to ICT-I Bay(201 CB) after Isolator Retrofitting works of 30 Years old 201 89C (ICT-I Isolator)	GRIDCO	
366	(+/-)450MVAr STATCOM at Jeypore	06/04/19	08:00:00	08/04/19	18:00:00	OCB	ER-II/Odisha /Jeypore	To carry out AMP of +/- 450MVAr STATCOM by contractor as per contractual agreement for starting of 5 years warranty period.		
367	400 kV Jeypore-Indravati S/C Line	10/04/19	08:00:00	11/04/19	18:00:00	ODB	ER-II/Odisha /Jeypore	For testing New A/R relayof Jeypore - Indravati Line & For PID defect insulator replacement work	NLDC	
368	412 Main Bay (JEYPORE-GAZ I MAIN BAY)	22/04/19	09:00:00	27/04/19	18:00:00	OCB	ER-II/Odisha /Jeypore	Overhauling of R, Y, B of 41252 (CB)(JEYPORE-GAZ I MAIN BAY)	**GRIDCO**	

369	315MVA ICT # II at Jeypore	30/04/19	09:00:00	30/04/19	18:00:00	ODB	ER-II/Odisha /Jeypore	AMP of ICT # II, 208 Bay CT and testing of Back up Impedance relay	GRIDCO	
370	413 MAIN BAY (JEYPORE-GAZ II MAIN BAY) at Jeypore	01/05/19	09:00:00	03/05/19	17:00:00	OCB	ER-II/Odisha /Jeypore	Overhauling of 41352 (CB)(JEYPORE-GAZ II MAIN BAY)	GRIDCO	
371	765/400kV, 3*500MVA ICT-1 at Angul	02/04/19	09:00	02/04/19	18:00	ODB	ER-II/Odisha/Angul SS	For retrofitting of Back up impedance relays of ICT.	GRIDCO	
372	765/400kV, 3*500MVA ICT-2 at Angul	03/04/19	09:00	03/04/19	18:00	ODB	ER-II/Odisha/Angul SS	For retrofitting of Back up impedance relays of ICT.		
373	765/400kV, 3*500MVA ICT-3 at Angul	04/04/19	09:00	04/04/19	18:00	ODB	ER-II/Odisha/Angul SS	For retrofitting of Back up impedance relays of ICT.	GRIDCO	
374	765/400kV, 3*500MVA ICT-4 at Angul	05/04/19	09:00	05/04/19	18:00	ODB	ER-II/Odisha/Angul SS	For retrofitting of Back up impedance relays of ICT.	GRIDCO	
375	Main Bay (403) of 400kV Bolangir Line at Angul	08/04/19	09:00	08/04/19	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.	GRIDCO	
376	Main Bay (427) of 400kV GMR Line-1 at Angul	09/04/19	09:00	09/04/19	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.		
377	Main Bay (430) of 400kV GMR Line-2 at Angul	10/04/19	09:00	10/04/19	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.	NLDC	
378	Main Bay (712) of 765kV Bus reactor-1 at Angul	11/04/19	09:00	11/04/19	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.	NLDC	
379	400kV Angul-Meramundali ckt-I	14/04/19	08:00	14/04/19	17:00	ODB	ER-II/Odisha/Angul SS	Taking into service the LILO bypass arrangement at Angul	**NLDC**	
380	400kV Angul-Meramundali ckt-II	15/04/19	08:00	15/04/19	17:00	ODB	ER-II/Odisha/Angul SS	Taking into service the LILO bypass arrangement at Angul	NLDC	
381	400kV Angul-Talcher	15/04/19	08:00	15/04/19	17:00	ODB	ER-II/Odisha/Angul SS	Taking into service the LILO bypass arrangement at Angul		
382	Main Bay (726) of 765kV Srikakulam Line-2 at Angul	12/04/19	09:00	12/04/19	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.		
383	765KV, 3*80 MVAR SRIKAKULAM LINE REACTOR-2 AT ANGUL	13-04-2019	10:00	13-04-2019	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.		
384	765KV,3*110 MVAR BUS REACTOR-2 AT ANGUL	16-04-2019	10:00	16-04-2019	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.		
385	765KV SUNDARGARH LINE-1 REACTOR BAY (709R)	09-04-2019	10:00	09-04-2019	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.	GRIDCO	
386	765KV SUNDARGARH LINE-2 REACTOR BAY (706R)	11-04-2019	10:00	11-04-2019	18:00	ODB	ER-II/Odisha/Angul SS	AMP Work.	GRIDCO	
387	ICT-II at Indravati	09/04/19	08:00	09/04/19	17:00	ODB	ER-II/Odisha /Indravati	For retrofitting of Backup Impedance relay in ICT-II at OHPC S/Y.		
388	125 MVAR BR at Indravati	11/04/19	08:00	11/04/19	12:00	ODB	ER-II/Odisha /Indravati	To Replace Terminal Box of PRD.		

389	400 KV Indravati-Jeypore Main Bay (401)	16/04/19	08:00	16/04/19	17:00	ODB	ER-II/Odisha /Indravati	AMP work of 400 KV Indravati-Jeypore Main Bay (401)	NLDC	
390	400kV Bus bar-1 at indravati	26/04/19	08:00	26/04/19	17:00	ODB	ER-II/Odisha /Indravati	AMP works -Bus-1	NLDC	
391	400kV Bus bar-2 at Indravati	27/04/19	08:00	27/04/19	17:00	ODB	ER-II/Odisha /Indravati	AMP works -Bus-2	NLDC	
392	400 KV Indravati-Rengali line	05-04-2019	09:00	05-04-2019	17:00	ODB	ER-II/Odisha/Indravati	Oil leakage from the reactor.For removal of 50MVAR LR of Rengali-Indravati Line from service, Opening of Jumpers for replacement of Gaskets of bushings.Line conductor is just above the reactor.Due to crane movement during maintenance of the	NLDC	All shutdwons pertains to SR TTC curtailment may be reshceduled after 15th Apr 19.(SR DEMAND REDUCTION)
393	400 KV Indravati-Rengali line	06-04-2019	09:00	06-04-2019	17:00	ODB	ER-II/Odisha/Indravati	Removal of bushings and Replacement of Gaskets. And placing of bushings after replacement of gaskets. Line conductor is just above the reactor.Due to crane movement during maintenance of the reactor line shutdown is required.	GRIDCO	
394	50MVAR L/R of 400KV Indravati-Rengali Line at indravati	05-04-2019	09:00	09-04-2019	14:00	OCB	ER-II/Odisha/Indravati	Replacement of Gaskets in Bushings, PRD, Inspection point, Radiator Banks, Valves, Oil Circulation work. During this period, 50MVAR LR will be out of service but the 400KV Indravati-Rengali line will remain in charged condition and there will be no power		
395	400 KV Indravati-Rengali line	09-04-2019	09:00	09-04-2019	14:00	ODB	ER-II/Odisha/Indravati	Connection of Jumpers in Rengali Line before charging and taking the LR into service.		
396	400 KV, FSC Bay (Bay No-412FSC) at Rengali	03-04-2019	09:00	03-04-2019	17:00	ODB	ER-II/Odisha/Rengali	AMP Work	GRIDCO	
397	400 KV, 315 MVA ICT # 2 at Rengali	05-04-2019	09:00	09-04-2019	17:00	ODB	ER-II/Odisha/Rengali	For bushing replacement of 200 KV Side R-Ph.	GRIDCO	
398	400 KV Rourkela-Talcher Line # 1 Auto reclose in Non-Auto Mode	01-04-2019	08:00	10-04-2019	17:00	ODB	ER-II/Odisha/Rengali	For PID Work	NLDC	
399	400 KV Rourkela-Talcher Line # 2 in Non-Auto Mode	11-04-2019	08:00	30-04-2019	17:00	ODB	ER-II/Odisha/Rengali	For PID Work	NLDC	
400	400 KV Rengali-Talcher Line # 2	11-04-2019	10:00	11-04-2019	18:00	ODB	ER-II/Odisha/Rengali	For Rectification of shutdown nature Defects		
401	400 KV Rourkela-Talcher Line # 1	12-04-2019	09:00	13-04-2019	17:00	ODB	ER-II/Odisha/Rengali	Insulator Replacement Work	NLDC	
402	400 KV Rourkela-Talcher Line # 2	14-04-2019	09:00	15-04-2019	17:00	ODB	ER-II/Odisha/Rengali	Insulator Replacement Work		
403	400 KV Indravati - Bus Reactor # 1 Tie Bay (Bay No-411)	23-04-2019	09:00	23-04-2019	17:00	ODB	ER-II/Odisha/Rengali	For Retrofitting of AR Relay		
404	Tie Bay of 400 KV Rengali-Keonjhar & Rengali-Talcher Line (Bay No-402)	26-04-2019	09:00	26-04-2019	17:00	ODB	ER-II/Odisha/Rengali	For Retrofitting of AR Relay	GRIDCO	
405	220 KV TBC Bay at Rengali	28-04-2019	09:00	28-04-2019	17:00	ODB	ER-II/Odisha/Rengali	MOM Box Retrofitting	GRIDCO	
406	220 KV BC Bay at Rengali	30-04-2019	09:00	30-04-2019	17:00	ODB	ER-II/Odisha/Rengali	MOM Box Retrofitting		
407	400kV Sundargarh-Raigarh Ckt#1	02/04/19	08:00	14/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	For PID Testing of Porcelain Insulator. Only Auto reclose relay will be off. Line will be in service		
408	400kV Sundargarh-Raigarh Ckt#3	15/04/19	08:00	30/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	For PID Testing of Porcelain Insulator. Only Auto reclose relay will be off. Line will be in service		

409	400kV Sundargarh-Rourkela Ckt #3 & 4	04/04/19	08:00	04/04/19	18:00	OCB	ER-II /ODISHA/SUNDERGARH	TL Maintenance works (Shut down of Sundargarh -Rourkela Ckt-III & IV is required together for maint. of Multi circuit/ LILO portion)		
410	400kV Sundargarh-Raigarh Ckt #3 & 4	06/04/19	08:00	06/04/19	18:00	OCB	ER-II /ODISHA/SUNDERGARH	TL Maintenance works (Shut down of Sundargarh -Raigarh Ckt-III & IV is required together for maint. of Multi circuit/ LILO portion)		
411	765 KV DC Sundargarh - Dharamjaygarh Ckt-I	09/04/19	08:00	09/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works		
412	765 KV DC Sundargarh - Dharamjaygarh Ckt-II	10/04/19	08:00	10/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works		
413	765 KV DC Sundargarh - Dharamjaygarh Ckt-III	12/04/19	08:00	12/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works		
414	765 KV DC Sundargarh - Dharamjaygarh Ckt-IV	13/04/19	08:00	13/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works		
415	400kV Sundargarh-Rourkela Ckt #1	19/04/19	08:00	19/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works		
416	400kV Sundargarh-Rourkela Ckt #2	20/04/19	08:00	20/04/19	18:00	ODB	ER-II/ODISHA/SUNDERGARH	TL Maintenance works	NLDC	
417	765KV 240 MVAR Bus Reactor-1 at Sundergarh	02/04/19	10:00	02/04/19	12:00	ODB	ER-II/Odisha/Sundergarh	Taking R-Ph Reactor in to service in place of Spare Reactor after attending oil leakage of R-Ph reactor	**NLDC**	
418	765KV Sundargarh-Angul Ckt #4 with LR	03/04/19	10:00	03/04/19	12:00	ODB	ER-II/Odisha/Sundergarh	To take spare Reactor in to service in place of B-Ph Reactor for attending oil leakage in B-Ph reactor	NLDC	
419	765/400KV 1500MVA ICT-2 at Sundergarh	04/04/19	09:00	04/04/19	12:00	ODB	ER-II/Odisha/Sundergarh	Taking spare ICT in service in place of B-Ph ICT for attending oil leakage of B-Ph ICT	NLDC	
420	765KV Bus-I at Sundargarh	15/04/19	09:00	23/04/19	18:00	OCB	ER-II/Odisha/Sundergarh	Erection of SF6 to Air bushing of 765KV GIS bus sectionalizer, jumpering , HV & impulse testing for commissioning of 765KV GIS and Stringing of jack bus of 765KV Raipur Ckt-1&2 i.e. Bay 709 & 712 for commissioning of the lines under construction head.	NLDC	
421	Main Bay-707 of 765KV Angul Ckt-4	06/04/19	08:00	06/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
422	765KV Bus-II at Sundargarh	05/04/19	09:00	13/04/19	18:00	OCB	ER-II/Odisha/Sundergarh	Erection of SF6 to Air bushing of 765KV GIS bus sectionalizer, jumpering , HV & impulse testing for commissioning of 765KV GIS under construction head.	NLDC	
423	Tie Bay-708 of 765KV Angul Ckt-4 & Future	09/04/19	08:00	09/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
424	Main Bay-710 of 765KV Angul Ckt-3	10/04/19	08:00	10/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
425	Tie Bay-711 of 765KV Angul ckt-3 & future	11/04/19	08:00	11/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
426	Main Bay-713 of 765KV Angul Ckt-2	12/04/19	08:00	12/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
427	Tie Bay-714 of 765KV Angul ckt-2 & Dharamjaygarh Ckt-3	13/04/19	08:00	13/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work		

428	Main Bay-715 of 765KV Dharamjaygarh Ckt-3	15/04/19	08:00	15/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work		
429	Main Bay-716 of 765KV Angul Ckt-1	16/04/19	08:00	16/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work		
430	Tie Bay-717 of 765KV Dharamjaygarh Ckt-4 & Angul-1 at Sundargarh	17/04/19	08:00	17/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
431	Main Bay-718 of 765KV Dharamjaygarh Ckt-4 at Sundargarh	18/04/19	08:00	18/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
432	Main Bay-719 of 765KV Darlipali Ckt-2	19/04/19	08:00	19/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
433	Tie Bay-720 of 765KV Darlipali-2 7 Dharamjaygarh-1	20/04/19	08:00	20/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
434	Main Bay-721 of 765KV Dharamjaygarh Ckt-1 at Sundargarh	22/04/19	08:00	22/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
435	Main Bay-722 of 765KV Darlipali Ckt-1	23/04/19	08:00	23/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
436	Tie Bay-723 of 765KV Darlipali Ckt-1 & Dharamjaygarh Ckt-2 at Sundargarh	24/04/19	08:00	24/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
437	Main Bay-724 of 765KV Dharamjaygarh Ckt-2	25/04/19	08:00	25/04/19	18:00	ODB	ER-II/Odisha/Sundergarh	AMP Work	NLDC	
438	765KV Bus-II(GISBus Split Section & Darlipali#1&2 dia) at Sundargarh	27/04/19	09:00	28/04/19	18:00	OCB	ER-II/Odisha/Sundergarh	for 765KV GIS and ICT-3&4 commissioning work under construction head. -Only Main bay of NTPC Darlilipali#1&2 will be off after 765 Bus Sectionaliser#1 is commissioned	NLDC	
439	765KV Bus-I (GIS Bus Split Section & Dharamjaygarh #1&2 dia)at Sundargarh	29/04/19	09:00	30/04/19	18:00	OCB	ER-II/Odisha/Sundergarh	for 765KV GIS and ICT-3&4 commissioning work under construction head. -Only Main bay of Dharmajaygarh #1&2 will be off after 765 Bus	NLDC	
440	765KV 240 MVAR Bus Reactor-2 at Sundergarh	03-04-2019	08:00	03-04-2019	18:00	ODB	ER-II/Odisha/Sundergar	AMP Work	NLDC	
441	765/400KV 1500MVA ICT-1 Sundergarh	04-04-2019	08:00	04-04-2019	18:00	ODB	ER-II/Odisha/Sundergar	AMP Work	NLDC	
442	400 KV GIS BUS-I	26-04-2019	09:00	26-04-2019	15:00	ODB	ER-II/Odisha/Sundergar	For modification of secondary box of Bus PTs of 400 KV GIS of Sundergarh substation	**NLDC**	
443	401 KV GIS BUS-II	27-04-2019	09:00	27-04-2019	15:00	ODB	ER-II/Odisha/Sundergar	For modification of secondary box of Bus PTs of 400 KV GIS of Sundergarh substation	**NLDC**	
444	400KV BARIPADA - DUBURI LINE	05/04/19	08:00	06/04/19	18:00	ODB	ER-II/Odisha/Bhadrak TL	AMP Work	NLDC	
445	315 MVA ICT#1 & 125 MAR B/R#1 TIE BAY (BAY NO.-423)	01/04/19	09:00	13/04/19	18:00	OCB	ER-II/ODISHA/ROURKELA	RETROFITTING OF OLD HYDRAULIC OPERATED BHEL MAKE CB BY NEW SPRING-SPRING OPERATED CGPISL MAKE CB	NLDC	
446	400 KV ROURKELA-RANCHI#2	04/04/19	10:00	04/04/19	14:00	ODB	ER-II/ODISHA/ROURKELA	CHECKING & TESTING OF A/R CIRCUIT OF BOTH MAIN & TIE CB	**NLDC**	
447	400 KV ROURKELA-RANCHI#1	05/04/19	10:00	05/04/19	14:00	ODB	ER-II/ODISHA/ROURKELA	CHECKING & TESTING OF A/R CIRCUIT OF BOTH MAIN & TIE CB	NLDC	

448	315 MVA ICT#1 at Rourkela	09/04/19	09:00	09/04/19	18:00	ODB	ER-II/ODISHA/ROURKELA	RETROFITTING OF EXISTING OLD ICT PROTECTION RELAYS WITH NEW NUMERICAL RELAYS	NLDC	
449	315 MVA ICT#2 at Rourkela	10/04/19	09:00	10/04/19	18:00	ODB	ER-II/ODISHA/ROURKELA	RETROFITTING OF EXISTING OLD ICT PROTECTION RELAYS WITH NEW NUMERICAL RELAYS	**NLDC**	
450	400 KV ROURKELA-CHAIBASA#2	11/04/19	09:00	11/04/19	18:00	ODB	ER-II/ODISHA/ROURKELA	RETROFITTING OF EXISTING OLD CONVENTIONAL B/U RELAY BY NUMERICAL RELAY IN ITS LINE REACTOR	NLDC	
451	50 MVAR CHAIBASA#1 LINE REACTOR	12/04/19	09:00	12/04/19	18:00	ODB	ER-II/ODISHA/ROURKELA	RETROFITTING OF EXISTING OLD CONVENTIONAL B/U RELAY BY NUMERICAL RELAY	NLDC	
452	315 MVA ICT#2 TIE BAY (BAY NO.-414)	15/04/19	09:00	23/04/19	18:00	OCB	ER-II/ODISHA/ROURKELA	RETROFITTING OF OLD HYDRAULIC OPERATED BHEL MAKE CB BY NEW SPRING-SPRING OPERATED CGPISL MAKE CB	NLDC	
453	125 MVAR BUS REACTOR-I	22/04/19	09:00	22/04/19	18:00	ODB	ER-II/ODISHA/ROURKELA	COMMISSIONING OF CSD IN ITS TIE BAY CB (42352 CB)	NLDC	
454	400 KV TALCHER#2 & 400 KV CHAIBASA#2 TIE BAY (BAY NO.-408)	23/04/19	09:00	31/04/19	18:00	OCB	ER-II/ODISHA/ROURKELA	RETROFITTING OF OLD HYDRAULIC OPERATED BHEL MAKE CB BY NEW SPRING-SPRING OPERATED CGPISL MAKE CB	**NLDC**	
455	125 MVAR BUS REACTOR at Balangir	28/03/19	09:00 Hrs	29/03/19	18:00 Hrs	OCB	ER-II/Odisha/Balangir	Replacement of defective Air Cell of conervator.	GRIDCO	
456	400KV Balangir-Jeypore Line TIE BAY(40304BAY)	05/04/19	09:00 Hrs	05/04/19	18:00 Hrs	ODB	ER-II/Odisha/Balangir	AMP for 40304 52 CB and 40304 CT		
457	400KV Balangir-Angul Line	14/04/19	08:00 Hrs	16/04/19	18:00 Hrs	ODB	ER-II/Odisha/Balangir	Replacement of defective insulator by Polymer long Rod Insulator		
458	400KV Balangir-Jeypore Line	12/04/19	08:00 Hrs	13/04/19	18:00 Hrs	ODB	ER-II/Odisha/Balangir	Replacement of defective insulator by Polymer long Rod Insulator		
459	400KV Balangir-Jeypore Line Main BAY(403BAY)	15/04/19	09:00 Hrs	17/04/19	18:00 Hrs	OCB	ER-II/Odisha/Balangir	For arresting SF6 Gas leakage in R-PH CB of 403 Bay CB.	GRIDCO	
460	400KV Balangir-Angul Line TIE BAY(40102BAY)	18/04/19	09:00 Hrs	18/04/19	18:00 Hrs	ODB	ER-II/Odisha/Balangir	AMP for 40102 52 CB and 40102 CT	GRIDCO	
461	220KV,Future Line-IV BAY (209 BAY) at Balangir	20/04/19	09:00 Hrs	20/04/19	18:00 Hrs	ODB	ER-II/Odisha/Balangir	AMP for 209 52 CB and 209 CT		
462	Future ICT main bay 400 kv (410) at Pandiabili	15-04-2019	10:00	15-04-2019	17:00	ODB	ER-II/Odisha/ Pandiabili GIS	Timing & CRM of Breaker		
463	220 KVBus Coupler (206) at Pandiabili	19-04-2019	10:00	19-04-2019	17:00	ODB	ER-II/Odisha/ Pandiabili GIS	Timing & CRM of Breaker		
464	63 MVAR Duburi Line Reactor bay(404R)	01/04/19	8:30	01/04/19	17:00	ODB	ER-II/Odisha/ Pandiabili GIS	AMP of Duburi L/R		
465	63 MVAR Duburi Line Reactor bay(403R)	02/04/19	8:30	02/04/19	17:00	ODB	ER-II/Odisha/ Pandiabili GIS	AMP of Baripada L/R		
466	400 KV 406 Main Bay of 315 MVA ICT-II at Baripada	03/04/19	09:00	03/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP works		
467	220KV 203 Bus Coupler Bay at Baripada	04/04/19	09:00	04/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP works		

468	400 kV 411 Tie Bay of Baripada-Pandiabili & Baripada-TISCO line	07/04/19	09:00	08/03/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP & Gasket replacement	NLDC	
469	125 MVAR Bus Reactor-1 at Baripada	10/04/19	09:00	10/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP works	NLDC	
470	41052- Main Bay of Pandiabilli line	11/04/19	09:00	11/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP works		
471	40552- Tie Bay of Kharagpur line & 315MVA ICT II	12/04/19	09:00	12/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	AMP works		
472	20852- 315MVA ICT I Bay at Baripada	13/04/19	09:00	13/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	Amp Works		
473	20452- 315MVA ICT II Bay at Baripada	14/04/19	09:00	14/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	Amp Works		
474	400 kV 408 Tie Bay of Baripada-Duburi & Baripada-Jamshedpur line	15/04/19	09:00	16/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	Gasket replacement		
475	400/220 Kv 315MVA ICT II at Baripada	28/04/19	09:00	28/04/19	17:30	ODB	ER-II/Odisha/BARIPADA S/S	Oil Leakage Arresting		
476	125 MVAR Bus Reactor at Keonjhar	08/04/19	09:00	11/04/19	18:00	OCB	ER-II/Odisha/KEONJHAR S/S	For replacement of defective rediator of Bus Reactor		
477	205 ICT-II Bay at Keonjhar	16/04/19	09:00	16/04/19	18:00	ODB	ER-II/Odisha/KEONJHAR S/S	For CB timing & DCRM rectification job	GRIDCO	
478	207 bus coupler at Keonjhar	17/04/19	09:00	17/04/19	18:00	ODB	ER-II/Odisha/KEONJHAR S/S	For CB timing & DCRM rectification job	GRIDCO	
479	206 Bay at Keonjhar	18/04/19	09:00	18/04/19	18:00	ODB	ER-II/Odisha/KEONJHAR S/S	For CB timing & DCRM rectification job	GRIDCO	
480	204 bay at Keonjhar	19/04/19	09:00	19/04/19	18:00	ODB	ER-II/Odisha/KEONJHAR S/S	For CB timing & DCRM rectification job	gRIDCO	
481	315MVA ICT-I at Keonjhar	24/04/19	9:00	24/04/19	18:00	ODB	ER-II/Odisha/Keonjhar	Retro fitting of Back up Impedance relay		
482	315MVA ICT-II at Keonjhar	26/04/19	9:00	26/04/19	18:00	ODB	ER-II/Odisha/Keonjhar	Retro fitting of Back up Impedance relay	**GRIDCO**	
483	765KV Angul-Srikakulam ckt-I	26-03-2019	07:00	27-03-2019	18:00	ODB	ER-II/Odisha/Nyg&Bmp TLAM	AMP Work	**GRIDCO**	All shutdwons pertains to SR TTC may be reshceduled after 15th Apr 19.
484	765KV Angul-Srikakulam ckt-II	28-03-2019	07:00	29-03-2019	18:00	ODB	ER-II/Odisha/Nyg&Bmp TLAM	AMP Work		
485	765KV Angul-Srikakulam ckt-I	01-04-2019	07:00	02-04-2019	18:00	ODB	ER-II/Odisha/Nyg&Bmp TLAM	AMP Work-**Shutdown is required if not granted in March 2019**	GRIDCO	
486	765KV Angul-Srikakulam ckt-II	03-04-2019	07:00	04-04-2019	18:00	ODB	ER-II/Odisha/Nyg&Bmp TLAM	AMP Work-**Shutdown is required if not granted in March 2019**	GRIDCO	

516	400KV Bus 1 in TSTPS	**03/04/19**	**07:00**	**03/04/19**	**18:00**	ODB	TALCHER	For attending bus isolator problem and replacement of twin moose conductor of bus side of 400KV TSTPS Meramunduli line Main bay		
517	(i)220KV BUS-2 in TSTPS alongwith (ii)220 KV TSTPS Meramunduli 2(Bay 3) line shut down	**05/04/19**	07:00	**06/04/19**	18:00	OCB	TALCHER	220KV Bus CVT replacement due to aging. 220 KV TSTPS Meramunduli 2 (Bay 3) line shut down is required due to high proximity of bay to Bus II which will restrict hydra movement during CVT replacement.	GRIDCO	
518	400KV GMR-ANGUL	**09/04/19**	09:00	**11/04/19**	11:00	ODB	GMR	necessary maintenance		
525	At Arambag:ABG-BKTPP 400kv line	08-04-2019	06:00	08-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
526	At Arambag:315 MVA ICT 1 in TBC bay,s/d of 400KV Main bus-1,Bus coupler	09-04-2019	06:00	09-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
527	At Arambag:315 MVA ICT 1 in TBC bay,s/d of 400KV Main bus-2,Bus coupler	10-04-2019	06:00	10-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
528	At Arambag:315 MVA ICT 2 in TBC bay,s/d of 400KV Main bus-1,Bus coupler	12-04-2019	06:00	12-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
529	At Arambag:315 MVA ICT 2 in TBC bay,s/d of 400KV Main bus-2,Bus coupler	13-04-2019	06:00	13-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
530	400 KV ARAMBAG-KTPP line on TBC Bay.s/d of 400KV Main Bus 1 & Bus coupler	16-04-2019	06:00	16-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
531	400 KV ARAMBAG-KTPP line on TBC Bay.s/d of Main Bus 2 & Bus coupler	17-04-2019	06:00	17-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
532	400 kv Arambag-Durgapur line on TBC Bay s/d 400KV Main Bus 1 & Bus coupler	19-04-2019	06:00	19-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
533	400 kv Arambag-Durgapur line on TBC Bay s/d 400KV Main Bus 1 & Bus coupler	~~20-04-2019~~	~~06:00~~	~~20-04-2019~~	~~15:00~~	ODB	WBSETCL	MAINTENANCE WORK		
534	At Arambag:315 MVA ICT 3 in TBC bay,s/d of 400KV Main bus-1,Bus coupler	22-04-2019	06:00	22-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
535	At Arambag:315 MVA ICT 3 in TBC bay,s/d of 400KV Main bus-2,Bus coupler	23-04-2019	06:00	23-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
536	At Arambag:400KV Bus coupler Bay with 400kv Main Bus-1	25-04-2019	06:00	25-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
537	At Arambag:400KV Bus coupler Bay with 400kv Main Bus-2	26-04-2019	06:00	26-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
538	400kv Arambag-KTPP Feeder	27-04-2019	06:00	27-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
539	400kv Arambag-KTPP Feeder	28-04-2019	06:00	28-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
540	At BANKURA: 400kv NEW PPSP-Arambag #1	08-04-2019	06:00	08-04-2019	16:00	ODB	WBSETCL	MAINTENANCE WORK		

541	At BANKURA:400kv NEW PPSP-Arambag #1	09-04-2019	06:00	09-04-2019	16:00	ODB	WBSETCL	MAINTENANCE WORK		
542	At BANKURA: 400kv NEW PPSP-Arambag #2	10-04-2019	06:00	10-04-2019	16:00	ODB	WBSETCL	MAINTENANCE WORK		
543	At BANKURA: 400kv NEW PPSP-Arambag #2	11-04-2019	06:00	11-04-2019	16:00	ODB	WBSETCL	MAINTENANCE WORK		
544	At BKTPP: 400kv Bus Reactor Bay	02-04-2019	06:00	03-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
545	At BKTPP:400/220/33kv 315MVA IBT #1	05-04-2019	06:00	06-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		
546	At BKTPP: 400/220/33kv 315MVA IBT #2	08-04-2019	06:00	09-04-2019	15:00	ODB	WBSETCL	MAINTENANCE WORK		

Quarterly Preparedness Monitoring -AGENDA

(Status as on :)

S.No.	State	Sector (G/T/D)	Utilities	Status of CISO Nomination	Critical Infra Identified	Crisis management Plan Prepared	Status of CS mock drill	Status of Training/ Workshops organized/ participated by utility	Action taken on CERT-In/NCIIPC Advisories
1	Tamilnadu	T	TANGEDCO	Yes/No	Yes/No	Yes/No	Done on ____		

Annexure – E.4

AVAILABILITY STATUS OF EVENT LOGGER, DISTURBANCE RECORDER & GPS

Sl. NO	Substation	Protection & Control System						Remarks
		Availability			Time Synchronization			
		EL	DR	GPS	Relay	DR	EL	
1	Subhasgram	Yes	Yes	Yes	Yes	Yes	Yes	
2	Maithon	Yes	Yes	Yes	Yes	Yes	Yes	
3	Durgapur	Yes	Yes	Yes	Yes	Yes	Yes	
4	Malda	Yes	Yes	Yes	Yes	Yes	Yes	
5	Dalkhola	Yes	Yes	Yes	Yes	Yes	Yes	
6	Siliguri	Yes	Yes	Yes	Yes	Yes	Yes	
7	Binaguri	Yes	Yes	Yes	Yes	Yes	Yes	
8	Birpara	Yes	Yes	Yes	Yes	Yes	Yes	
9	Gangtok	Yes	Yes	Yes	Yes	Yes	Yes	
10	Baripada	Yes	Yes	Yes	Yes	Yes	Yes	
11	Rengali	Yes	Yes	Yes	Yes	Yes	No	New EL would be implemented in BCU under NTAMC project by March'2015
12	Indravati (PGCIL)	Yes	Yes	Yes	Yes	Yes	No	EL is old one(model-PERM 200), provision for time synchronisation is not available. New EL would be implemented in BCU under NTAMC project by March'2015
13	Jeypore	Yes	Yes	Yes	Yes	Yes	Yes	EL is old and not working satisfactorily. New EL would be implemented in BCU under NTAMC project by March, 2015
14	Talcher	Yes	Yes	Yes	Yes	Yes	Yes	
15	Rourkela	Yes	Yes	Yes	Yes	Yes	Yes	
16	Bolangir	Yes	Yes	Yes	Yes	Yes	Yes	
17	Patna	Yes	Yes	Yes	Yes	Yes	Yes	
18	Ranchi	Yes	Yes	Yes	Yes	Yes	Yes	
19	Muzaffarpur	Yes	Yes	Yes	Yes	Yes	Yes	
20	Jamshedpur	Yes	Yes	Yes	Yes	Yes	Yes	
21	New Purnea	Yes	Yes	Yes	Yes	Yes	Yes	
22	Gaya	Yes	Yes	Yes	Yes	Yes	Yes	
23	Banka	Yes	Yes	Yes	Yes	Yes	Yes	
24	Biharsariif	Yes	Yes	Yes	Yes	Yes	Yes	
25	Barh	Yes	Yes	Yes	Yes	Yes	Yes	
26	Sagardighi	No	Yes	Yes	Yes	Yes	No	EL is under process of restoration with help from OEM, China
27	Kahalgaon	Yes	Yes	Yes	Yes	Yes	Yes	
28	Farakka	Yes	Yes	No	No	No	No	Time synchronization available for Farakka-Kahalgaon line-III & IV. The same will be implemented in rest of the lines by December, 2014.
29	Meramundali	Defunct	Yes	Yes	Yes	Yes	Yes	
30	Tisco	Yes	Yes	Yes	Yes	Yes	Yes	
31	Bidhannagar	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical

								relays. GPS will be put in service by January, 2015.
32	Indravati (OHPC)	Yes	Faulty	No	No	No	No	Time synchronization will be done by Feb, 2015. ICT-I feeders using DR & EL available in Numerical relays. 400 kV ICT-II feeder is being maintained by PGCIL, Mukhiguda.Status may confirm from PGCIL
33	Kharagpur	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays.
34	DSTPS	Yes	Yes	Yes	Yes	Yes	Yes	
35	Sterlite	Yes	Yes	Yes	Yes	Yes	Yes	
36	Mejia 'B'	Yes	Yes	Yes	Yes	Yes	Yes	
37	Mendhasal	Defunct	Yes	Yes	Yes	Yes	No	EL will be restored by March, 2015.
38	Arambagh	No	Yes	Yes	No	No	No	Using DR & EL available in Numerical relays
39	Jeerat	No	Yes	No	No	No	No	Using DR & EL available in Numerical relays. Procurement of new GPS is in progress.
40	Bakreswar	Yes	Yes	Yes	Yes	Yes	Yes	
41	GMR	Yes	Yes	Yes	Yes	Yes	Yes	
42	Maithon RB	Yes	Yes	Yes	Yes	Yes	Yes	
43	Raghunathpur	Yes	Yes	Yes	Yes	Yes	Yes	
44	Kolaghat	Yes	Yes	Yes	Yes	Yes	Yes	
45	Teesta V	Yes	Yes	Yes	Yes	Yes	Yes	
46	Koderma	Yes	Yes	Yes	Yes	Yes	Yes	
47	Sasaram	Yes	Yes	Yes	Yes	Yes	Yes	
48	Rangpo	Yes	Yes	Yes	Yes	Yes	Yes	
49	Adhunik	Yes	Yes	Yes	Yes	Yes	Yes	
50	JITPL	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	
51	765kV Angul	Yes	Yes	Yes	Yes	Yes	Yes	
52	Chuzachen	Yes	Yes	Yes	No	Yes	Yes	
53	New Ranchi 765kV	Yes	Yes	Yes	Yes	Yes	Yes	
54	Lakhisarai	Yes	Yes	Yes	Yes	Yes	Yes	
55	Chaibasa							
56	765kV Jharsuguda	Yes	Yes	Yes	Yes	Yes	Yes	All are in working condition. However a dedicated DR for 765KV Lines; make TESLA is not working. M/s Siemens has assured to commission the same by 31.01.15
57	Beharampur	Yes	Yes	Yes	Yes	Yes	Yes	
58	Keonjhar	Yes	Yes	Yes	Yes	Yes	Yes	

Eastern Regional Power Committee

The status of ERS towers in Eastern Region as updated in OCC meetings is given below:

1) ERS towers available in Powergrid S/s is as given below:

Sl. No.	Name of S/S	No. of ERS towers available
1	Durgapur, ER-II	1 Set (8 towers)
2	Rourkela, ER-II	3 towers incomplete shape
3	Jamshedpur, ER-I	15 towers (10 nos Tension tower and 5 nos suspension tower)

2) The present status of ERS towers in OPTCL system is as follows:

Sl. No.	Name of S/S	No. of ERS towers available
1	Mancheswar	2 nos, 400 kV ERS towers
2	Mancheswar, Chatrapur & Budhipadar	42 nos, 220 kV ERS towers

- 12 nos. of new 400 kV ERS towers have been recieved.
- Another, 16 nos of 400 kV towers accompanied with 6 sets of T&P are required which is under process

3) The present status of ERS towers in WBSETCL system is as follows:

Sl. No.	Name of S/S	No. of ERS towers available
1	Gokarna	2 sets
2	Arambag	2 sets

4) The present status of ERS towers in BSPTCL system is as follows:

Sl. No.	Type	Quantity	Remarks
1	Tension ERS Tower	12	New
2	Suspension ERS Tower	20	New
3	Old ERS Tower	10	1 no. is defective
Total		**42**	

- As informed in ERS meeting held on 10-11-2014 taken by Member (Power System), CEA; 2 sets (12 tension & 20 suspension) of ERS towers had been procured and currently available in BSPTCL system (as mentioned in above table with remarks “New”).
- Same ERS tower is used in both 220 kV and 132 kV circuits.

5) In 25th ERPC meeting held on 21.09.2014, E R P C concurred to the proposal of procurement of four sets of ERS and it was also informed that, the proposed four sets of ERS will be kept at Sikkim, Siliguri, Ranchi and Gaya and will be used by all constituents of ER during emergencies.

   Powergrid informed that four sets of ERS for Eastern Region will be procured.

5) DVC informed that they are in process of procuring two (2) sets of 400 kV ERS towers.