Minutes

of

138th OCC Meeting

Date: 08.11.2017

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Minutes of 138th OCC Meeting held on 30th October, 2017 at ERPC, Kolkata

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

PART A

Item no. 1: Confirmation of minutes of 137th OCC meeting of ERPC held on 21.09.2017

The minutes of 137th OCC meeting were uploaded in ERPC website and circulated vide letter dated 06.10.2017 to all the constituents.

Members may confirm the minutes.

Deliberation in the meeting

Members confirmed the minutes of 137th OCC meeting.

PART B: ITEMS FOR DISCUSSION

Item No. B.1: Commissioning of new transmission elements in Eastern Region

In 118th OCC, it was informed that the network diagram of eastern region needs to be updated on regular basis on account of commissioning of new elements in the CTU as well as STU networks.

OCC advised all the constituents to update the list of newly commissioned power system elements to OCC on monthly basis so that ERLDC/ERPC can update the network diagram on regular basis.

New Generators/Transmission Elements commissioned/charged during **September, 2017** as follows:

1. 400kV Kharagpur-New Chanditala-I & II Charged for the first time at 15:21 hrs. of 06.09.17 and at 15:33 hrs. of 07.09.17 respectively.
2. 315MVA, 400/220/33 kV ICT # II at New Chanditala charged for the first time at 17:05 hrs. Of 15.09.17.
3. 132kV Baripada - Jaleswar charged for the First Time at 18:48 hrs. Of 23/09/17.
4. 132kV Baripada- Bhograi first time charged at 18:54 hrs. on 25/09/17.

Constituents may update.

Deliberation in the meeting

Members noted.

Item No. B.2: 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.

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 (in Rs.)	Status as updated in 135th OCC
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in W. Bengal	31-12-14		120.67 Cr	11.04 Cr.	95 % Supply Completed
2		Transmission System improvement of WBSETCL	22-05-17				
3		Renovation & modernisation of transmission system for relieving congestion in Intra-State Transmission System.	22-05-17				
4		Installation of switchable reactor & shunt capacitors					
5	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	10.05.15	10.05.17	162.5 Cr.	16.25 Cr + 8.91 Cr	***Total contract awarded for Rs. 51.35 Cr***
6	ERPC	Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid	17.03.16		20 Cr.	4.94 Cr. + 9.88 Cr.	1) Hardware supplied and installed. 2) SAT completed for pilot state 3) **Protection database management software (PDMS) put in live w.e.f. 30.03.17.** 4) ***Training on PDMS organised at ERPC, Odisha, Bihar, WBSETCL, Jharkhand and DVC.***
7	BSPTCL	Renovation and up-gradation of 220/132/33 KV GSS Biharsharif, Bodhgaya, Fatuha, Khagaul, Dehri -on-sone & 132/33 kV GSS Kataiya	11/5/2015	Feb'2017	64.22 crore	23.68 crore	Project is on going. ***Contract awarded for Rs.71.37 Cr till date.***
8		Installation of capacitor bank at different 35 nos. of GSS under BSPTCL	5/9/2016		18.88 crore		Approved (triparty agreement among NLDC, Govt. of Bihar & BSPTCL is in under process)
9		Renovation & up-gradation of protection and control system of 12 nos. 132/33 KV GSS under BSPTCL.					Recommendation of appraisal committee is awaited. Estimated cost 54.69 crore.
10	DVC	Renovation and upgradation of control & protection system and replacement of Substation Equipment of 220/132/33 kV Ramgarh Substation			25.96		Tendering in process.
11		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			140		Appraisal committee has recommended. It will be placed in next monitoring Committee meeting.
12	WBPDCL	Implementation of Islanding scheme at Bandel Thermal Power Station			1.39 Cr		***Award placed to ABB. Material delivery by Dec, 17.***
13		Upgradation of Protection and SAS			26.09		Approved by Ministry of Power
14	OHPC	Renovation and up-gradation of protection and control system of 4 nos OHPC substations.			***22.35 Cr***		**Tendering unde progress.**
15	Powergrid	Installation of STATCOM in ER			***160.28 Cr***	*63.028 Cr*	**work is in progress, e*expected to complete by June 2018***

16a	ERPC	Training for Power System Engineers					***The proposal was approved by Appraisal Committee. The approval from MoP, GOI is awaited.***
16b		Training on Power market trading at NORD POOL Academy for Power System Engineers of Eastern Regional Constituents					

Respective constituents may update.

Deliberation in the meeting

It was informed that "Creation & Maintenance of web based protection database and desktop based protection calculation tool for Eastern Regional Grid" project funded under PSDF has been completed and it is alive from today.

ERPC informed that editing rights for updating the network and protection data in PDMS will be given to the respective constituents. All the constituents were advised to nominate the member who will be authorised with editing rights. All constituents were advised to send the nomination to ERPC vide mail: mserpc-power@nic.in.

OCC advised all the constituents to utilise PDMS and PSCT for protection system studies effectively.

Item No. B.3: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of September, 2017 has been received from OPTCL, CESC, JUSNL, WBSETCL, DVC, and BSPTCL.

Members may note.

Deliberation in the meeting

Members noted.

Item No. B.4: Healthiness of SPS existing in Eastern Region

GMR, Vedanta, JITPL, CESC, Chuzachen, Powergrid(ER-II & Odisha) & NTPC (TSTPS) have submitted the healthiness certificate for the month of September, 2017.

In 136th OCC, members felt that healthiness certificate for SPS of 132 kV Muzaffarpur-Dhalkebar D/C line may also be submitted on monthly basis and advised Powergrid to submit the healthiness certificate in every OCC meeting.

Teesta-III, Jorethang & Dikchu may submit the healthiness certificate for Rangpo SPS as decided in special meeting of 21.06.2017.

Powergrid may submit the healthiness certificate for September 2017.

Deliberation in the meeting

Teesta-III, Dikchu and Powergrid have submitted the healthiness certificate.

Powergrid informed that SPS of 132 kV Muzaffarpur-Dhalkebar D/C line has been tested and found healthy.

ERLDC informed that Tashiding HEP is also included under Rangpo SPS, two units of Tashiding HEP will trip on actuation of SPS. However, it will be reviewed in coordination with other generators covered in the SPS.

Item No. B.5: Electricity Generation Targets for the year 2018-19 – CEA

The annual exercise of assessment and finalization of the generation targets and the planned maintenance schedules of the generating units for the year 2018-19 is being initiated by CEA. Although the generation performance of the various stations and their planned & unscheduled outages are regularly monitored in CEA but it is felt that a more realistic projection of month-wise generation in the coming year could be made by the respective Station Authorities.

While monitoring the generation performance during the current financial year, it has been observed that power utilities are facing the problem of loss of generation due to no / low schedules, high fuel costs and other technical and commercial and transmission etc. issues. Accordingly, it is requested that the following inputs may kindly be submitted to this office as per the enclosed **formats (given at Annexure-B.6)**:

i) The unit wise yearly generation (with unit -wise monthly breakup) proposed during 2018-19 as per the format given along with the fuel availability, the anticipated loss of generation on account of various reasons such as grid constraint, low schedule/ reserve shut down due to high cost, poor quality coal/lignite etc, if any, may also be furnished (**Annex-I (1 to 5))**

ii) Utilities who have their Power Purchase Agreement (PPA) with various Discoms, Trader, States etc, details may be furnished in MW for Long, Medium and Short term to enable us to assess the expected generation for next year (**Annex –I (point no 6)**).

iii) The details of coal linkage from coal agencies and availability of secondary fuel oil/gas/ liq fuel may also please be furnished (**Annex- I (point no 7 (a) and (b))**.

iv) Production cost, Unit wise cost of generation and rate of sale of power may also be furnished. **(Annex – I (point 8))**

v) Details of unit-wise schedule of Planned Maintenance as approved by the respective RPCs (Regional Power Committees), unit-wise R&M planned to be carried out during 2018-19, may also be considered for deciding the generation targets (**Annex- II**).

The information may please be furnished electronically at the email address **targetopmcea@gmail.com, prathamkumar@gmail.com** with a copy to ERPC (e-mail: **mserpc-power@nic.in**).

For the convenience of the generating utilities, the input formats are also being made available at CEA website **http://www.cea.nic.in**. For any other query/ clarification any of the following officer may be approached.

1. Mr Pratham Kumar, Assistant Director, 011-26732666, Mob- 08252697842

*CEA vide letter dated 25th October 2017 informed that desired information from many generating stations have not been received till now. The list of such stations is enclosed at **Annexure-B6A**. MoP vide letter no. 5/1/2017-OM informed that Annual generation targets for 2018-19 is to be finalized by 15th December, 2017 and to avert any coal supply crisis during 2018-19, plant wise detailed plan needs to be prepared.*

In view of this, it is requested to furnish unit wise outage schedule of generating stations of your region for 2018-19 and month wise, state wise energy requirement for 2018-19 to this division by 15th November, 2017.

Members may furnish the above data by 15th November 2017.

Deliberation in the meeting

OCC advised all the constituents to refer the annexure and send the relevant information to CEA electronically at the email address ***targetopmcea@gmail.com, prathamkumar@gmail.com*** *with a copy to ERPC (e-mail:* ***mserpc-power@nic.in****) by 15th November 2017.*

Item No. B.6: Furnishing of data for Merit Order Web Portal – CEA

During the Power Minister's Conference held on 3rd and 4th May 2017, at New Delhi, it was decided to develop a web portal/mobile app in about a month's time with a view to having transparency in Merit order scheduling & dispatch and ensuring most economic system operation.

In the conference Hon'ble Union Minister for Power requested all the States/UTs to submit the requisite data to CEA immediately.

On this regard, it is to inform that POSOCO has developed the facility for online uploading of monthly & daily data related to Merit Order Dispatch Portal, by the SLDCs. NLDC (POSOCO) has already communicated via email to all the SLDCs, their respective User IDs & Passwords and the procedure for online filling & uploading of data. All the SLDCs to start submitting the above data to NLDC online immediately.

In case of any doubt / clarification, Shri Harish Kr Rathour (NLDC) may be contacted at his Mobile No.9873918443. The procedure for online uploading of data for the portal is available in ERPC website.

Subsequently, CEA vide mail dated 4th July 2017 informed that for the ease of user, import from excel (in a predefined format) facility have also been implemented. Users are requested to follow following steps to upload data through excel:

1) Login to MERIT web portal (www.meritindia.in/login).
2) Select any date and click on "GO" button. After this, list of all station will be visible for that date with other information's, if already filled.
3) Click on "Export Data in Excel" to export the file in excel***. This would be a template file which is to be used for uploading the data***.
    a. Once you do not have any changes in the list of plants, this file can be used for data uploading and on daily basis user need not to download excel format again.
    b. In case updation in list of station is required (State owned stations), same can be modified through monthly page. At present this feature is disabled and very shortly it will be enabled.
    c. Initial two row has station ID and name of station, which should not be disturbed and data will be uploaded based on these only. Any changes in it may lead to wrong data uploading.
    d. User can select any file name to save and upload the data.
    e. Once you filled data click on "If you have data ready in Excel, CICK HERE to upload", select date for which you want to upload data, browse for the desired file and click on UPLOAD.
    f. If entire file has not been uploaded, you will get the file which will show list of stations not uploaded.
4) If new station to be added for state, user can add through monthly data upload pages. Once, it has added new EXCEL template to be downloaded again in order to fill data for new station.
5) User who wants to fill data directly through web-portal, would now have option to sort based on the various fields, which will help in filling data. Users who wants to fill on-line need not to click on "If you have data ready in Excel, CICK HERE to upload", they only select the date and simply click on "GO" button.

After submission of data, user can check directly on www.meritindia.in. It is once again requested to all to fill the monthly data (variable and fixed cost) because all visualization in first page is based

on variable costs of the plants. In case of any doubt / clarification, Shri Harish Kr Rathour (NLDC) may be contacted at his Mobile No.9873918443.

Members may comply.

Deliberation in the meeting

Members noted for compliance.

Item No. B.7: Flexible jumpering arrangement for bypassing substations, prone to inundation during monsoon, for ensuring continuity of important corridors and power evacuation from power stations--ERLDC

During the current monsoon season, quite a few substations in Eastern Region viz. Alipurduar(PG), Kishanganj(PG), Dalkhola(PG) and Motihari(DMTCL) had to be completely shutdown, due to massive waterlogging. Outage of Kishanganj S/Stn posed constraint in power evacuation of Sikkim generators and surplus power of NER while outage of Alipurduar S/stn weakened the inter-regional connectivity between ER and NER. Such substations typically have 2 nos incoming and 2 nos outgoing lines and lie either along a major intra/inter-regional corridor or along the evacuation route of a major power station.

Under the above mentioned situation, it is desirable that continuity of the transmission corridor be maintained by directly connecting the incoming and outgoing lines, bypassing the inundated substation. However, such network re-configuration is possible only if facility for jumpering conductors at appropriate locations is already in place. This practice is already being followed at a number of locations in Western Region.

Members may please identify the substations where the above proposed arrangement can be utilised for maintaining grid security under flood situations.

In 136th OCC, ERLDC explained that the flexible jumpering arrangement may be done for 400 kV Binaguri-Kisheenganj-N.Purnea D/C and 400kV Binaguri-Alipurduar-Bongaigaon D/C lines for bypassing the LILO points i.e. 400kV Kishanganj(PG) and Alipurduar(PG) S/s so that the same lines may be directly connected during the emergencies like flood situations at LILO points. The possibility may be explored as these elements are very important in terms of hydro power evacuation and long outages of these elements may endanger the grid security. The other such elements (LILOed at Dalkhola, Motihari (DMTCL) etc) may also be explored which are under threat during flood and other emergencies.

OCC felt that such kind of bypassing arrangement will help the grid to improve the reliability during emergencies when substation is not available in service.

OCC advised Powergrid to explore the possibilities of implementing such bypassing arrangement for above elements and for other important elements, if any.

Powergrid agreed to do the survey and explore the possibilities.

In 137th OCC, Powergrid informed that first they will implement the flexible jumper arrangement at Alipurduar(PG) S/s then they will implement at Kishanganj(PG) and Dalkhola(PG).

Powergrid may update.

Deliberation in the meeting

Powergrid informed that feeders are identified for Alipurduar, Kishanganj and Dalkhola SS for necessary jumpering. However, awarding and execution of the work will take some time.

Item No. B.8: Status of Islanding Schemes of Eastern Region

B.8.1. Status of commissioned Islanding Schemes 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

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

In 134th OCC, JUSNL was advised to submit the healthiness certificate of the UFR and PLCC system related to Farakka islanding scheme at their end.

The healthiness certificate for Islanding Scheme for September, 2017 has been received from CTPS, DVC, NTPC, JUSNL, BkTPS, Tata Power and CESC.

Members may note.

Deliberation in the meeting

It was informed that in 60th PCC NTPC was informed that protection equipment and CBs are very old at Lalmatia S/s which are the property of ECL. NTPC added that they are facing difficulty to maintain the Lalmatia S/s and 220kV Farakka-Lalmatia line with such old equipment.

OCC felt that Lalmatia S/s is covered under Farakka islanding scheme and ineffective protection/communication system at Lalmatia will be a concern for successful operation of Farakka islanding scheme.

OCC advised NTPC to submit the healthiness status of protection/communication equipment to ERPC and ERLDC. OCC also advised NTPC to pursue with ECL for further necessary action.

B.8.2. Bandel Islanding Scheme, WBPDCL

As per the latest status available in PSDF web site the scheme was approved for an amount of Rs.1.39 crore by the Monitoring Committee on 10.04.2017.

In 134th OCC, WBPDCL informed that MoP has issued the sanction letter for grant of PSDF.

In 135th OCC, WBPDCL informed that order has been placed to ABB for implementation of Bandel islanding scheme.

In 137th OCC, WBPDCL informed that the order has to be revised as per new GST guidelines.

WBPDCL may update the latest status.

Deliberation in the meeting

WBPDCL informed that material will be supplied by November 2017.

Item No. B.9: Controlling overdrawal of states by disconnection of radial feeders - ERLDC

In accordance with IEGC sections 5.4.2 (c) and 5.4.2 (f), feeders for disconnecting demand of every state in the order of their priority for switching off, were identified in the past. List of these

feeders is given in **Annexure-B9**. However, with growth of network interconnection and load as well as change of load distribution (if any) during the intervening period, it is felt that the list needs reviewing.

All constituents are requested to furnish views regarding their respective identified feeders and indicate the expected load (average and peak) that would be disconnected by switching off the feeders, so that the list can be finalized at the earliest.

Members may discuss.

Deliberation in the meeting

ERLDC informed that the feeders list needs to be reviewed in view of growth of network interconnection and change of load distribution.

SLDC, Bihar updated the feeders list as follows:

- *132kV Banka(PG)-Banka D/C line (60 MW)*
- *132kV Banka(PG)-Sultanganj D/C line (80 MW)*
- *132kV Ara(PG)-Jagdishpur S/C line (45 MW)*

OCC advised all the other SLDCs to identify the suitable feeders to be disconnected during overdrawal of states and submit the details to ERLDC and ERPC.

Item No. B.10: Implementation of Automatic Demand Management Scheme (ADMS)-ERLDC

West Bengal SLDC vide letter dated 13-10-17 has informed that the scheme of automatic demand management within the control area, has been completed. The scheme is enclosed at **Annexure-B10**.

West Bengal SLDC may please elaborate. Jharkhand, Odisha and Bihar may share the status of implementation.

Deliberation in the meeting

Jharkhand informed that they are interacting with M/s Chemtrol for implementation of the scheme.

Odisha informed that that they are at tendering stage.

Bihar informed that they have identified the feeders and they will submit the list by next OCC.

Item No. B.11: Concerned members may update the latest status.

B.11.1. Special Protection Scheme(SPS) of Sterlite (VAL) –ERLDC

Sterlite has installed capacity of 4X600MW (2400MW) with smelter load of More than 1000MW grid-connected plant. In case of loss of smelter load or evacuation path units might trip due to mismatch of load and generation. Sterlite had already implemented SPS to minimize the impact of such major load generation mismatch on the grid. In an earlier OCC meeting VAL agreed to share their presently implemented SPS details. But thereafter, VAL did not submit anything to ERLDC/ERPC.

In 135th OCC, OPTCL was advised to submit the present SPS settings to ERPC and ERLDC within a week.

OPTCL vide mail dated 20th September 2017 informed that as per the ref no ERLDC/MO/SS/2013/559, 13th May'2013 from M/s POSOCO, the internal SPS i.e., Composite Islanding & Load Management (CILMS) of Vedanta Limited Jharsuguda had been framed and complied as per specified planning criteria to restrict the Transmission line loading within steady state loading limit of 850MW. Details are enclosed at ***Annexure-B11.1****.*

Members may discuss.

Deliberation in the meeting

OPTCL informed that physical construction of 400kV Vedanta-Jharsuguda line has been completed but the line is not yet charged due to bay integration and communication issues at Jharsuguda.

Vedanta and Powergrid informed that it will be resolved soon and the line will be charged.

OCC decided to review the SPS as per the new configuration after charging of 400kV Vedanta-Jharsuguda line.

B.11.2. Repeated tripping of 220kV Chuka-Birpara D/c line

In 60th PCC, meeting Powergrid explained that the line is in lightning prone area. The line is getting tripped due to Insulator failures. Powergrid added that line insulators of part of the line which is belongs to Powergrid have been replaced with polymer insulators. The insulator failures during lightning have been reduced. However, the line is getting tripped due to failure of porcelain insulators in 39.8 km stretch which is belongs to Bhutan.

DGPC may place their action plan.

Deliberation in the meeting

DGPC informed that BPC is the owner of part of the line which is belongs to Bhutan. They have already replaced porcelain insulators of 7 to 8 towers with polymer insulators.

DGPC added that they will discuss the issue with BPC in their coordination meeting scheduled to be held in November 2017 and update the action plan in next OCC meeting.

B.11.3. Enabling of 3-Phase Auto Reclose at 132 kV North Bengal and Sikkim areas to minimize element outages due to transient faults -- Powergrid

During rainy season In North Bengal and Sikkim area, high element outages observed of 132 KV level. Mainly from past experience it is observed that 90% of the fault is of Single Phase to Ground fault and transient in nature. However as per general practice 132 KV level CB's are of mechanically ganged and any single phase fault also causing tripping of all three phases.

To make system more dynamic it is prudent to go for, three phase auto reclosure for any single phase Fault in the 132 KV lines. Only by introduction of A/R facility line availability may be increased in the tune of 90% i.r.o present situations. POWERGRID proposed to implement the same however other constituents as well as ERLDC may give respective views. Upon concurrence detailed road map for Implementation will be given.

In 132nd OCC, Powergrid informed that in North Bengal and Sikkim area most of the time the 132 kV lines were tripping on transient fault and the system can be saved by implementing 3-phase auto-reclosure scheme.

OCC discussed the matter in detail and agreed in principle for implementation of 3-pase auto-reclosure scheme for 132 kV lines. Further, it was decided that the implementation would start with North Bengal and Sikkim area.

Further, OCC advised Powergrid to submit a report on the status of PLCC/telemetry, A/R facility etc. for both ends of each 132 kV lines of North Bengal and Sikkim area.

In 134th OCC, Powergrid informed that the 3-phase auto-reclosure scheme for 132kV Rangpo-Gangtok line will be implemented by July 2017.

In 136th OCC, Powergrid was advised to submit a report on the status of PLCC/telemetry, A/R facility etc. for both ends of each 132 kV lines of North Bengal and Sikkim area.

In 137th OCC, Powergrid informed that the 3-phase auto-reclosure scheme for 132kV Rangpo-Gangtok line will be implemented by December 2017.

Powergrid added that other 132kV lines except 132kV Siliguri-Melli line are radially connected where auto reclose scheme is not required. 3-phase auto-reclosure scheme for 132kV Siliguri-Melli line will be implemented after implementation of auto-reclosure scheme at 132kV Rangpo-Gangtok line.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that they require some more time to finalize the contract and implement 3-phase auto-reclosure scheme for 132kV Rangpo-Gangtok line.

B.11.4. Status of Installation of STATCOM in Eastern Region

In the 15th meeting of SCM it was agreed to install STATCOM in combination with mechanically switched Reactors (MSR) and Capacitors (MSC) and co-ordinated control mechanism of MSCs and MSRs at Ranchi, Rourkela, Jeypore and Kishanganj substations in Eastern Region.

The matter was again discussed in the 28th ERPC/TCC meeting held on 12th -13th September, 2014 at Goa, wherein, it was decided that POWERGRID may go ahead with implementation of the STATCOM project in Eastern Region with debt – equity ratio of 70:30 funding. The debt part should be refunded through PSDF and Equity Component (30%) to be funded by POWERGRID to be recovered through regulated tariff mechanism. CTU should initiate the process of availing fund from PSDF.

In 137th OCC, Powergrid updated the status as follows:

Sl No	Location /Sub-Station of POWERGRID in ER	STATCOM - Dynamic Shunt Controller (MVAr)	Mechanically Switched Compensation Sl. (MVAr)		Latest status
			Reactor (MSR)	Capacitor (MSC)	
1	Rourkela	±300	2x125		*Expected to complete by Mar 2018*
2	Kishanganj	±200	2x125		*Expected to complete by June 2018*
3	Ranchi(New)	±300	2x125		*Expected to complete by April 2018*
4	Jeypore	±200	2x125	2x125	*Expected to complete by June 2018*

Powergrid may update.

Deliberation in the meeting

Powergrid informed that work is in progress as per the given schedule.

B.11.5. Bus Splitting of Powergrid Sub-stations

As per decision of Standing Committee of ER CTU was entrusted to do Bus splitting at Maithon, Durgapur & Biharsariff S/Ss or ER. The latest status on the same are:

- 400 kV Maithon ---Completed
- 400 kV Durgapur--Completed
- 400 kV Biharshariff— *Completed in May, 2017*.

In 134th OCC, it was informed that the bus splitting scheme at 400 kV Maithon & Biharshariff will be operationalized after the getting the consent from CTU.

CTU vide letter dated 11th September 2017 informed that they have carried out the study and the results suggested that bus splitting scheme at400 kV Maithon and Biharshariff may be operationalized at the earliest to limit the fault current. However, the bus sectionaliser may be kept closed or opened by POSOCO depending upon the system conditions and requirement.

CTU added that fault level at 400 kV Durgapur has almost reached the design limit, with the operationzation of split bus at 400kV Kahalgaon (expected by Dec 2018) and the Farakka bypass scheme (approved in 19th SCM), the fault current level at Durgapur reduces to 37 kA. Therefore, the bus splitting at Durgapur may be operationalized at a later date.

In 36th TCC/ERPC, ERLDC informed that they will carry out internal study and operationalize the bus splitting schemes at 400kV Maithon and Biharshariff one by one with close monitoring of the system behaviour.

In 137th OCC, ERLDC informed that they will carry out internal study and operationalize the bus splitting schemes at 400kV Maithon and Biharshariff.

Load flow studies were conducted by ERLDC considering four different scenarios viz. low-hydro peak & off-peak and high-hydro peak & off-peak, to examine the effect of operating Biharshariff and Maithon 400kV S/Stns in split bus mode, under normal as well as contingent conditions. The findings are summarized below:

Maithon :

- After bus splitting Maithon 400kV bus, flow in 400 kV Maithon-Parulia D/C increases significantly and its N-1 contingency may become critical in future. However, after splitting of Farakka 400kV bus, this flow is expected to reduce.
- There is a significant reduction in flow of 400 kV RTPS-Maithon which can assists in maintain good generation at Raghunathpur TPS without loading 400 kV RTPS-Maithon critically.
- Reduction of power flow in 400kV MPL-Maithon D/C line is also observed after splitting Maithon bus, which in turn helps in reducing the post-contingency line flow, on tripping of one of the circuits.
- Increase in loading of 400 kV New Ranchi-Chandwa D/C is observed. However, as this is strung with Quad Moose conductor, its N-1 contingency loading is well within the safe limit.

Biharshariff :

- With bus split arrangement at Biharsariff, the loading of the 400/220kV ICTs become uneven resulting in high loading of one 315 MVA ICT (Connected to Biharsariff-B section) and very less loading of other two ICTs (Connected to Biharsariff-A section). This condition does not change significantly whether Maithon 400kV bus operates in split mode or not.
- Even without any contingency, loading of the ICT connected to Biharsariff-B section may cross its continuous rating.

- Flow of 400 kV Khalgaon-Banka-Biharsariff-B D/C reduces somewhat while that of 400 kV Kahalgaon-Lakhisarai-Biharsariff-A D/C increases.
- There is slight increase in flow of 400 kV Farraka-Malda D/C
- As per final scheme, the 4th (500 MVA) ICT is supposed to get connected to 400kV Bus-B, in parallel with the single 315MVA ICT. Therefore till commissioning of the 500MVA ICT, operation of Biharsariff 400kV substation in split mode is not recommended.

Members may discuss.

Deliberation in the meeting

*ERLDC presented the study results. Presentation is enclosed at **Annexure-B11.5**.*

ERLDC informed that split bus mode operation may be operationalized at Maithon in consultation with NLDC as it affects interregional flow to some extent.

Regarding bus splitting operation at 400kV Bihrshariff, ERLDC informed that the loading of 400/220kV ICTs become uneven resulting in high loading of one 315 MVA ICT (Connected to Biharsariff-B section). Even without any contingency, loading of the ICT connected to Biharsariff-B section may cross its continuous rating.

Till commissioning of the 500MVA ICT, operation of Biharsariff 400kV substation in split mode is not recommended.

OCC advised ERLDC to operationalize the bus splitting scheme at Maithon in coordination with NLDC and Powergrid.

B.11.6. Bus Splitting of Kahalgaon STPS Stage I&II, NTPC

In 24th ERPC meeting held on 27.04.2013, ERPC advised NTPC to go ahead with the bus-splitting scheme as it is a technical requirement for safe, secure operation of the grid.

In 32nd TCC, NTPC informed that they are going ahead with the implementation of Bus Splitting of Kahalgaon STPS Stage I&II and the implementation is expected to be completed by December, 2018.

In 126th OCC, NTPC has given the present status as follows:

- 400/132kV Switchyard package - bid opened on 14.03.16. Awarded on 04.05.2016.
- Site levelling – Site levelling work has been completed.
- Transformer package and Shunt reactor– have been awarded.

In 35th TCC, NTPC informed that the work is in progress as per the schedule and the bus splitting will be completed by December, 2018.

In 137th OCC, NTPC informed that the bus splitting will be implemented by December, 2018.

NTPC may update.

Deliberation in the meeting

NTPC informed that work is in progress as per the given schedule.

B.11.7. 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 136th OCC, 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 Mar, 2018.***
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By Mar, 2018.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019.
3.	**400/220kV Pandiabil Grid S/s:**	
a.	Pratapsasan(OPTCL)-Pandiabil(PG) 220 kV D/C line	By Mar, 2018.

OPTCL may update.

Deliberation in the meeting

OPTCL updated the status as mentioned above.

B.11.8. 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj & Dhanbad

In 136th OCC, JUSNL updated the latest status as follows:

Sl. No.	Name of the transmission line	Completion schedule
1.	**Chaibasa 400/220kV S/s**	
a.	Chaibasa (JUSNL) – Ramchandrapur (JUSNL) 220kV D/c	***commissioned on 25th August, 2017***
2.	**Daltonganj 400/220/132kV S/s:**	
a.	Daltonganj (POWERGRID) – Latehar 220kV D/c	By Dec, 2017.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	May, 2018
C	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	Dec, 2018
d	Daltonganj (POWERGRID) – Chatarpur/Lesliganj 132kV D/c	Matching with S/s
3.	**Dhanbad 400/220 kV S/s: Awarded under TBCB**	
a.	Dhanbad – Dhanbad (Govindpur) (JUSNL) 220kV D/c	Matching with S/s

JUSNL may update.

Deliberation in the meeting

ERLDC apprised that as per information collected from JUSNL over telephone, the bays of 220kV Chaibasa - Ramchandrapur D/C at Chaibasa end are in JUSNL switchyard and construction of the line upto Ramchandrapur is complete. However, as the 220kV bays at Ramchandrapur switchyard are not yet ready, the line cannot be terminated at Ramchandrapur. Hence the line is at present idle-charged from Chaibasa(JUSNL) switchyard.

B.11.9. 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Alipurduar & 2x500 MVA Rajarhat sub-stations

In 136th OCC, *WBSETCL updated the latest status as follows:*

Sl. No.	Name of the transmission line	Completion schedule
1.	**2x315MVA, 400/220kV Alipurduar sub-station**	
a.	Alipurduar (POWERGRID) – Alipurduar (WBSETCL) 220kV D/c (***Twin moose***)	***Nov, 2017***
2.	**2x500MVA, 400/220kV Rajarhat ---**	
a.	Rajarhat-N. Town-3 (WBSETCL) 220 kV D/C line	Matching
b.	Rajarhat-N. Town-2 (WBSETCL) 220 kV D/C line	June, 2018
c.	Rajarhat- Barasat (WBSETCL) 220 kV D/C line	June, 2018

WBSETCL may update.

Deliberation in the meeting

WBSETCL informed that work is in progress as per the given schedule.

Item No. B.12: BSPTCL Agenda

1. Restoration of power supply at Patna

According to present load scenario, load of Patna is increasing very fast. Supply of power to Patna is mainly dependent on the grid sub-station Patna (Sampatchak) of PGCIL. In case of tripping of transformers (ICTs) or lines connected with grid substation of PGCIL sub-station, the power supply to Patna gets highly affected, causing blackout at Patna and connected Substations.

Due to infructous or mal operation of the relay it has been observed that, though the system has to be taken in service within 10-15 minutes, the same is delayed due to process of taking code from ERLDC for loading/off loading. In order to fastest restoration of power supply to Patna the approval is solicited to allow Power Grid and BSPTCL to restore power in close association with each other and to seek post facto approval from ERLDC.

This approval may be granted for the conditions when restoration would be possible within 10-15 minutes after resetting of relays, load isolation/load management etc.

Members may discuss.

Deliberation in the meeting

OCC advised BSPTCL to continue with the existing procedure.

2. Standard operating procedure during contingencies

As a contingency plan for operations/load management to be done during the tripping scenarios, mainly at Patna (PG) {source} or BSPTCL, a standard of procedure has been prepared in association with PGCIL, Patna for restoration of supply or to avoid outages due to cascading effects. Details are placed in **Annexure-B12**. BSPTCL intends that the same is to be adopted in case of the contingencies defined under various conditions/outages. The approval of the proposed SOP may kindly be granted so that actions/load managements/sheddings as per availability of power could be done within shortest possible time with an objective to reduce restoration / outage time to bare minimum. Once approved, all operations shall be done by PGCIL/SLDC/Grid Sub Stations without waiting for further restrictions/codes either from SLDC/ERLDC. However all information shall be subsequently forwarded to ERLDC regarding the same event.

The matter has since been examined by ERLDC.

It is observed that at present the peak requirement of Bihar at Patna, Gaya, Sasaram, Muzaffarpur etc. ISTS interconnection points is such that security against (n-1) contingency of the respective 400/220kV ICTs is not ensured at all times. Peak loading of concerned 400/220kV ICTs observed during the current month are summarized below:

400/220kV ICT	**Peak load (MW)**
Patna (1X315 + 1X500) MVA	550
Gaya (1X315 + 1X500) MVA	700
Sasaram (1X315 + 1X500) MVA	≈ 550

Muzaffarpur (2X315 + 1X500) MVA	600
Biharshariff 3X315 MVA	≈ 700

Further, as some of the 220kV loops of BSPTCL such as Patna- Fatuah – Biharshariff(PG), Gaya(PG) –Dehri-Sasaram, Biharshariff(PG) - Begusarai –Ujiyarpur-MTPS-Muzaffarpur(PG) etc. usually remain closed thereby interconnecting the 220kV sides of these ICTs, opening of any such line to relieve ICT loading at one substation is likely to aggravate the ICT loading at another substation.

In view of the aforesaid difficulty, BSPTCL may identify suitable 132kV or 220kV radial feeders that may be automatically disconnected through relay actuated inter-tripping scheme, whenever one of the 400/220kV ICTs supplying the corresponding load trips.

For ease of identification of radial loads, BSPTCL may opt to supply the entire load of each of these 400/220kV S/Stns in radial mode, by keeping the 220kV loops open under normal conditions.

Members may discuss.

Deliberation in the meeting

ELRDC suggested that BSPTCL may identify suitable 132kV or 220kV radial feeders that may be automatically disconnected through relay actuated inter-tripping scheme, whenever one of the 400/220kV ICTs supplying the corresponding load trips, so that cascade tripping of the remaining ICT is avoided. For this purpose, BSPTCL may even consider keeping open 220kV loops such as Patna-Fatuah-Biharshariff and Khagaul-Arrah-Sasaram, at appropriate points.

BSPTCL informed that scheme for automatic inter-tripping of 220kV Patna-Khagaul S/C and 220kV Sipara-Khagaul S/C lines have already been implemented in case the 315MVA ICT at Patna trips. For loss of the 500MVA, 400/220kV ICT at Patna, in addition to the above mentioned 220kV lines, Patna-Khagaul 220kV S/C would also be inter-tripped.

ERLDC emphasized that for reconnection of the 220kV lines, SLDC Patna should follow the normal procedure of exchanging message codes, in order to comply with the basics of security. Nevertheless, all possible efforts would be made to minimize the duration of power interruption.

3. Erection and commissioning of 02 nos. of 220 kV line bays at KBUNL

Despite of several requests and reminders, KBUNL is not taking up this work seriously and it appears that the initiatives of KBUNL for construction of bay, which is essential for making available second circuit with Samastipur(New) and Motipur are far from satisfactory and the work is yet to start. Presently 220 KV KBUNL- Samastipur (new) (D/C) & 220 KV KBUNL - Motipur (D/C) tr. lines have only one 220 KV bays each at KBUNL end since long & due to this one circuit each from KBUNL to Samastipur (new) & KBUNL to Motipur remain unutilised. Due to unavailability of these bays at KBUNL end, BSPTCL is facing difficulties for synchronising 220 KV line at KBUNL and also unable to shift loading of Biharsharif(PG)-Begusarai D/C T/L on MTPS for off loading of Biharsharif(PG) ICTs and in case of any contingency occurs at DMTCL(D)-Motipur D/C T/L, MTPS-Motipur S/C T/L also tripped at overloading. It is evident that the transmission infrastructure developed by BSPTCL in North Bihar could not be fully utilized causing limitations in power flow as well as power interruption.

The unavailability of bays at KBUNL is affecting the evacuation of power from KBUNL (Generating Station 2*110 MW+2*195MW). So, keeping these lines in loop at KBUNL will enhance the quality, reliability and stability of system.

KBUNL may begin the construction and complete commissioning of 2nd bay in minimum possible time in order to avoid crisis arisen due to unforeseen outage of Biharsharif(PG) and DMTCL(Darbhanga).

As such target dates for the start and completion of the above works may kindly be got ensured from KBUNL.

KBUNL may update.

Deliberation in the meeting

KBUNL informed that tender has been floated and the work will be awarded in November 2017. The work will be completed by March 2018.

4. Utilisation of 220 KV Ara(PG)-Khagaul ckt-I for feeding 132 KV power to Ara GSS from Ara (PG)

BSPTCL informed that Ara GSS and Jagdishpur GSS are availing power from Ara (PG) through single source. Two nos. of new 132 kV transmission lines are under completion stage meant for connecting Ara GSS and Jagdishpur GSS under transmission line strengthening work. The existing 132 kV Ara (PG)-Ara T/L and newly constructed 132 kV Ara-Jagdishpur D/C T/L are proposed to emanate from Ara GSS through multi circuit towers, as Ara GSS is surrounded by residential buildings and has space constraints for transmission line emanation. Four (4) nos. of multi circuits towers has to be constructed on the existing foundations of the 132 kV Ara (PG)-Ara T/L. The anticipated time for construction of these multi circuit towers is approx. two (2) months during which 132 kV power availability through any alternative way even erecting ERS to Ara GSS for feeding power to Ara town and near by area is a challenging task for us. Keeping in viw the severe ROW issue due to thickly populated area around Ara GSS and no any other available corridor, only option which is feasible to utilize is:

a) Utilize 2nd unstrung circuit of railway tower.

b) Erection of ERS tower where ever required.

c) Avail 132 kV power through some section from location 6 to 1 of 220 kV Ara (PG)-Khagaul circuit-1 through 132 kV transfer bus at Ara (PG).

As per the study done by our field engineers, following arrangement at Ara (PG) may be considered and allowed for the above mentioned point "c":-

Dropping and connecting 132 KV Ara line on 132 KV Transfer Bus, from 132 KV Ara bay at PGCIL Ara & connecting 132 KV Transfer Bus to ckt-I of 220 KV D/C Ara(PG)-Khagaul line at tower no-01, through jumpering and disc insulators on Transfer Bus-Support gantry and availing 132 KV power from Ara bay through 132 KV Transfer-Bus(transfer bus will remain engaged for period of 2 months).

Members may discuss.

Deliberation in the meeting

BSPTCL explained the proposal. SLD of the proposal is enclosed at Annexure-B12.4.

BSPTCL informed that this is a temporary arrangement till completion of multi circuit towers construction for existing 132 kV Ara (PG)-Ara(B) line and newly constructing 132 kV Ara(B)-Jagdishpur D/C line. The construction work will be completed within two months.

OCC in principle agreed to the proposal and advised BSPTCL to implement the arrangement in coordination with Powergrid.

5. Loading of 220 kV Sasaram (PG)-Sahupuri (UP,NR) line

220 kV Sasaram (PG)-Sahupuri (NR,UP) line (completely owned by BSPTCL) is about 40 years old and its loading remains continuously more than 240 MW during peak hours and about 200 MW during off peak hours. Such loading may damage the line and also it causes low voltage problem in GSS connected to Sasaram (PG), hence causing load restriction in BSPTCL system.

SLDC, Patna daily requests RLDC to restrict the drawl maximum upto 180 MW only through the said transmission line. Also this agenda item was discussed In 133rd OCC meeting, OCC is hereby again requested to restrict the drawal upto 180 MW only in order to avoid overloading of ICTs at Gaya (PG) end by improving the sharing of 220 KV power to Dehri from Sasaram(PG) (especially during peak hours).

Members may discuss.

Deliberation in the meeting

220kV Sasaram-Sahupuri line being an inter-regional tie line between ER and NR, it was felt appropriate to send a communication from ERPC to NRPC, so that the issue may take up with UP SLDC for restricting load, whenever the power flow through the line exceeded 180MW.

6. Trail operational certificate for underground fiber optic link from Jakkanpur to SLDC, Patna-BSPTCL

End to end testing of UGFO link between Jakkanpur to SLDC, Patna has been carried out on 03-10-16. Route survey with M/S KEC was carried out on 31-05-17. It was observed that no marking to identify route, location of splice chamber and pits. No provision of clause of standard technical specification of UGFO of PGCIL was followed either regarding the route markers, constrcution of manholes, warning bricks etc. BSPTCL repeatedly requested PGCIL authorities to furnish the technical specification and the SAT procedure of UGFO, but the same has not been provided yet. This may affect the maintenance of UGFO link further.

In 137th OCC, BSPTCL informed that issue is not yet resolved.

OCC advised Powergrid and BSPTCL to do the joint inspection as agreed in last OCC.

OCC advised Powergrid to provide the technical specification and SAT procedure of UGFO to BSPTCL.

BSPTCL and Powergrid may update.

Deliberation in the meeting

BSPTCL informed that the issue has been resolved.

7. Ethernet link for integration of Kishanganj SAS GSS with SLDC, Patna - BSPTCL

Synchronous Digital Hierarchy (SDH) has been installed in Kishanganj (PG)and approach cable laid out up to connecting SDH for integration of SDH of Kishanganj (New) GSS. Ethernet link for integration of SDH of Kishanganj SAS GSS with SLDC, Patna for monitoring of real time data and voice of 220/132/33 kV Kishanganj (New) GSS as well as connecting GSS for ULDC purpose is required on priority basis.

In 137th OCC, BSPTCL informed that there is no progress from Powergrid end.

OCC advised Powergrid to resolve the issue at the earliest.

BSPTCL and Powergrid may update.

Deliberation in the meeting

BSPTCL informed that the issue has been resolved.

Item No. B.13: Early commissioning of 220 kV Patna-Sipara third ckt.—ERLDC

Major load of Capital city Patna is fed from 220 kV Sipara Substation, Further Sipara is conneted with Khagaul as well as well as Fatuah at 220 kV level. These are also major load centers normally fed in radial mode from Patna (except Fatuah, which is usually supplied radially from Biharshariff). This causes very high loading of 220 kV Patna-Sipara D/C and it did not satisfy N-1 Contingeny criteria for most of the time in last quarter.

The third circuit of 220kV Patna-Sipara line is expected to be commissioned soon, which will help in relieving the loading on other two lines. Further with commissioning of 220 kV Patna-Sipara T/C 220 kV Khagul-Arrah-Pusauli loop may be kept close, which will help in improving system reliability and maintaining better voltage regulation in and around that area.

In view of above BSPTCL may expedite commissioning of 220 kV Patna-Sipara third ckt.

In 137th OCC, BSPTCL informed that the line will be commissioned within 20 days.

BSPTCL may update the latest status.

Deliberation in the meeting

BSPTCL informed that the line will be commissioned within 15 days.

Item No. B.14: Issues related to energy accounting of MTPS stage-l & ll of KBUNL-KBUNL

KBUNL vide letter dated 10th October 2017 informed that 1OO% power from MTPS Stage-l is allocated to Bihar and its scheduling is being done by SLDC, Patna since COD of Unit-1 i.e. 01.11.2013. MTPS Stage-ll is an interstate generating station and 67.7o/o (74.97% including unallocated share) power from Stage ll is allocated to Bihar. ln the special meeting held at ERPC, Kolkata on 25.01.2017, it was agreed that scheduling and other associated activities of MTPS Stage-ll shall be performed by SLDC, Patna. Following issues, related to energy accounting and related matters of MTpS Stage-l &stage-ll, are arising which needs to be addressed at the earliest:

1. **Issuance of compensation schedule and certification of compensation amount in line with ERPC**:

KBUNL is raising bills for compensation, (due to partial loading) amount as per its own calculations based on if RC Regulations and CERC approved detailed operating procedure. However it is understood that DISCOMs are not admitting and paying compensation bills due to non certification of same by SLDC, patna.

Therefore, SLDC, Patna needs to issue compensation schedule along with monthly energy account. Also SLDC, Patna to check and certify the calculations of compensation amount in line with ERPC.

2. **Finalisation of methodology for accounting of actual generation of MTPS Stage I & ll and issuance of weekly DSM account by SLDC, Patna**

DSM is applicable for MTPS stage-I and stage-II. However presently DSM accounts are not being issued.
Therefore, methodology for accounting of actual generation of MTpS Stage-I and Stage-II may be finalised. Accordingly, SLDC, Patna needs to issue weekly DSM accounts in line with ERPC.

3. Methodology for scheduling of other beneticiaries of MTPS Stage-II:

Jharkhand has signed LTA Agreement with CTU. CTU is expected to operationalise the LTA shortly. Therefore, methodology for scheduling of power of MTPS Stage-II beneficiaries in co-ordination with ERLDC may please be discussed and decided.

Members may discuss.

Deliberation in the meeting

SLDC, Bihar informed that M/s PWC is developing the software for accounting of DSM charges and it will be ready by January 2018.

SLDC, Bihar agreed to settle the issues.

Item No. B.15: Third Party Protection Audit & Inspection of Under Frequency Relays (UFR)

1. 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	37	68.52
NTPC	16	14	87.50
NHPC	1	1	100.00
DVC	40	26	65.00
WB	68	27	39.71
Odisha	59	38	64.41
JUSNL	34	21	61.76
BSPTCL	16	5	31.25
IPP (GMR, Sterlite and MPL)	5	5	100.00

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.

OCC advised all specially JUSNL and BSPTCL to send the revised DPRs at the earliest after clarifying the queries if any.

Members may comply.

Deliberation in the meeting

Members noted for compliance.

2. Schedule for 2nd Third Party Protection Audit:

The latest status of 2nd Third Party Protection audit is as follows:

1)	400kV Jeerat (PG)	Completed on 15th July 2015
2)	400kV Subashgram (PG)	Completed on 16th July 2015
3)	400kV Kolaghat TPS (WBPDCL)	Completed on 7th August 2015
4)	400/220kV Kharagpur (WBSETCL)	Completed on 7th August 2015
5)	400/220kV Bidhannagar (WBSETCL)	Completed on 8th September, 2015
6)	400kV Durgapur (PG) S/s	Completed on 10th September, 2015
7)	400/220kV DSTPS(DVC)	Completed on 9th September, 2015
8)	400/220kV Mejia (DVC) TPS	Completed on 11th September, 2015
9)	400/220/132kV Mendhasal (OPTCL)	Completed on 2nd November, 2015
10)	400/220kV Talcher STPS (NTPC)	Completed on 3rd November, 2015
11)	765/400kV Angul (PG)	Completed on 4th November, 2015
12)	400kV JITPL	Completed on 5th November, 2015
13)	400kV GMR	Completed on 5th November, 2015
14)	400kV Malda (PG)	Completed on 23rd February, 2016
15)	400kV Farakka (NTPC)	Completed on 24th February, 2016
16)	400kV Behrampur(PG)	Completed on 25th February, 2016
17)	400kV Sagardighi (WBPDCL)	Completed on 25th February, 2016
18)	400kV Bakreswar (WBPDCL)	Completed on 26th February, 2016
19)	765kV Gaya(PG)	Completed on 1st November, 2016
20)	400kV Biharshariff(PG)	Completed on 3rd November, 2016
21)	220kV Biharshariff(BSPTCL)	Completed on 3rd November, 2016
22)	400kV Maithon (PG)	Completed on 18th May, 2017
23)	132kV Gola (DVC)	Completed on 17th May, 2017
24)	132kV Barhi (DVC)	Completed on 18th May, 2017
25)	132kV Koderma (DVC)	Completed on 18th May, 2017
26)	132kV Kumardhubi (DVC)	Completed on 19th May, 2017
27)	132kV Ramkanali (DVC)	Completed on 19th May, 2017
28)	220kV Ramchandrapur (JUSNL)	Completed on 1st June, 2017
29)	400kV Jamshedpur (PG)	Completed on 1st June, 2017
30)	132kV Patherdih (DVC)	Completed on 31st May, 2017
31)	132kV Kalipahari (DVC)	Completed on 30th May, 2017
32)	132kV Putki (DVC)	Completed on 31st May, 2017
33)	132kV ASP (DVC)	Completed on 30th May, 2017
34)	132kV Mosabani (DVC)	Completed on 2nd June, 2017
35)	132kV Purulia (DVC)	Completed on 1st June, 2017

The list of observations for the above sub-stations is already available at ERPC website (www.erpc.gov.in). Respective constituents are requested to comply and submit the report to ERPC for regular update.

Members may note.

Deliberation in the meeting

Members noted for compliance.

3. The proposed UFR audit schedule is placed below:

Sl No	Proposed Date	Substation/feeder inspected by the sub-group
1	Nov, 2017	220/132/33 KV Kalyaneswari of DVC
2		220/132/33 KV New Bishnupur of WBSETCL
3		132/33 KV Old Bishnupur of WBSETCL
4	Dec, 2017	BRS (Liluah S/Stn.) of CESC

Members may decide.

Deliberation in the meeting

Members noted.

Item No. B.16: 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.

NTPC communicated their activity of the preparation of Crisis Management Plan for countering the cyber attacks vide letter dated 2nd August, 2013.

In 113th OCC, Member Secretary informed that during interaction with consultants of Grid Study Committee, NLDC agreed that they will plan for conducting workshops on crisis management plan for Cyber Security and few workshops will also be held in Eastern Region.

CESC vide letter dated 22.08.15 had furnished their status of the preparation of Crisis Management Plan (CMP) for Cyber attacks in their system.

Members may note.

Deliberation in the meeting

Members noted.

Item No. B.17: 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

Members may note and update the status.

Deliberation in the meeting

Members noted for compliance.

Item No. B.18: Data of Peak Demand – Submission of hourly power cut data

The peak demand met figure calculated by CEA is a part of the monthly Power Supply Postion Report prepared by CEA, based on the data provided by five Regional Power committee (RPCs), who in turn collect the data from State / UTs and RLDCs. As per the present methodology being adopted for calculation of States /Regional peak demand met, the figure of peak demand met at

any time in the month is taken as peak demand met for the month. For all India monthly peak demand met, the sum of five regional peaks met, which may occur at different points of time is taken.

The above methodology has been reviewed and it has been decided with the approval of Chairperson, CEA that Peak demand Met and Peak Demand in the country should be based on hourly all India demand data. The matter was taken up with POSOCO for getting the hourly data of peak demand met for each month in respect of all the regions in the country in the first week of following month and they have assured to furnish the same. To calculate the demand, data of hourly scheduled and unscheduled power-cuts / load shedding is also required, which is not available with POSOCO.

It is, therefore, requested that hourly figures of scheduled/ unscheduled power cuts/load shedding data may be collected from States / UTs and the same may be sent to CEA every month as per above schedule in the enclosed format, in spread sheet, so that hourly figures of peak demand can be calculated and incorporated in Power Supply Position report.

This data for a month may kindly be sent in the first week of each month, along with PSP data, starting from the data for the month of February, 2015. The format for sending the data of hourly scheduled and unscheduled power-cuts / load shedding has already been circulated.

In 110th OCC meeting, OCC advised all the concerned utilities (BSPTCL, JUSNL, OPTCL, WBSETCL & Sikkim) to send the data of hourly scheduled and unscheduled power-cuts / load shedding by mail to mserpc-power@nic.in latest by first week of each month.

OCC advised all constituents to submit the data also to ERLDC (erldcprotection@gmail.com).

For the month of September, 2017 data has been received from OPTCL, CESC, DVC, WBSETCL, BSPTCL.

JUSNL may submit.

Deliberation in the meeting

JUSNL has submitted the data.

Item No. B.19: Long outage of important transmission elements

a) Non availability of Line Reactor of 400KV Malda-Purnea-I

In 123rd OCC, Powergrid informed that order has been placed for Reactor-1 and it will be commissioned by September, 2016.

In 137th OCC, Powergrid informed that they are replacing the protection relay of the reactor within 2-3 days and commission the reactor.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that the reactor is in service from 14th October, 2017.

b) 50MVAR Bus Reactor-I at Farakka (alongwith main and tie bays)

Under shutdown wef 31/05/16 for dismantling from old bay and re-installation in new bay in the dia of FSTPP GT#3.

In 133rd OCC, Powergrid informed that the reactor will be in service by second week of June, 2017.

In 137th OCC, Powergrid informed that the reactor would be brought into service after the rectification of the differential protection which is expected by5th October 2017.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that the reactor is charged today.

c) 400 kv Barh – Motihari D/C

400 kV Barh – Motihari – D/C were out since 14th Aug, 2017 as 24 numbers of towers were submerged in Gandak River due to flood like situation. Right Now Motihari is drawing radial power from Gorakhpur S/S of Northern region through 400 kV Gorakhpur – Motihari D/C. Due to outage of 400 kV Barh - Motihari D/C, one inter regional link between Eastern and Northern region was out, which need to be restored with utmost priority to maintain all India reliable and safe power system operation.

DMTCL may update.

Deliberation in the meeting

ERLDC informed that DMTCL had sent an email on the same day, apprising the present status of the line. As per the said mail, work for dismantling of bulged towers and establishment of ERSS tower of Barh-Motihari 400kV Line has just been started . As the location is not easily approachable, it would take 2 to 3 weeks to restore power flow through the line.

d) Bus Reactor at Jamshedpur

50 MVAR Bus Reactor at Jamshepur was out since 05th June, 2017 for commissioning and replacement of new 125 MVAR Bus Reactor-II. As per earlier communication expected date of commissioning of the 125 MVAR Bus Reactor-II was 30th Aug, 2017. In addition to this one more 125 MVAR Bus Reactor – III was also expected to commission during the month of September. Till date the status of the progress of commissioning work of new reactors is not updated from ER – I Power Grid side. Considering the voltage pattern at Jamshedpur S/s, which was on higher side most of the time during the day and would be deteriorate more with the onset of winter season, priority for the restoration of the Bus Reactors at Jamshedpur is utmost important.

Power Grid may update the status of commissioning of 125 MVAR Bus Reactor 2 & 3.

Deliberation in the meeting

Powergrid informed that both the reactors will be commissioned within 15 days.

Item No. B.20: Failure of RTU data with the outage of ICTs of Patna and Biharshariff station --ERLDC

It has been observed on several occasions that with the tripping of all the ICTs at Patna and Biharshariff station, RTU stopped reporting to ERLDC, after restoring these ICTs, data again started reporting. It is to be appreciated that real time SCADA data should not be getting interrupted for any eventuality of the grid. The same was informed to POWERGRID several times but it is yet to be implemented and confirmed by them.

In 135th OCC, Powergrid informed that at Biharshariff the ULDC battery bank is under replacement. At Patna, the reason is yet to be identified.

ERLDC informed that the same problem has been observed in other substations also and

requested Powergrid to ensure uninterrupted power supply to RTUs.

OCC advised ERLDC to submit the list of such substations to Powergrid. OCC advised Powergrid to ensure uninterrupted power supply to RTUs and send the updated status to ERPC.

In 136th OCC, ERLDC placed the details of substations where the communication and telemetry is getting effected due to power supply failures. The list is enclosed at ***Annexure-B20****.*

Powergrid agreed to look and resolve.

Members may update.

Deliberation in the meeting

It was decided that the issues will be discussed in detail in a separate meeting with ULDC team.

Item No. B.21: Shifting of communication links for PMUs reporting to ERLDC--ERLDC

Presently, PMUs locations at Farakka, Talcher, Jamshedpur, Ranchi, Binaguri, Durgapur, Rourkela & Jeypore are reporting through Alcatel Mux using E1 – Ethernet convertor at both end. In case of fibre cut between Kasba to ERLDC, all the 8 nos PMUs data stopped reporting to ERLDC (happened on 16/May/2017 from 04:25 Hrs to 12:49 Hrs). There is no redundant path provided for these communication links. So, it is requested POWERGRID to shift these PMUs' communication path / equipment so that the protection path of ULDC network would be used and this type of outage could be avoided. Communication link for Patna PMU is taken from PowerTel. It is also requested to POWERGRID that communication path may also be shifted for Patna PMU so that PowerTel communication could be removed.

In 134th OCC, ERLDC informed that work is not yet completed.

Powergrid informed that 8 PMUs communication system have been shifted to ULDC network.

OCC advised ERLDC to send the details of requirement to Powergrid.

Accordingly, ERLDC has sent the detailed requirement for shifting of communication link to POWERGRID ULDC on 14-07-2017.

In 135th OCC, Powergrid agreed to complete the work within a month.

In 137th OCC, ERLDC placed the updated status as follows:

S/N	Location	Station type	Commmunicatio channel
1	**Binaguri**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 16 June,2017
2	**Biharshariff**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 24th November ,2015
3	**Patna (ER1)**	400/220KV Substation	**2 MBPS PDT link from Patna to ERLDC , Kolkata**
4	**Farakka (NTPC)**	400 kV Generating Station.	**E1 link**
5	**Ranchi (ER1)**	400/220KV Substation	**E1 link**
6	**Rourkela**	400/220KV Substation	**Shifted on 01-09-2017 (was in progress on 136th OCC meeting).**
7	**Talcher (NTPC)**	400 kV Generating Station.	**E1 link**

8	**Jeypore (Odissa pj.)**	400/220KV Substation	**E1 link**
9	**Durgapur**	400/220KV Substation	**Shifted on 30-08-2017 (was in progress on 136th OCC meeting).**
10	**Jamshedpur (ER1)**	400/220KV Substation	**E1 link**
11	**Sasaram**	765/400/220 kV SubStation	Shifted to POWERGRID ULDC wideband on 24th November ,2015
12	**Rengali**	400/220KV Substation	Shifted to POWERGRID ULDC wideband on 17 April,2017

Powergrid agreed to complete the work at the earliest.

PGCIL may update.

Deliberation in the meeting

Powergrid informed that converters are to be installed at Patna and Ranchi. The work is in progress at other substations.

OCC advised Powergrid to complete the work at the earliest.

Item No. B.22: 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.

In 120th OCC, ERLDC informed that every month they were updating the status and posting at ERLDC website.

137th OCC advised all the respective constituents to ensure the availability of telemetry data to ERLDC.

Members may update.

Deliberation in the meeting

*ERLDC presented the status of telemetry. Presentation is enclosed at **Annexure-B22**.*

ERLDC informed that SCADA data of Bheramar HVDC, New Farakka is not available.

OCC advised all the respective constituents to ensure the availability of telemetry data to ERLDC.

a) Frequent failure of JITPL data to ERLDC:

Real time SCADA data from JITPL is frequently failing (*May-17: 24% & June-17 (up to 18th): 62%*). It was observed that

- Microwave terminal equipment at Talcher HVDC end is getting hanged quite frequently causing failure of real time data to ERLDC.
- The direct line from JITPL to Angul 765/400 kV pooling station is available but real time SCADA data is yet to be diverted through this path.
- The voice connectivity from JITPL to ERLDC is yet to be provided / integrated with Hot Line Voice Communication installed by M/s Orange.

In 136th OCC, JITPL informed that presently they are communicating ERLDC with a radio link, which is an interim arrangement and is not reliable and they are trying hard to maintain it. However, they had planned to make PLCC system operational for uninterruptable communication to ERLDC. But Powergrid is not allowing them to shift NSK modem of PLCC system from Bolangir(PG) S/s which is the property of JITPL.

JITPL added that they were in process of settling the commercial issues with Powergrid and requested Powergrid to cooperate.

OCC took serious note of the issue and felt Powergrid should not interrupt in establishing the proper communication system for SCADA/telemetry data to ERLDC. OCC felt that Powergrid should not take up commercial issue by staking the grid security and advised Powergrid to take up the commercial issue separately.

In 36th TCC, Powergrid agreed to allow JITPL to shift their PLCC modem from Bolangir S/s within a week.

JITPL informed that they will shift the modem within a week and they will commission the communication system in another 10 days subject to availability of OEM (ABB) engineers.

TCC advised JITPL to shift the modem as decided and update the status in forthcoming OCC meeting scheduled to be held on 21st September 2017.

In 137th OCC, JITPL informed that they have shifted the PLCC modem from Bolangir to Angul and they will commission the communication system by 15th October 2017.

JITPL may update.

Deliberation in the meeting

ERLDC informed that JITPL data through PLCC is not yet restored.

JITPL representative was not available in the meeting.

Item No. B.23: Sustain Under-injection by ISGS generators during RRAS—ERLDC

During July and August 2017, NLDC triggered RRAS UP for ISGSs generators of Easter Region on several occasions. However it is observed that some of the ISGS failed to maintain their generation as per schedule and continuous under-injection was observed during the above mentioned period.

As per section 5.4 of Detailed Operating procedure of RRAS, “The continuity of the RRAS shall be ensured by the RRAS provider over the period of the despatch”. However, this was continuously violated by ISGS stations of ER.

As per clause 9.13 of Detailed Operating procedure of RRAS

> **Quote** -
> *Sustained failure, i.e. failure to provide the RRAS (barring unit tripping) by RRAS Provider(s) more than three (3) times during a month shall be brought to the notice of the CERC*
> - **Unquote**

Detailed performance of ER ISGS from RRAS point of view would be presented during the meeting.
ISGSs are therefore requested to exercise due care while declaring their respective DCs, so that actual generation as per the total schedule issued, can be maintained by them.

In 136th OCC, ERLDC presented the performance of the RRAS provider generators during July & August 2017 and informed that in real time Barh, FSTPP stage I & II and KhSTPP stage I & II generators were failed to maintain their generation as per schedule.

OCC advised NTPC to follow the RRAS schedule strictly.

OCC advised ERLDC to monitor the status for one week and even if there is no improvement, the acion may be initiated as per the provisions of IEGC. Further, OCC advised ERLDC to place the status in next OCC meeting.

In 137th OCC, ERLDC informed that in real time FSTPP stage I & II are not maintaining their generation as per schedule and continuously under generating. KhSTPP stage II generators need improvement.

OCC advised NTPC to strictly follow the RRAS schedule.

NTPC informed that they are implementing alarm system to alert the operator during RRAS initiation and it will improve the performance.

ERLDC may update.

Deliberation in the meeting

*ERLDC presented the performance of the RRAS provider generators. Presentation is enclosed at **Annexure-B23A**. ERLDC informed that in real time FSTPP stage I & II are not maintaining their generation as per schedule and continuously under generating. KhSTPP stage II generators need improvement. The performance of Talcher and Barh units is satisfactory.*

OCC advised NTPC to strictly follow the RRAS schedule.

ERLDC added that FSTPP I & II, NTPC has requested for DC downward revision during peak hours on following dates:

- *on 26.10.17 from 18:30hrs at 17:47 for "MILL NONAVAIBILITY & POOR COAL QUALITY"*
- *on 27.10.17 from 16:45hrs at 16:15hrs for "COAL FEEDING PROBLEM & LOW BUNKER PROBLEM"*

*Details are enclosed at **Annexure-B23B**.*

ERLDC informed that they have declined the DC revision as per IEGC 6.4.17.

Item No. B.24: Delineation of O&M responsibilities of various assets of the ISTS--ERLDC

With opening up of transmission sector for private participation and rapid addition of new ISTS elements through TBCB route, multiple transmission licensees are now involved, in so far as ownership and maintenance of the regional ISTS is concerned. A single transmission line may be partly owned by one licensee and partly by the other, while the bay equipment, panels etc. at each of the ends may be owned / maintained by two different transmission licensees. In the above backdrop, as the apex body to ensure integrated operation of the regional power system, it becomes essential for RLDCs to be accurately aware of the scope of responsibilities of each of the licensees, in order to discharge its responsibilities in a smooth and efficient manner.

A list of transmission elements in Eastern Region together with their ownerships as per information available with ERLDC is enclosed at **Annexure-B24.** It is requested to kindly go through the list and indicate the agencies responsible for maintenance of line, ensuring real time data, furnishing relay indication, DR etc. in respect of each of the elements and inform ERLDC wherever necessary updating / correction is required to be incorporated.

In 137th OCC, all the constituents were advised to update the status as given in the annexure and send it to ERPC and ERLDC within a week.

Powergrid ER-I has submitted the details.

Members may update.

Deliberation in the meeting

Powergrid ER-II has submitted the details.

OCC advised all the other constituents to submit the relevant information.

Item No. B.25: Transfer capability determination by the states -- Agenda by NPC

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.

ATC/TTC declared by states for the month of October-2017 is given below:

Sl No	State/Utility	TTC import(MW)	RM(MW)	ATC (Import) MW
1	BSPTCL	4665	145	4520
2	JUSNL	755	100	655
3	DVC	386	52	334
4	OPTCL	1822	81	1741
5	WBSETCL	3880	300	3580
6	Sikkim			

In 136th OCC, OCC advised WBSETCL to share the details of inter tripping schemes at other substations, if any.

In WBSETCL informed that they are having one more inter tripping scheme at Arambag the details of the same would be furnished to ERLDC.

Members may update.

Deliberation in the meeting

ERLDC informed that the network data should be updated regularly on monthly for realistic calculation of ATC, TTC figures. A procedure has been made as follows:

- *Updated Base case of Previous month both for peak and off peak case to be circulated by ERLDC by 2nd day of every month*
- *States have to update their network changes in the same case circulated by ERLDC till date and then load the LGBR of the upcoming month*
- *Updated case and calculated TTC of the upcoming month to be sent to the ERLDC by 10th of the current month*

OCC advised all the SLDCs to update the network as per the above procedure.

Item No. B.26: Installation of PMUs in Eastern Region under URTDSM project

LOA for installation of PMUs in Eastern Region under URTDSM project was awarded to M/s Alstom on 15th January 2014. The contract has to be completed in all respect within 24 months from the award. The status of implementation may be informed since PMU data is very much important to real time shift operator for analyzing the security of the grid.

OCC advised Powergrid to submit a report on latest status of implementation and advised to update the status on every OCC.

In 131st OCC, Powergrid submitted the latest status of PMU installation.

The updated status as furnished in 132nd OCC by Powergrid is given at **Annexure-B.26**.

In 136th OCC, Powergrid informed that space provided for PMU installation at Farakka is already occupied and requested NTPC to allot space for installation of PMU.

NTPC agreed to look into.

Powergrid pointed that they are facing some problem at 400 kV FSTPS & Kolaghat S/s for installation of PMUs.

NTPC and WBPDCL agreed to co-operate with Powergrid for installation of PMUs.

POWERGRID may update the status.

Deliberation in the meeting

OCC advised Powergrid to send the updated list to ERPC and ERLDC.

Item No. B.27: 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-B.27**.

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

Teesta Urja 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.

Members may update.

Deliberation in the meeting

Members noted for compliance.

Item No. B.28: 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- B.28**.

In 137th OCC, WBSETCL informed that they will send the updated status to ERPC mail.

Members may update the latest status.

Deliberation in the meeting

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

Item No. B.29: Time correction of SEMs in Eastern Region – Replacement of heavily drifted SEMs

The issue was discussed in 35th TCC/ERPC meetings and it was felt that the meters with severe drift greater than 10 min need to be replaced first and if replacement is done with Genus then readings are to be collected manually using Laptop till interfacing with AMR is completed.

35th ERPC advised Powergrid to replace the 10% of the heavily drifted SEMs with new Genus make meters and monitor the performance of the Genus meters. Powergrid should present this performance before constituents and subsequently the decision on replacement of the other time drifted meters will be taken up.

Subsequently, ERLDC has prepared a list of such SEMs.

In 133rd OCC, Powergrid informed that 22 meters were replaced except Purnea.

ERLDC informed that the performance of 22 newly installed meters are satisfactory and suggested that all other meters can be replaced.

OCC advised Powergrid to replace next 10% of heavily drifted meters as per the list. The list as shared by ERLDC is attached at ***Annexure-B.29****.*

In 134th OCC, Powergrid informed that SEM at Purnea has been replaced and the replacement of SEMs as per the Annexure will be completed within 2 months.

OCC advised Powergrid to give the schedule for replacement of SEMs to ERPC and ERLDC.

In 137th OCC, Powergrid informed that out of 23 meters time correction has been done for 6 meters and 8 SEMS have been replaced. Rest will be replaced subjected to availability of shutdown.

Powergrid/ ERLDC may update.

Deliberation in the meeting

It was informed that 9 SEMs are yet to be replaced.

OCC decided to hold the replacement of SEMs till interfacing of Genus meters with AMR is resolved.

Item No. B.30: Meter related Issues-ERLDC

Due to the meter related issues of following locations energy accounting and its validation is being affected.

Issue	Location	Meter No	Line	Responsibility	Problem Since	Present Status
Erroneous data	1.Chandil	NP-7436-A	220 KV Chandil-Santaldih	JUVNL	19.07.17	Problem still persists

Non receipt of Data	1. NPGC	NP-1282-A NP-1287-A	132 KV Rihand & Sonnagar	BSPTCL	More than 3 month	Not Received. Status is same
Installation of Check/Standby meter	1.Subhashgram(WB)		220 KV Subhasgram(PG) D/C	WBSETCL/PG CIL	Charging of Line	As informed by PGCIL Meter is handed over to CESC
	2. New Town(CESC)		220 KV Subhasgram(PG) S/C	WBSETCL/PG CIL	Charging of Line	
	3. Bantala(CESC)		220 KV Subhasgram(PG) S/C	WBSETCL/PG CIL	Charging of Line	
	4. EM Bypass(CESC)		220 KV Subhasgram(PG) D/C	WBSETCL/PG CIL	Charging of Line	

The above issues were last discussed in 37th TCC/ERPC Meeting held on 13.09.17/14.09.17 at Bhubaneswar.

PGCIL/BSPTCL/WBSETCL/JUVNL may please further update the status.

Deliberation in the meeting

Members updated the status as follows:

Issue	Location	Meter No	Line	Responsibility	Problem Since	Present Status
Erroneous data	1.Chandil	NP-7436-A	220 KV Chandil-Santaldih	JUVNL	19.07.17	SEM replaced on 14th October 2017
Non receipt of Data	1. NPGC	NP-1282-A NP-1287-A	132 KV Rihand & Sonnagar	BSPTCL	More than 3 month	BSPTCL agreed to take appropriate action.
Installation of Check/Standby meter	1.Subhashgram(WB)		220 KV Subhasgram(PG) D/C	WBSETCL/PG CIL	Charging of Line	As informed by PGCIL, Meter is available at Subashgram and the same to be collected by WBSETCL and to be put into service.
	2. New Town(CESC)		220 KV Subhasgram(PG) S/C	WBSETCL/PG CIL	Charging of Line	
	3. Bantala(CESC)		220 KV Subhasgram(PG) S/C	WBSETCL/PG CIL	Charging of Line	
	4. EM Bypass(CESC)		220 KV Subhasgram(PG) D/C	WBSETCL/PG CIL	Charging of Line	Meter already connected but time synchronisation yet to be done.

Item No. B.31: Integration of Genus Make meter in AMR-- ERLDC

A. Integration issues:

In Eastern Region, order for procurement of 965 no of SEM's was placed with M/s Genus Power. First Lot of the meters have already been delivered by Genus and 24 meters of Genus make meter has been installed in different substation in ER. Issue of Integration of Genus make meters in AMR system was discussed in different fora of ERPC since March,17.In 36th ERPC meeting Powergrid informed that a meeting will be held on 20th September 2017 wherein the interfacing issues would be resolved by M/s TCS and M/s Genus.

In 137th OCC, Powergrid informed that a meeting will be held at RHQ Kolkata on 25th September 2017 wherein the interfacing issues would be discussed and resolved by M/s TCS and M/s Genus.

In 25th September 2017 meeting, it was agreed by all concerned that GENUS will implement the required changes at meter level within 15th October 2017 to resolve the pending issues related to Integration of Genus meter with AMR.

Powergrid may please update the status.

Deliberation in the meeting

Powergrid informed that integration of Genus meters with AMR is pending because time block identification problem. This problem will be resolved through software by TCS on payment basis within 15 days.

B. Compatibility with 5 min scheduling:

In order to accommodate intermittency and variability of around 175 GW Renewable energy, requirement of fast ramping of conventional generator is absolute necessity. In order to facilitate fast ramping of conventional generator, it is felt that ongoing 15 min scheduling, metering accounting and settlement methodology need to be shifted at 5 min interval level in near future. Keeping in view of Implementation of 5- Minute Scheduling, Metering, Accounting & Settlement, Technical specifications for "Interface Energy Meters (5-min compatibility) for Western region was approved by 34th TCC/WRPC on 27.07.17/28.07.17.

At present approximately 600 new meters are yet to be delivered by vendor M/s Genus for Eastern Region and inspection of those meters is not yet done. It is felt that the new meters should have the provision of giving data in parallel, in 5 min new coded format as well as old meters (present) coded format i.e in 15 min.

In 137th OCC, Powergrid informed that the issue has been referred to M/s TCS and Genus and it will be discussed in detail in 25th September 2017 meeting.

Powergrid added that M/s TCS and Genus will give the cost estimation for implementation of 5 min schedule. The cost is to be borne by the constituents.

In 25th September 2017 meeting, it was decided that every meter has to demonstrate its capability to operate with 05 min accounting standard. GENUS is yet to demonstrate its feasibility with 05 min accounting. GENUS will confirm for the same at the earliest.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that Genus meters are not compatible for 5 min accounting and meters are to be replaced for implementation of 5 min scheduling.

Item No. B.32: Accounting of Tertiary Loading Arrangement at PGCIL s/station in ER

Auxiliary consumption of PGCIL EHV AC sub stations are usually met from HT feeders of the state Discom. In few substations of PGCIL, auxiliary consumption is met through tertiary winding (as alternate supply for reliability).

In 35th CCM, It was decided that the drawal of auxiliary power from tertiary winding by Powergrid substations would be treated as state drawl for inter-regional accounting. Powergrid and the states would make back to back commercial arrangements for this power. ERLDC requested Powergrid to submit the requisite information such as meter no, CTR, PTR, etc in respect of those meters and also make meter readings available ontime.

Status of meter details and receipt of their data at ERLDC from Powergrid ER-I, ER-II and Odisha project is as below:

	List of PGCIL substation with Tertiary Loading in ER							
ER-I								
S. No	**S/Station**	**Loc ID**	**Meter No**	**Make**	**CTR**	**PTR**	**Remarks**	**Data Receipt**
1	Banka	ES-88	NP-7458-A	L&T	50	33000/110		Yes
2	Lakhisarai	ES-94	NP-8870-A	L&T	50	33000/110		Yes
3	New Ranchi(765)	ES-87	NP-8752-A	L&T	50	33000/110		Yes
4	New Purnea	ES-98	NP-5249-A	L&T	50	33000/110		Yes
5	Patna	ES-89	ER-1285-A	Genus	50	33000/110		Yes
6	Pusauli	ET-06	NP-8646-A	L&T	50	33000/110		Yes
7	Muzaffarpur	ET-02	NP-5231-A	L&T	1000	415/110		Yes
9	Kishanganj	ES-90	NP-8876-A	L&T	50	33000/110		Yes
11	Ara(220)	ES-99	NP-8893-A	L&T	50	33000/110		Yes
12	Chaibasa	ET-15	ER-1254-A	Genus	50	33000/110		Yes
13	Ranchi(400/220)	ET-14	ER-1251-A	Genus	50	33000/110		Yes
8	Gaya(765)	EM-99	NP-7472-A	L&T	50	33000/110		No
10	Biharshariff	ET-01	NP-2355-A	SECURE	1000	415/110		No
ER-II & Odhisa Project								
1	Angul	ES-95	NP-5942-A	L&T	1000	415/110		Yes
2	Pandiabili	ES-39	NP-7462-A	L&T	1000	415/110		Yes
3	Rangpo (33 kv TRF)	ES-96	NP-7940-A	L&T	1000	415/110		Yes
4	Rangpo (11 KV AUX TRF)	ES-97	NP-7941-A	L&T	1000	415/110		Yes
5	Sundergarh	ES-93	ER-1019-A	Genus	50	33000/110		Yes
6	Maithon	ET-07	NP-7934-A	L&T	1000	415/110		Yes
7	Baripada	EM-69	NP-5909-A	L&T	1200	400/110		Yes
8	Durgapur	ET-04	NP-6024-B	L&T	200	400/110		Yes
9	Keonjhar	ET-11	NP-7921-A	L&T	50	33000/110		Yes
10	Subhashgram	ET-12	ER-1105-A	Genus	1000	415/110		Yes
13	Jeypore	ET-10	NP-5965-A	L&T	20	430/110		Yes
11	Bolangir	ET-03	NP-7951-A	L&T	1000	415/110		**No**
12	Rengali	ET-05	NP-0629-B	Secure	200	415/110		**No**

ERLDC and Powergrid may update.

Deliberation in the meeting

ERLDC informed that they are not getting the data of Biharshariff and Rengali.

Powergrid informed that SEMs are to replaced at Biharshariff and Rengali. They will replace the SEMs and send the data.

ERLDC informed that they will consider the energy through Tertiary as state drawal and accordingly process the meter reading for onward transmission to ERPC with immediate effect.

Item No. B.33: Requirement of data from AMR for SEM Vs SCADA Comparison -- ERLDC

In Eastern Region, AMR is already implemented and successfully running. Provision of getting various reports like Load Curve, NPC report, time drift report, maximum & minimum flow reports etc already exist.

However, report of 15 minute tie line data from AMR is also required to be made available so that the same could be utilised for developing comparison / error checking for SCADA. ERLDC is planning to develop SCADA Vs SEM comparison report which can identify the error in SCADA or time drift in SEM. The same is planned to develop considering the view for improvement of the system. Accordingly, the concern will take necessary action to validate the SCADA / SEM.

In view of the above, it is requested to POWERGRID to take up the matter with TCS for implementation of the same.

In 137th OCC, Powergrid requested ERLDC to share the format and they will interact with TCS for implementation.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that they have interacted with TCS and TCS is asking about the details of lines for which the data is required.

ERLDC informed that they required all tie line SEM data to be available at ERLDC.

Item No. B.34: Mock Black start exercises in Eastern Region – ERLDC

i) <u>The status of black start exercises</u>

The tentative schedule of black-start exercises for F.Y 2017-18 is as follows :

Sl no	Name of Hydro Station	Schedule	Tentative Date	Schedule	Tentative Date
		Test-I		Test-II	
1	U.Kolab	Last week of May, 2017	*30th May 2017*	Last Week of January2018	
2	Maithon	1stweek of June 2017	Completed on 04.04.17	1stWeek of February2018	
3	Rengali	2ndweek of June 2017	Done on 29.06.2017	Last week of November 2017	
4	U. Indarvati	3rdweek ofJune 2017	November 2017	2ndweek of February2018	
5	Subarnarekha	1stweek of October 2017	Done on 14th October 2017	1stweek of January2018	
6	Balimela	3rdweek of October 2017	November 2017	1stweek of March 2018	
7	Teesta-V	2ndweek of Nov 2017		Last week of February2018	
8	Chuzachen	Last Week of May2017	May, 2017	January2018	
9	Burla	Last Week of June 2017	Dec, 2017	Last week of February2018	
10	TLDP-III	1stWeek of June 2017	November 2017	2ndWeek of January2018	
11	TLDP-IV	Last Week of June 2017	After Mansoon	1stWeek of February2018	
12	Teesta-III		December 2017		

Members may update.

<u>Deliberation in the meeting</u>

Members updated the schedule as mentioned in above table.

<u>Testing of DG sets meant for Black start</u>

Test run report of DG sets for blackstart has been received only from Odisha hydro units. The test run reports of other machines may be sent to erldc.cal@gmail.com and erldcoutage@gmail.com.

Constituents may kindly ensure compliance.

<u>Deliberation in the meeting</u>

Members noted for compliance.

Item No. B.35: Restricted Governor /Free Governor Mode Operation of generators in ER

CERC vide their letter dated 05-06-17 desired to know the present status of RGMO/FGMO response of all eligible thermal and hydro units. Accordingly ERLDC vide letter no.ERLDC/SS/FGMO/2017 dated 07-06-17 requested all concerned power stations and SLDCs to provide updated status of FGMO/ RGMO of units under their control.

The latest status of the RGMO/FGMO of ER generators is enclosed in ***Annexure-B35****.*

Members may update.

Deliberation in the meeting

Members noted for compliance.

Item No. B.36: Need for expediting commissioning of new 125 MVAR bus reactors at Subhashgram, Jamshedpur and Behrampur 400KV substations.

The duration for which voltage at these S/Stns was above the allowable upper limit of 420kV during the last quarter, is summarised below:

Sub-station	% Duration >420kV July-17	% Duration >420kV August-17	% Duration >420kV September-17
Jamshedpur	92	96	83
Baharampur	14	10	30
Subhasgram	0	2	7

With onset of winter from the 2nd fortnight of November, the power demand in ER is expected to reduce rapidly, particularly in the state of W. Bengal, causing most of the EHV lines to be lightly loaded.
To control over voltage conditions, commissioning of 125MVAR bus reactors already planned for the needs to be expedited on urgent basis. The short-circuit strength of Jamshedpur being more than 30kA, it is necessary to expedite commissioning of the 2nd 125MVAR reactor also.
In WBSETCL, voltage of Arambagh S/Stn is observed to remain higher than 420kV for around 58% time in September-17. This is likely to increase further in the coming winter season. Voltage of this S/Stn rose as high as 437kV on 10-10-17.

West Bengal may please apprise actions being taken by them to control the voltage of Arambag.

Deliberation in the meeting

Powergrid informed that work order for Reactor at Subashgram is yet to be awarded. Two reactors at Jamshedpur will be commissioned within 15 days. Reactor of Behrampur will be delivered by January 2018.

OCC felt that WBSETCL may go for opening of lightly loaded lines during off peak hours to control severe high voltage.

Item No. B.37: Voltage control at Baharampur 400kV S/stn by reactive power absorption at FSTPS and SgTPS. –ERLDC

It is observed that on 01-10-17, for around 75% of the time voltage of Baharampur S/Stn persisted above the allowable upper limit of 420kV, which in turn forced ERLDC/NLDC to reduce the power export to Bangladesh by around 30 MW w.r.t the schedule. Though efforts were made to reduce the voltage by opening one circuit of 400kV Sagardighi – Durgapur 400kV line and one circuit of 400kV Kharagpur-N. Chanditala line, the effect was almost imperceptible. Similar high

voltage condition was also experienced on 02-10-17, when the voltage remained above 420kV for around 42% of the time.

In this regard, several messages were issued to FSTPS and WBSLDC by ERLDC, requesting to enhance reactive power absorption at FSTPS and SgTPS. In this connection it may be readily appreciated that Farakka and Sagardighi power stations being located close to Baharampur and having direct connectivity with the S/Stn, can play a significant role by absorbing reactive power by their generating units.

Further, from the capability chart of Sagardighi 300MW and FSTPS 500MW units (Fig-4) it is observed that at rated active power generation, the under-excitation / stator core end heating limits are reached when these units absorb around 90MVAR and 120 MVAR respectively
Therefore it is apparent that except U-2 and U-4 of FSTPS, further scope for reactive power absorption was available in the other units of the two stations, which if utilized, could have helped in reducing the voltage of Baharampur. Utilization of leading power factor capability is particularly essential for avoiding reduction of power export to Bangladesh in the ensuing winter season when Baharampur is likely to experience high voltage during off-peak hours owing to drastic fall of the demand of W. Bengal.

Members may discuss.

Deliberation in the meeting

ERLDC apprehended acute high voltage is likely to occur during the winter season that may cause power flow restriction to Bangladesh, which is undesirable.

OCC advised NTPC and WBPDCL to take adequate measures for voltage control by absorbing the reactive power at FSTPS and SgTPS as per capability curve of the units.

Item No. B.38: Status of state owned units under long outage --ERLDC

Numbers of units of state sector were decommissioned during recent days/months. As per the letter received from DVC on date 08th August, 2017, CTPC U#2, BTPS U#1&2 are under the process of de-commissioning as they have crossed their useful life and compliance of prevailing pollution norms is not feasible and CTPS U#1 is already de-commissioned.

In 136th OCC, It was informed that DVC has already furnished their status.

OCC advised West Bengal and Odisha generating units to submit their status to ERLDC and ERPC.

West Bengal and Odisha may update.

Deliberation in the meeting

OHPC updated that the status as follows:

- *Rengali unit#1 will be restored on 30th November 2017.*
- *Rengali unit#5 will be restored on 30th November 2017.*
- *U. Kolab unit#2 will be restored on 30th November 2017.*

Item No. B.39: Reactive Power performance of Generators and optimisation of Transformer tap

Generating stations have been monitored for certain sample dates in the month of September,17.

Power Plant	Max and Min Voltage observed for Sep 17 (KV)	Date for monitoring (Sep 17)
Farakka STPS	422,407	18,29
Khalgaon STPS	421,405	18,29
Talcher STPS	412,400	18,19
Teesta	410,396	1,18
Bakreshwar TPS	418,389	18,30
Kolaghat TPS	427,397	18,30
Sagardighi TPS	422,401	20,29
MPL	420,409	29,30
Mejia-B	418,409	18,19
DSTPS	427,414	29,30
Adhunik TPS	427,408	18,30
Barh	434,415	1,27
JITPL	418,409	18,19
GMR	416,406	19,30
HEL	422,391	3,24
Kodarma	422,405	29,30

ERLDC may present the reactive performance.

Deliberation in the meeting

*ERLDC presented the performance of the generators and informed that the performance of Barh units was not satisfactory. Presentation is enclosed at **Annexure-B37**.*

NTPC informed that 400kV Bus CVT was giving erroneous voltage measurement and the same is being replaced today.

a) Schedule for reactive capability tests

The following was status of regarding reactive capability testing:

a. Adhunik TPS(both units) –Yet to be confirmed by Adhunik
b. JITPL(both units) – After the emergent inspection of OEM(BHEL)
c. Barh TPS – November 2017
d. Raghunatpur – by December 2017
e. GMR (Three units)
f. Haldia TPS –Done in October 2017

The reactive capability test of HEL units were carried out on 6th September 2017 and 1st October

2017.

Members may update.

Deliberation in the meeting

Members noted.

b) Transformer tap optimisation of Eastern Region :

1. Present tap position of 220/132KV, ICTs at Malda is 10(ten). Based on operational study, the voltage may be optimised by changing transformer tap from 10 to 8.
2. Tap position of 220/132KV, 160MVA ICT at Lalmatia is set to 5(five). For improvement of 132kV voltage, the tap position may be changed from 5 to 7(Seven).

In 136th OCC, it was decided to change the tap of 220/132 kV Malda ICTs from 10 to 8 and Lalmatia ICT tap on later stage.

Members may update.

Deliberation in the meeting

It was decided that changing the tap of 220/132 kV Malda ICTs from 10 to 8 is not required during this winter.

PART C:: OPERATIONAL PLANNING

Item no. C.1: ER Grid performance during September, 2017

The average consumption of Eastern Region for September - 2017 was 429 Mu. Eastern Region has achieved record maximum energy consumption of 458 Mu on 25th Sptember-17. Total Export schedule of Eastern region for September - 2017 was 1701 Mu, whereas actual export was 1448 Mu.

ERLDC may present.

Deliberation in the meeting

*ERLDC has presented the performance of the Eastern Region grid during September 2017. Presentation is enclosed at **Annexure- C1**.*

A. Persistent over drawl by West Bengal:

It has been observed for the last few days, West Bengal is over drawing continuously to the tune of 5 to 6 mu per day with maximum deviation respect to schedule was in tune of 600 to 1000 MW. Numbers of instructions/ violation messages/ Feeder opening intimations and warning messages for controlling over drawl were also issued to SLDC, West Bengal control room during real time operation to maintain their drawl within schedule. However, the response of West Bengal was not commensurate with criticality of the situation. Further some instances have also been observed, where WBSEDCL operated PPSP under PUMP mode during overdrawl situation.

As per IEGS clauses 5.4.2 (a), (b) and (c):

5.4.2 (a) SLDC/ SEB/distribution licensee and bulk consumer shall initiate action to restrict the drawal of its control area, from the grid, within the net drawal schedule.

5.4.2 (b) The SLDC/ SEB/distribution licensee and bulk consumer shall ensure that requisite load shedding is carried out in its control area so that there is no overdraw.

5.4.2 (c) Each user/STU/SLDC shall formulate contingency procedures and make arrangements that will enable demand disconnection to take place, as instructed by the RLDC/SLDC, under normal and/or contingent conditions. These contingency procedures and arrangements shall regularly be/updated by User/STU and monitored by RLDC/SLDC. RLDC/SLDC may direct any User/STU to modify the above procedures/ arrangement, if required, in the interest of grid security and the concerned User/STU shall abide by these directions.

As per these clauses, for continuous over drawl by any entity, ERLDC issued warning messages and sometime also opens feeders (first level) as per the list approved in OCC for demand disconnection. Under the stated circumstances, henceforth in the event of violation of RLDC instruction or persistent failure to abide by the limits of deviation as specified in DSM regulation, ERLDC shall have no option but to disconnect feeders at identified points (Second level) that would result in net reduction of drawal by W. Bengal, as a corrective measure.

ERLDC may present. WBSETCL may explain.

Deliberation in the meeting

ERLDC explained the overdrawal by West Bengal with the help of a presentation.

OCC advised SLDC, West Bengal to maintain their drawl within schedule also suggested to avoid Pump mode operation of PPSP during overdrawl situation.

Item no. C.2: OPERATION OF HYDRO POWER PROJECTS IN PEAKING MODE

CEA vide letter dated 18.07.17 informed that POSOCO has carried out operational analysis of various hydro stations in the country and observed that despite 40.6 GW of peaking hydro capacity only about 33 GW peak generation is carried out on all India basis. According to POSOCO, this is on account of a number of hydro stations, particularly in state sector, which are not being operated in peaking mode. In order to examine the above observation, a Sub-committee has been constituted by the MoP under Chiarperson, CEA with heads of POSOCO, NHPC, SJVN & THDC as members and Director (H), MoP as the Member Convenor. The Sub-Committee has held three meetings with the concerned hydro generating stations and concluded that there is scope for about 2000 MW additional power generation from hydro stations during peak hours.

It has been desired by the Chairperson that the matter of utilization of hydro stations in peaking mode be made a regular agenda item for discussion at the monthly OCC meetings while discussing operational planning for the month ahead and analyzing the operation in the previous month.

In 135th OCC, ERLDC presented the performance in peaking mode for hydro generations in Eastern Region.

OCC decided to review the performance of hydro generators in peaking mode in monthly OCC meetings

As informed by ERLDC, during review it was observed numbers of hydro units of state sectors were under outage due to various reasons and also some units were running at de-rated capacity compare to their installed capacity.

In this regards, it is requested to all State (through SLDC), ISGS and IPP owned hydro generators to update the status of the hydro units on bar, hydro units under outage along with reason to ERLDC and ERPC on daily basis in the following format. Hydro units which are unable to generate as per installed capacity may be intimated to RLDC and RPC on monthly basis.

Hydro unit outage status:

S.No	Station	Location	Owner	Unit No	Capacity	Reason(s) of Outage	Outage Date	Outage Time	Expected Revival Date
1.									
2.									
n.									

Hydro Units running at De-rated Capacity:

S.No	Station	Location	Owner	Unit No	Capacity	De-Rated capacity	Reason of operation at De-rated
1.							
2.							
n.							

In 136th OCC, all the hydro generators were advised to submit the requisite data to ERLDC and ERPC in the prescribed format on regular basis.

ERLDC received daily hydro outage status report from SLDC, Odisha regularly. Daily outage reports from SLDC, WBSETCL & SLDC, JUSNL on daily basis to ERLDC is still pending. IPPs are also advised to send daily outage status report to ERLDC in case of outage of units at their respective stations.

In 137th OCC, WBSETCL and JUSNL informed that outage status will not be changed on daily basis and sending daily report may not be required.

ERLDC advised SLDCs and IPPs to update the outage status on regular basis for any changes/deviation.

SLDC, WBSETCL, JUSNL and IPPs may comply.

Deliberation in the meeting

*ERLDC presented the performance of Hydro generators for September 2017. Presentation is enclosed at **Annexure-C2**.*

Item no. C.3: Anticipated power supply position during November'17

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of November'17 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-C.3**.

Members may confirm.

Deliberation in the meeting

*Modified anticipated power supply position for the month of November, 2017 after incorporating constituents' observations is given at **Annexure-C.3**.*

Item no. C.4: Shutdown proposal of transmission lines and generating units for the month of November'17

Members may finalize the Shutdown proposals of transmission lines and generating stations for the month of November 17 as placed at **Annexure-C.4**.

- TSTPS stage-I unit #1 shutdown from 5th November 2017 to 4th December 2017 30days for overhauling.
- Unit #2 (110MW) of MTPS stage-1 overhauling is scheduled from 16th November 2017 to 15th December 2017.

ERLDC may place the transmission line shutdown. Members may confirm.

Deliberation in the meeting

*Approved maintenance programme of generators and transmission elements for the month of November, 2017 is given at **Annexure-C.4**.*

OCC approved the maintenance programme of following generators:

- *TSTPS stage-I unit #1 shutdown from 1st December 2017 to 30th December 2017 for 30days.*
- *Unit #2 (110MW) of MTPS stage-1 overhauling is scheduled from 16th November 2017 to 15th December 2017.*

Item no. C.5: Prolonged outage of Power System elements in Eastern Region

(i) Thermal Generating units:

Sr. No	Generating Station	Unit Number	Capacity(MW)	Reasons For Ouatge	Outage Date
1	JITPL	1	600	COAL SHORTAGE	5-May-17
2	GMR	1	350	COAL SHORTAGE	27-Sep-17
3	RAGHUNATHPUR	2	600	COAL SHORTAGE	9-Aug-17
4	RAGHUNATHPUR	1	600	COAL SHORTAGE	27-Sep-17
5	MEJIA	3	210	COAL SHORTAGE	22-Oct-17
6	BAKRESHWAR	4	210	COAL SHORTAGE	19-Oct-17
7	DSTPS	2	500	COAL SHORTAGE	12-Oct-17
8	BAKRESHWAR	3	210	COAL SHORTAGE	20-Oct-17
9	ADHUNIK	1	270	COAL BUNKERING PROBLEM	17-Oct-17
10	FSTPP	1	200	DRUM LEVEL HIGH	23-Oct-17
11	GMR	2	350	BOTTOM ASH PROBLEM	23-Oct-17
12	KOLAGHAT	6	210	STATOR EARTH FAULT	11-Jun-17
13	KOLAGHAT	2	210	NGT order	22-Oct-17
14	VEDANTA	2	600	HYDROGEN LEAKAGE	28-Jun-17
15	MEJIA	5	250	PROBLEM IS IN BARRING GEAR	22-Sep-17
16	SANTALDIH	5	210	ROTOR EARTH FAULT	30-Apr-17
17	GMR	3	350	DUE TO HEAVY EXPANSION BELLOW	15-Oct-17
18	SAGARDIGHI	1	300	MASTER FUEL TRIP	23-Oct-17
19	SAGARDIGHI	3	500	MAINTENANCE WORK	20-Oct-17
20	DPL	7	300	LOW SYSTEM DEMAND	20-Oct-17
21	SANTALDIH	6	250	ROTOR EARTH FAULT	23-Oct-17

(ii) Hydro Generating units:

Sr. No	Generating Station	UNIT NO	CAP(MW)	REASONS FOR OUTAGE	OUTAGE DATE
1	BURLA	5	37.5	R & M WORK	25.10.2016
2	BURLA	6	37.5	R & M WORK	16.10.2015
3	CHIPLIMA	3	24	R & M WORK	15.10.2015
4	BALIMELA	1	60	R & M WORK	05.08.2016
5	U.KOLAB	2	80	Repair of MIV & Draft tube gate leakage	28.05.2017
6	RENGALI	5	50	Hoist gate problem	21.03.2017
7	RENGALI	1	50	Stator Earth fault	08.09.2017
8	U.KOLAB	3	80	Generator stator problem & MIV tunnion leakage	19.04.2017

(iii) Transmission elements

Transmission Element / ICT	Agency	Outage Date	Reasons for Outage
220 KV BALIMELA - U' SILERU	OPTCL / APSEB	27.04.15	LINE IDLE CHARGED FROM UPPER SILERU END AT 12:42 HRS OF 25.01.17
400KV MOTIHARI-BARH-I & II	DMTCL	14.08.17	24 NO OF TOWERS IN GANDAK RIVER WHERE WATER LEVEL IS HIGH

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

Members may update.

Deliberation in the meeting

Members noted.

Item no. C.6: Status of commissioning of generating station and transmission elements

New generating units:

S.No.	Power Plant	Plant Size	Expected date

New transmission elements:

Sl No.	Name of Element	Expected date
1	400kV Rajarhat-Purnea D/C (with LILO of one circuit each at Farakka and Gokarno)	
2	Augmentation of 400kV Farakka-Malda D/C with HTLS conductor	
3	400kV Ind-Bharath-Jharsuguda D/C	
4	400kV Talcher-Bramhapur-Gazuwaka D/C	
5	400kv Talcher-Rourkella(2nd D/C-Quad)	
6	400kV Sterlite-Jharsuguda D/C	
7	765kv Anugul-Srikakulum D/C	
8	400kV Sasaram-Daltonganj D/C &Daltonganj S/Stn	
9	400 kV Ranchi-Raghunathpur D/C	
10	220 kV TLDP-IV – NJP ckt-2	
11	220 kV Bidhansai-Cuttack D/C	
12	220kV Gola- Ranchi	

Members may update.

Deliberation in the meeting

Members noted.

PART D:: OTHER ISSUES

Item no. D.1: UFR operation during the month of September'17

System frequency touched a maximum of 50.32 Hz at 06:04 Hrs of 17/09/17 and a minimum of 49.62 Hz at 18:26 Hrs of 23/09/17. Hence, no report of operation of UFR has been received from any of the constituents.

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.2: Non-compliance of directions issued by SLDC

Vide clause no 5.5.1.(c)(h) of IEGC, non-compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal are to be reported to ERLDC for incorporating the same in weekly report to be prepared and published by ERLDC.

All SLDCs are to inform ERLDC the instances of non–compliance of SLDC directions by SEB/Distribution licenses/bulk consumers to curtail overdrawal, within two days after the day of operation.

No report from any constituent has yet received. Hence, ERLDC would be considering 'Nil' report for all constituents for September'17.

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.3: Grid incidences during the month of September, 2017

Sr No	GD/ GI	Date	Time	S/S involved	Affected System	Summary	Load loss (MW)	Gen loss (MW)
1	GD-I	05/09/2017	10:17	Motipur	BSPTCL	At 10:17 hrs, 220 kV Darbhanga (DMTCL) - Motipur D/C and 220 kV MTPS - Motipur D/C tripped from DMTCL & MTPS end only in B-N, Z-III due to fault in 220 kV Motipur - Musari section.	130	0
2	GD-I	06/09/2017	09:52	Madhepura	BSPTCL	Tripping of 220 kV Purnea - Madhepura D/C on Y-B-N fault at 09:52 hrs resulted power failure at Madhepura , Supaul, Saharsa and Lahan (Nepal load).	150	0
3	GD-I	07/09/2017	18:57	Hazipur	BSPTCL	Tripping of 220 kV Muzaffarpur - Hazipur D/C from Hazipur on operation of Bus bar protection at Hazipur at 18:57 hrs resulted power	210	0

						failure at Hazipur which was radially fed from Muzaffarpur.		
4	GD-I	09/09/2017	10:42	Lakhisarai	BSPTCL	Tripping of 132 kV Lakhisarai - Lakhisarai D/C at 10:42 hrs resulted total power failure at BSPTCL end which was radially fed from PG end.	80	0
5	GD-I	09/09/2017	13:47	Arambag	WBSETCL	Delayed clearance of Y-N fault of 400 kV Arambag - Kolaghat S/C due to stuck breaker at Arambag end resulted operation bus differential protection at 400 kV bus - II followed by tripping of all feeders and 400/220 kV ICTs connected to bus - II.	70	0
6	GD-I	15/09/2017	19:25	Patna	BSPTCL	After tripping of ICT I (500 MVA) due to rebooting of differential relay other ICT at Patna (315 MVA) also tripped due to overloading resulting total power failure at Sipara and Khagul which was radially fed from Patna	530	0
7	GD-I	17/09/2017	18:13	Madhepura	BSPTCL	At 18:00 Hrs, 220 kv Purnea-Madhepura # I tripped from Madhepura end on B-N fault. At 18:13 Hrs, 220 kv Purnea-Madhepura # II tripped on Y-B-N fault causing power failure at Madhepura,Supaul,Kataiya, Sonbarsa and Udakishanganj (Total 140 MW).	140	0
8	GD-I	24/09/2017	00:33	Chukha	ISTS	Due to three phase fault in 220 kV Chukha - Birpara D/C (during inclement weather condition) at Birpara S/S, 220 kV Chukha Birpara D/C and 220 kV Chukha - Malbase S/C tripped from Birpara end and 220 kV Birpara - Malbase S/C tripped from Malbase end.	0	290
9	GD-I	26/09/2017	13:25	CTPS	DVC	Both the running units at CTPS B tripped due to tripping of bus II at CTPS B. ' 220KV CTPS(B)-CTPS(A)-I, 220KV CTPS-Dhanbad-I & 220KV CTPS-Bokaro-B-D/C also tripped at same time.	360	0

Multiple elements tripping without load loss

1	GI-I	16/09/2017	01:27	Siliguri	WBSETCL	At 01:27 horsey ph conductor snapped of 220 KV Binaguri-Siliguri-II at location no. 6, 3 km from Siliguri-II. At same time, LBB operated at 220 KV main Bus of Siliguri resulted in tripping all outgoing elements. In PMU data, two more voltage dip observed in R phase.	0	0

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.4: Reporting of voltage deviation indices (VDI) for select S/Stns in ER

ERLDC submitted the Voltage Deviation Index (VDI) of selected 400 kV Sub-stations for September, 2017 of Eastern Region which is enclosed at **Annexure- D.4**.

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.5: Additional agenda

1. **Recovery of loss due to schedule revision during flodding of Kishanganj S/S of PGCIL-Teesta Urja Ltd.**

Due to flooding at Kishanganj S/S of PGCIL, the IEX schedule of Teesta-III HEP and other Projects was directed to be revised from 10:00 hours to 24:00, hours on 13.08.2017. However, vide subsequent communications, the curtailment of schedule was initially directed to start from 10.00 hrs , which got changed to 10.30 hrs and again to 10.00 a.m. However, the IEX schedule which had got curtailed from 10.30 hrs could not get revised to 10.00 hrs leading to the Teesta-III (and other Projects) being penalized under DSM for two time blocks from 10.00 hrs to 10.30 hrs.

It is requested to deliberate the matter so as to facilitate recovery of such loss to the Generators."

Deliberation in the meeting

ERLDC informed that they will look into it.

2. **Revision of final schedule of Dikchu HEP and revocation of UI penalty inflicted on 13.08.2017- Dikchu**

On 13.08.2017, Dikchu was advised by ERLDC through mail and phone to back down the generation to Zero w.e.f 10:00 hrs, 13.08.2017, as all STOA & collective transactions were cancelled due to flooded condition at Kishanganj S/s. Dikchu plant was shut down promptly within 10:01 hrs.

The final schedule of Dikchu HEP was revised to Zero w.e.f 10:30 hrs by NLDC. The consequence was that as per final generation schedule data, although Dikchu was able to generate 96 MW in between 10:00 hrs to 10:30 hrs, Dikchu generation was Zero in real time incurring heavy UI penalization.

It is requested to consider the merit of the incidence and accord consent in revision of the final schedule of 13.08.2017 from 10:00hrs to 10:30 hrs to Zero in respect of Dikchu HEP.

Deliberation in the meeting

ERLDC informed that they will look into it.

3. **Shifting of two nos. towers of railway crossing (Howrah-New Delhi Rout) near Shivsagar (Loc no. 338 & 339) of 765 kV Gaya- Varansi ckt-2 due to bending of main leg.--Powergrid**

During patrolling of lines after monsoon season the railway crossing tower location no. 338 & 339 of 765 kv Gaya-Varanasi ckt-2 near Shivsagar have been found damaged. From the nature of damage of towers it is being suspected that the tower would have damaged due to severely localized cyclone in that area.The condition of towers is very critical and it may collapse any time due to high wind pressure. During this monsoon season POWER GRID Esatern Reagion-I witnessed tower collapsed of other three lines also which have restored

The commencement shifting of tower location 338 & 339 have been planned from 1st week of December and completion by mid of January-18. During the restoration work the said line will be under continuous shutdown.

Deliberation in the meeting

OCC approved and advised Powergrid to place the shutdown request in OCC meeting of NRPC.

Meeting ended with vote of thanks to the chair

****

Annexure – A

Participants in 138th OCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 30.10.2017 (Monday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
1	A.K. Bandyopadhyay	MS, ERPC	9433068533	mserpc-power@nic.in	
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19	S.P. Barnwal	Asstt GM ERLDC, POSOCO	9433041812	SPbarnwal@posoco.in	
20	Subash Kapchaki	Section Officer DGPC, CHP, Bhutan	+975 77420067	subashmorgay94@gmail.com	

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Participants in 138th OCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata   Time: 11:00 hrs   Date: 30.10.2017 (Monday)

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33	T.R. Mohapatra.	Mgr/ERLDC	9433041873	trmohapatra@posoco.in	[illegible]
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35	PREMJEET KUMAR	ESE/SLDC, BSPTCL	7763817712	premjeet75@gmail.com	[illegible]
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37	B.B. Bhoi	Dy. Mgr/ERLDC	9432351830	bibhu.cet@gmail.com	[illegible]
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40	Tushar Ranjan	AEE SLDC, Ranchi	9326374226	ranjitushar@gmail.com	Ranjan

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Participants in 138th OCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 30.10.2017 (Monday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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58	S. K. Bag	SE(E), CPD WBSETCL	9434910093	sajalkbag@yahoo.co.in	
59	A. Bardhan Roy	ACE, SLDC WBSETCL	9434910302	abardhanroy_84@rediffmail.com	
60	CR Haldar	ACE, WB - SLDC	9432209503		

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Participants in 138th OCC Meeting of ERPC

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 30.10.2017 (Monday)

Sl No	Name	Designation/ Organization	Contact Number	Email	Signature
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"Coming together is a beginning, staying together is progress, and working together is success." –Henry Ford

Station name

Organisation

Annex-I (1 of 2)

Unit wise yearly generation Program for the year 2018-19

1. Contact Details

Sr. no	Name	Designation	email	Phone no.	Fax. no.
1					
2					

2. Units existing on 31.03.2017

Unit No.	Capacity (MW)	Date of commissioning	2017-18 generation details (MU)				2018-19 generation details (MU)			Remarks
			Program for 2017-18	Total Anticipated Gen for Sept 17 to March 18 (MU)	Total Anticipated Gen for 2017-18 (MU)	Reason for low generation (if any)	Anticipated maximum Generation capability (MU)	Anticipated Generation (MU)	Reason for variation from Maximum Capability	

3. Units Commissioned during 2017-18

Unit No.	Capacity (MW)	Date of commissioning	2017-18 generation details (MU)				2018-19 generation details (MU)			Remarks
			Program for 2017-18	Total Anticipated Gen for Sept 17 to March 18 (MU)	Total Anticipated Gen for 2017-18 (MU)	Reason for low generation (if any)	Anticipated maximum Generation capability (MU)	Anticipated Generation (MU)	Reason for variation from Maximum Capability	

4. Units likely to be commisioned during 2018-19

Unit No.	Capacity (MW)	Expected date of commissioning	Expected Generation 2018-19 (MU)	Remarks

Note: Please furnish the month-wise break-up of yearly generation in a separate Sheet keeping the similar format.

5. Loss of Generation due to Grid Constraints/ Low schedules /fuel related issues during 2017-18

Transmission Constraints/ power evacuation problems/ low schedule/high fuel c

S No.	Details of the Constraint	Loss so far (Apr'17-Aug'17)		during 2017-18	
				Anticipated Period of constraint	Anticipated loss of generation (MU)

6. PPA details

Capacity (MW)	With DISCOM			With State Trading Cos.				With PTC / other trading cos.				Untied (MW)
	State of Discom	Quantum (MW)	Duration (Yrs)	Quantum (MW)	b/b PPA with Discom (name of Discom)	quantum of b/b PPA in MW	Duration of b/b PPA (Years)	Quantum (MW)	b/b PPA with Discom (name of Discom)	quantum of b/b PPA in MW	Duration of b/b PPA (Years)	

7(a)Coal Linkage for coal based plants

Unit No	Domestic linkage (MT)	Source	PLF from this coal linkage during the year (%)

7(b)Gas availibility for gas based stations

Varoius sources	Figures in MMSCMD	PLF from this gas availibility during the year (%)

8. Cost of Generation:

Unit No	Cost of Gen. (Paise/kwh)	Rate of Sale of Power (Paise/kwh)

Planned maintenance Schedules including R&M activities

A) R&M of Units likely to be completed during 2017-18 & 2018-19

Station name	Unit No.	Capacity (MW)	R&M Schedule	
			From date	To date

B) Annual Overhaul/ Boiler overhaul

Station name	Unit No.	Capacity (MW)	AOH Schedule	
			From date	To date

C) Capital Overhaul

Station name	Unit No.	Capacity (MW)	COH Schedule	
			From date	To date

D) Other maintenance if not included above such as PG tests (new units) and Boiler inspection

Station name	Unit No.	Capacity (MW)	Schedule		Reason
			From date	To date	

Annexure-B6.A

Generation Target 2018-19

Region	State	SECTOR	Fuel	Name of Utiity	NAME OF THE STATION	Monitored Capacity as on 31.07.2017 MW
ER	BIHAR	CENTRAL	COAL	BRBCL	NABI NAGAR TPP	500
ER	BIHAR	CENTRAL	COAL	K.B.U.N.L	MUZAFFARPUR TPS	610
ER	BIHAR	CENTRAL	COAL	NPGCPL	NEW NABI NAGAR TPP	0
ER	BIHAR	STATE	COAL	BSEB	BARAUNI TPS	210
ER	JHARKHAND	CENTRAL	COAL	PVUNL	PATRATU TPS	455
ER	JHARKHAND	PVT	COAL	ADHUNIK	MAHADEV PRASAD STPP	540
ER	ORISSA	PVT	COAL	IBPIL	UTKAL TPP(IND BARATH)	350
ER	ORISSA	PVT	COAL	ICCL	ICCL (IMFA) IMP	0
ER	ORISSA	PVT	COAL	JITPL	DERANG TPP	1200
ER	ORISSA	PVT	COAL	NALCO	NALCO IMP	0
ER	ORISSA	PVT	COAL	SEL	STERLITE TPP	600
ER	WEST BENGAL	PVT	COAL	IEL	INDIA POWER TPP (HALDIA)	150
ER	ANDAMAN NICOBAR	STATE	DIESEL	A&N ADM	AND. NICOBAR DG	40.05
ER	WEST BENGAL	STATE	HIGH SPEED DIESEL	WBPDC	KASBA GT (Liq.)	40

Annexure-B9

Bihar

Priority	Feeders/ICTs	Point of Disconnection
1	400/220 kV 315 MVA ICT at Biharsariff	400 kV Biharsariff PG
2	132 kV Arrah (PG)- Arrah (BSPHCL)	132 kV Arrah PG
3	132 kV Purnea(PG)-Purnea(BSPHCL)	132 kV Purnea PG

Jharkhand

Priority	Feeders/ICTs	Point of Disconnection
1	One 400/220 kV 315 MVA ICT Jamsedpur	400 kV Jamsedpur
2	220 kV Ranchi(PG)-Chandil(JUVNL)	220 kV Ranchi-PG

DVC

Priority	Feeders/ICTs	Point of Disconnection
1	220 kV Maithon (PG)-Kalyaneswari	220 kV Maithon-PG
2	220 kV Parulia (PG)-Parulia (DVC)	220 kV Parulia PG
3	220 kV Maithon (PG)-Dhanbad (DVC)	220 kV Maithon-PG

Odisha

Priority	Feeders/ICTs	Point of Disconnection
1	220 kV Rengali(PG)-Rengali(OPTCL)	220 kV Rengali-PG
2	220/132 kV Baripada 160 MVA ICT	220 kV Baripada-PG
3	220 kV Baripada(PG)-Balsore (Odisha)	220 kV Baripada-PG

West Bengal

Priority	Feeders/ICTs	Point of Disconnection
1	220 kV Dalkohla (PG)-Dalkohla(WB)	220 kV Dalkohla-PG
2	132 kV Malda (PG)-Malda(WB)	132 kV Malda-PG
3	220 kV Subhasgram(PG)-Subhashgram(WB)	220 kV Subhasgram PG

West Bengal State Electricity Transmission Company Limited

(A Government of West Bengal Enterprise)

CIN: U40109WB2007SGC113474; Website: www.wbsetcl.in; Phone / Fax No. (033) 2334 9020

Registered Office : Vidyut Bhawan, Block-DJ, Sector-II, Bidhannagar, Kolkata – 700 091

OFFICE OF THE CHIEF ENGINEER

STATE LOAD DESPATCH CENTRE

Memo. No: SLDC/HOW/18/ 1090 Dated: 13.10.17

To

The Member Secretary, ERPC

14, Golf Club Road, Tollygange

Kolkata-700033.

Sub. Implementation of ADMS scheme in West Bengal system

Dear Sir,

As per Reg.5.4.2(d) of CERC (IEGC) Regulations,2010 (Grid Code), work of implementation of Automatic Demand Management Scheme in West Bengal system has been completed and kept in service at following S/S :-

Sl.No	Name of Substn.	Summer Evening (MW)	Summer Morning (MW)	Winter Evening (MW)	Winter Morning (MW)	Remarks
1	BIGHATI	36	36	25	16	Block A
2	BARJORA	28	20	20	16	Block A
3	SUBHASGRAM	80	52	53	33	Block B
4	NEWBISHNUPUR	50	55	24	24	Block B
5	NEWTOWN A.A.III	35	40	24	20	Block C-implemented on 20.09.17
6	DHARAMPUR	85	65	55	45	Block C-implemented on 20.09.17

Maximum 50MW load will be interrupted by tripping of 33kv feeders in sub-stns. covered in each block.

Thanking you,

Yours faithfully

13/10/2017

(P.K.kundu)

Chief Engineer

SLDC, WBSETCL

SPS FOR STERLITE – Rev 3

Assumptions:-

1. Unit 1, 3 & 4 are connected to PGCIL bus (400 kV).
2. Unit 2 is connected to OPTCL bus (400 kV).
3. Both the buses are decoupled
4. Circuits 2 and 4 of 400 kV Raigarh-Rourkela line are LILOed at Sterlite.
5. Steady state and emergency line loading limits for different outgoing lines as per new planning criteria:-

Sl	Line	Steady-state	Emergency
1	400 kV Raigarh-Sterlite-I	852MW	937MW
2	400 kV Raigarh-Sterlite-II	852MW	937MW
3	400kV Rourkela-Sterlite-I	852 MW	937MW
4	400kV Rourkela-Sterlite-II	852MW	937MW

Inputs to the SPS :-

1. MW flow (with direction) of 400 kV Sterlite- Raigarh-I
2. MW flow (with direction) of 400 kV Sterlite- Raigarh-II
3. MW flow(with direction) of 400 kV Sterlite- Rourkella-I
4. MW flow (with direction) of 400 kV Sterlite- Rourkela-II
5. Number of units on bar at 400kVand their present generation
6. CB status of all 400KV lines emanating from SEL

Principle of operation

Case:-1

At least three 400KV lines in service from Sterlite.

The SPS should be activated if loading of any of the following lines exceeds 850MVA (Thermal line loading as per CEA Planning criteria)

1. 400 kV Sterlite- Raigarh-I
2. 400 kV Sterlite- Raigarh-II
3. 400 kV Sterlite- Rourkella-I
4. 400 kV Sterlite- Rourkela-II

Condition:- Line loading (A) > 850MVA

Action:- Rapid reduction of generation till line loading comes down to 750MVA (100MVA margin kept to avoid frequent operation of SPS on account of variation in WR-ER interchange)

Case:-2

Only two 400KV lines in service from Sterlite.

Condition: - Line loading (A) > 850MVA or SEL maximum generation limited by 900MW

Action:- Rapid reduction of generation till line loading comes down to 750MVA (100MVA margin kept due to reduced security and to avoid frequent operation of SPS)

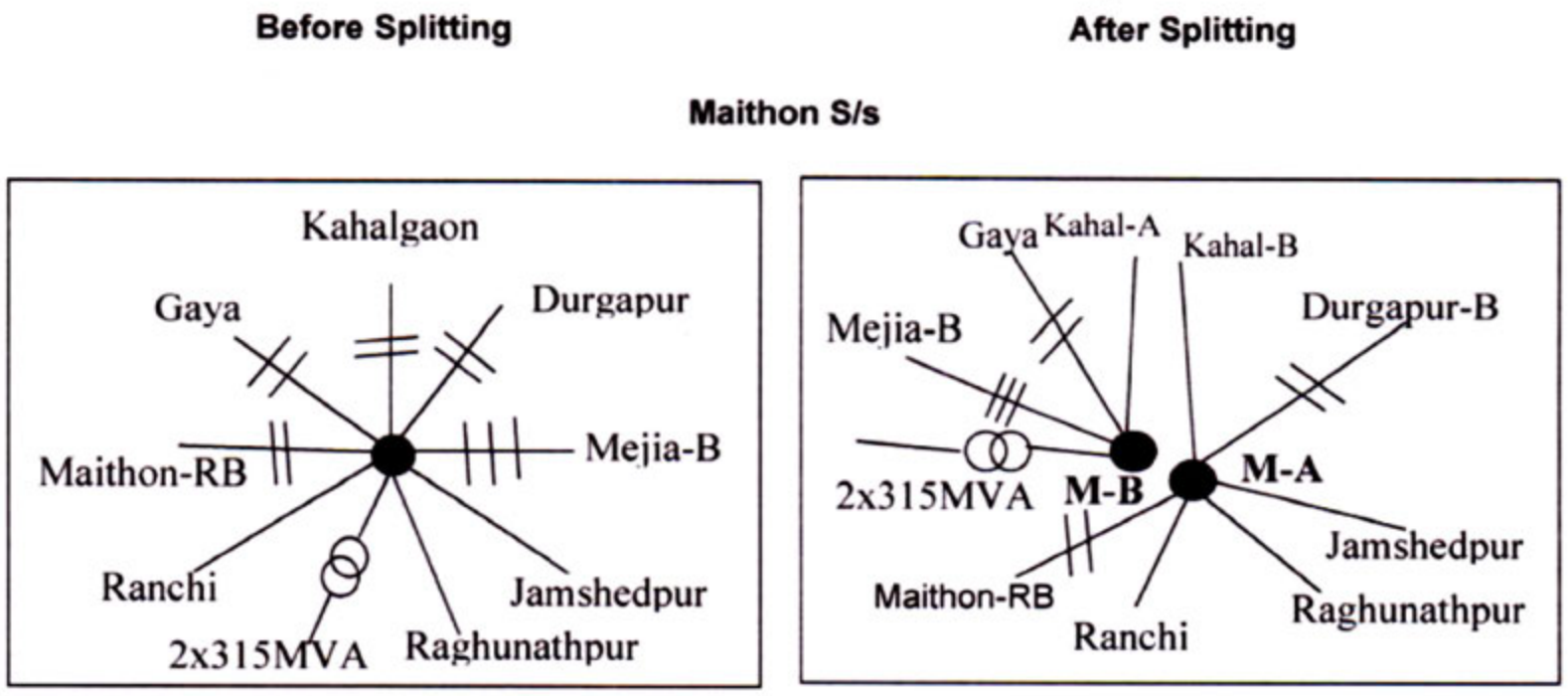
Scanning time will be every 10 sec. and thresh hold value will be 10 MVA for reduction of generation

Annexure-B11.5

Maithon and Biharsariff Bus Splitting Study

Bus Splitting at Maithon 400kV

- Sectionalisation of 400kV Maithon bus was proposed in earlier standing committee meeting, anticipating high short-circuit level and same has been implemented now. In segregated mode, connectivity of the two different sections of Maithon 400kV bus would be as follows:



Feeder connection with the two bus sections

Sl No	Maithon - A	Maithon-B
1	400 kV Maithon- MPL D/C	2 x 315 MVA ICT
2	400 kV Maithon Ranchi	400 kV Maithon-Mejia T/C
3	400 kV Maithon-Raghunathpur	400 kV Maithon-Gaya D/C
4	400 kV Maihton-Jamsedpur	400 kV Maithon-Kahalgaon S/C
5	400 kV Maithon-Parulia D/C	
6	400 kV Maithon-Kahalgaon S/C	

Steady-state Simulation

- Four different scenarios have been considered for simulation which are:-
  - Low Hydro (winter) peak condition
  - Low Hydro (winter) off peak condition
  - High Hydro (monsoon) peak condition
  - High Hydro (monsoon) off peak condition

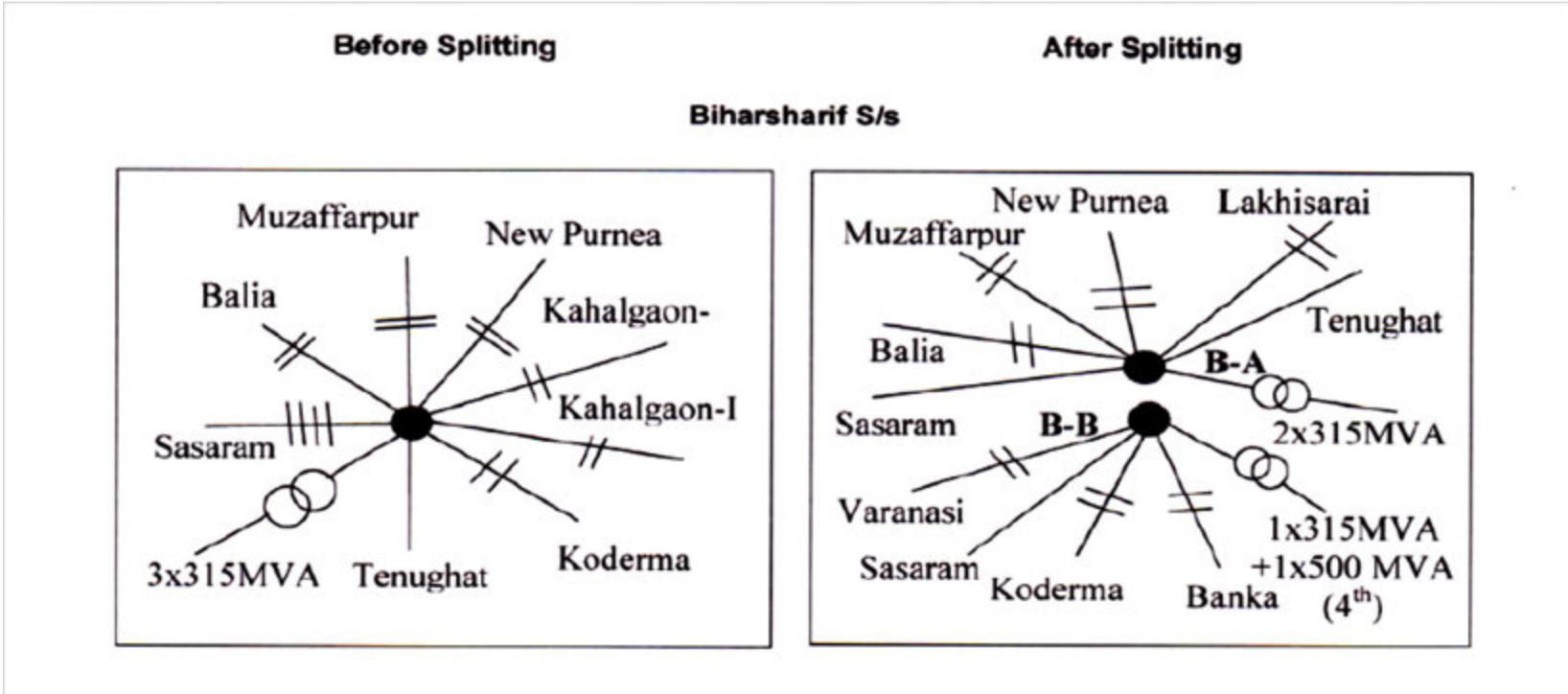
Summary of findings

- After splitting Maithon 400kV bus, flow in 400 kV Maithon-Parulia D/C increases significantly and its N-1 contingency may become critical in future. However, after segregation of Farakka 400kV bus, this flow is expected to reduce.
- There is a significant reduction in flow of 400 kV RTPS-Maithon which can assist in maintaining good generation at Raghunathpur TPS without loading 400 kV RTPS-Maithon critically.
- Reduction of power flow in 400kV MPL-Maithon D/C line is also observed after splitting Maithon bus, which in turn helps in reducing the post-contingency line flow, on tripping of one of the circuits.
- Increase in loading of 400 kV New Ranchi-Chandwa D/C is observed. However, as this is strung with Quad Moose conductor, its N-1 contingency loading is well within the safe limit.
- With bus split operation at Maithon power which wheels from WR to NR via ER reduced slightly due to increase in relative impedance of path. This resulted in reduction in WR→ER and ER→NR flow while flow from WR→NR is expected to rise slightly

Suggestion: Split bus mode operation may be operationalized at Maithon

Bus Splitting at Biharshariff 400kV

Due to increase of fault level at Biharsariff, segregated operation of the 400kV bus was proposed in earlier standing committee meeting and the same in place now. After bus splitting arrangement is put in service, following will be connectivity of the two different sections of Biharsariff 400kV:



Feeder connection with the two bus sections

Sl No	Biharsariff - A	Biharsariff-B
1	400 kV Biharsariff-Lakhisari D/C	400 kV Biharsariff-Banka D/C
2	400 kV Biharsariff-Purnea D/C	400 kV Biharsariff-Koderma D/C
3	400 kV Biharsariff-Muzaffarpur D/C	400 kV Biharsariff-Varanasi D/C
4	400 kV Biharsariff-Balia D/C	400 kV Biharsariff-Sasaram S/C
5	400 kV Biharsariff-Sasaram S/C	1x315 MVA ICT
6	2 x 315 MVA ICTs	1 x 500 MVA ICT**
7	400 kV Biharsariff-Tenughat S/C*	

Steady-state Simulation

- Four different scenarios have been considered for simulation which are:-
  - Low Hydro (winter) peak condition
  - Low Hydro (winter) off peak condition
  - High Hydro (monsoon) peak condition
  - High Hydro (monsoon) off peak condition

Summary of findings

- With bus split arrangement at Biharsariff, the loading of the 400/220kV ICTs become uneven resulting in high loading of the single 315 MVA ICT (Connected to Biharsariff-B section) and very less loading of other two ICTs (Connected to Biharsariff-A section). This condition does not change significantly whether Maithon 400kV bus operates in split mode or not.
- Even without any contingency, loading of the ICT connected to Biharsariff-B section may cross its continuous rating.
- Flow of 400 kV Khalgaon-Banka-Biharsariff-B D/C reduces somewhat while that of 400 kV Kahalgaon-Lakhisarai-Biharsariff-A D/C increases.
- There is slight increase in flow of 400 kV Farraka-Malda D/C
- As per final scheme, the 4th (500 MVA) ICT is supposed to get connected to 400kV Bus-B, in parallel with the single 315MVA ICT. **Therefore till commissioning of the 500MVA ICT, operation of Biharsariff 400kV substation in split mode is not recommended.**

Conclusion

- Maithon may be put in split bus mode of operation, in consultation with NLDC as it affects interregional flow to some extent.
- Till commissioning of the 500MVA ICT, operation of Biharsariff 400kV substation in split mode is not recommended.

Annexure-B12

BIHAR STATE POWER TRANSMISSION COMPANY LTD: PATNA
Registered Office: 4th Floor, Vidyut Bhawan, Baily Road, Patna
Corporate Identity No. (CIN) U40102BR2012SGC018889Web site- www.bsptcl.in

Standard Operating Procedure (S.O.P.)

Case-I: In case of outage of 315 MVA ICT of Patna (PG) & 500 MVA ICT remaining in service

Action to be taken:

1. [illegible]s tripping of 220 kV Patna (PG) - Fatuha T/L may be done in Consultation with PG & SLDC [illegible] to avoid overloading of 500 MVA ICT, as recommended by PGCIL.
2. (a) Khagaul GSS will shed Bihta & Digha GSS immediately to get instant relief of approx 150 MW.
   (b) In case of synchronized state of 220 KV Patna(PG)-Khagaul-Ara (PG) loop, if 500 MVA ICT still gets overloaded after operation of (a) then incomer of 220 KV Patna (PG) & Sipara line will be isolated at Khagaul GSS **(in anticipation to post facto approval of ERLDC).**
   (c) In case of Khagaul is not synchronised with Ara (PG), SLDC will reduce load of Sasaram(PG)-Ara(PG) both ckt, subsequently ERLDC shall be requested for extending power from Khagaul to Arrah(PG) for synchronization. Then incomer of 220 KV Patna (PG) & Sipara will be isolated at Khagaul GSS **(in anticipation to post facto approval of ERLDC).**
   (d) Then Power to Khagaul will be available from Ara (PG)
   (e) SLDC will reschedule all connected GSS to ensure power availability at Khagaul GSS.
3. After stabilization of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-II: In case of outage of 500 MVA ICT of Patna (PG) & 315 MVA ICT remaining in service

Action to be taken:

1. Simultaneous tripping of **220 KV Patna (PG)-Khagaul, 220 KV Sipara-Khagaul & 220 KV Patna (PG)-Fatuha** Trans. Lines may be done through relay, as recommended by PGCIL.
2. Under this condition power to 220 KV Khagaul will remain zero from Patna (PG) and Sipara (BSPTCL).
3. 250 MW power will be available at Patna (PG) which will be used for 132KV power supply to Jakkanpur, Mithapur & Karbigahiya. All 33 KV feeders at Sipara GSS will be disconnected.
4. Since, Khagaul is not synchronized with Ara (PG), SLDC will reduce load of Sasaram(PG)-Ara(PG) both ckt, subsequently ERLDC shall be requested for extending power from Arrah (PG) to Khagaul.
5. After stabilization of system at Khagaul, Khagaul will take action for restoration of its own load along with that of Digha, Bihta GSS & Traction load, as per availability of power in accordance with guidance of SLDC.

Case-III: In case of outage of both 315MVA & 500MVA ICT at Patna (PG)

Action to be taken:

1 Simultaneous tripping of **220 KV Patna (PG)-Khagaul, 220 KV Sipara-Khagaul & 220 KV Patna (PG)-Fatuha** Trans. Line may be done through relay, as recommended by PGCIL.
2 Under this condition, power to 220 KV Khagaul will remain zero from Patna (PG) and Sipara (BSPTCL).
3 Sipara will avail power from 220 KV Sipara- Fatuha line, then after transformation to 132KV it will be extended to Jakkanpur.
4 In case of unavailability of 220 kV Sipara-Fatuha line:
   (a) Isolate Fatuha power which is being feed to Masaudhi via transfer bus of Sipara.

(13)

(b) Fatuha will extend power to Sipara (up to 125 MW) and subsequently Sipara will extend it to Mithapur, Karbigahia & Jakkanpur.

5 The load allocation to Mithapur shall be done by SLDC considering the limit of loading of Biharsarif(PG) & associated 220KV Biharsarif(SG)-Fatuha transmission line.

6 Masaudhi & Jahanabad GSS will avail power from Gaya GSS (L-33) with suitable power allocation.

7 Isolation of rural load of Fatuha & Katra shall be done by respective GSS.

Case-IV: In case one ckt of 220 KV D/C Patna (PG)-Sipara goes under breakdown.

Action to be taken:

1. Simultaneous tripping of **220KV Patna (PG)-Khagaul & 220KV Sipara-Khagaul** line may be done through Relay.
2. Power to Khagaul from Patna(PG) will then be zero to avoid bulk load & tripping on overloading.
3. Then, Khagaul will avail power through 220 KV Patna (PG)-Khagaul line keeping Bihta and Digha GSS shaded.
4. After stabilization of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-V: In case of 220KV D/C Patna (PG)-Sipara both goes under breakdown.

Action to be taken:

1. Simultaneous tripping of **220KV Patna (PG)-Khagaul & 220KV Sipara-Khagaul** line may be done through Relay.
2. Power to Khagaul from Patna (PG) will be zero to avoid tripping of line in overload due to bulk load and reverse power flow i.e. from Khgaul to Sipara (on single ckt of Patna(PG)-Khagaul).
3. Since, Sipara is powerless, it will avail power through 220 KV Sipara – Fatuha line then after transformation to 132KV it will be extended to Jakkanpur. Simultaneously, rescheduling of load at Fatuha, Katra, Gaighat, Jakkanpur, Mithapur & Karbigahiya will be done.
4. In case of unavailability of 220 kV Sipara-Fatuha line:
   (a) Isolate Fatuha power which is being feed to Masaudhi via transfer bus of Sipara.
   (b) Fatuha will extend power to Sipara (up to 125 MW) subsequently Sipara will extend it to Mithapur, Karbigahia & Jakkanpur.
5. The load allocation to Mithapur shall be done by SLDC considering the limit of loading of Biharsarif(PG) & associated 220KV Biharsarif(SG)-Fatuha transmission line.
6. Masaudhi & Jahanabad GSS will avail power from Gaya GSS (L-33) with suitable power allocation.
7. Isolation of rural load of Fatuha & Katra shall be done by respective GSS.
8. Then, Khagaul will avail power through 220 KV Patna (PG)-Khagaul line keeping Bihta and Digha GSS shaded.
9. After stabilisation of system at Khagaul, Khagaul will take action for reduction of rural load & restoration of PSS connected to Digha & Bihta etc. as per availability of power and in guidance of SLDC.

Case-VI: In case of 132KV D/C Sipara-Jakkanpur goes under breakdown.

Action to be taken:

1. Extend Mithapur Power to Jakkanpur via Karbigahia , The total load of Jakkanpur will be restricted to 70 MW only &33 kv Power for Karbigahia shall be regulated as per instruction of SLDC.

17

Case-VII: In case of 220KV D/C Biharsarif-Fatuha line goes under breakdown.

Action to be taken:

1. Isolation of Masaudhi & Jahanabad from Fatuha and shall be shifted on Gaya GSS with suitable power allocation.
2. GSS Katra, Gaighat & Fatuha shall be rescheduled by SLDC as per availability of power at Patna (PG).

Case-VIII: In case of either 13KV Fatuha-Gaighat or Fatuha-Katra line goes under breakdown.

Gaighat GSS & Katra GSS are interconnected at 132 KV level as such these grids can share load available at other end.

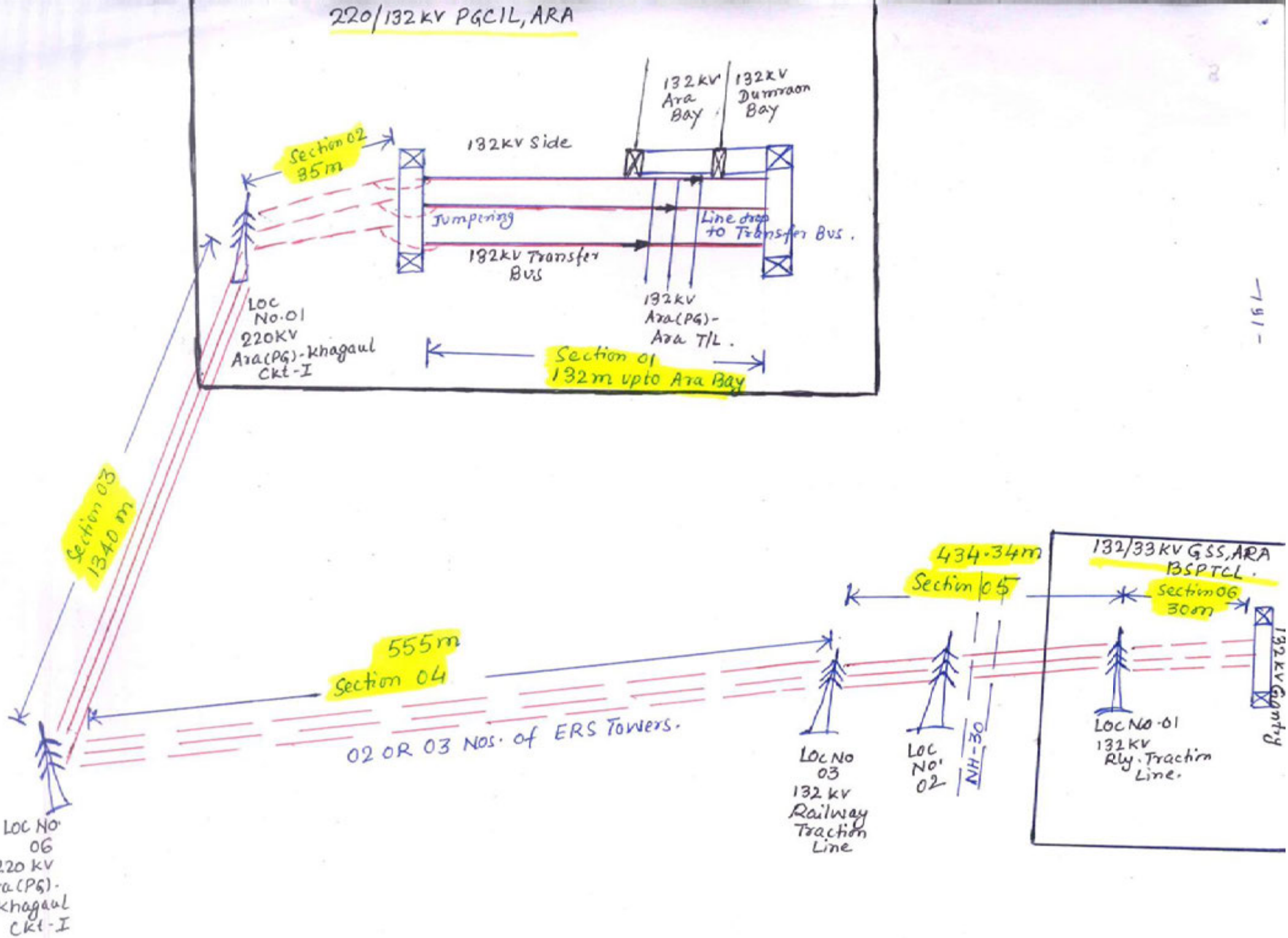
Case I:-In case 132 KV Fatuha-Gaighat lines goes under breakdown, Gaighat can draw full load from GSS Katra as the transmission line capacity of 132 Fatuha-Katra is 150 MW.

Case II:-In case 132 KV Fatuha-Katra line goes under breakdown, GSS Katra may avail load up to the extent load of Katra & Gaighat is 120 MW. As soon as load reaches peak of 120 MW, some rural feeder of Katra may be shaded or Katra PSS may be shifted on Fatuha GSS.

(Perwez Alam) ESE, Telecom & ULDC	(A. K. Choudhary) ESE, TC, Patna	(Premjeet Kumar) ESE, SLDC	(R. K.Gopal) ESE,Tr.(O & M)
18/09/17			18/9/17

18/09/17	18/9/17	
(H. R. Panday) CE (SO)	(S.B. Prasad) CE, Trans (O &M)	(J.P. Singh) GM-cum-CE Trans Zone, Patna

Annexure-B12.4



Item No:B20 Failure of RTU data with the outage of ICTs of Patna and Biharshariff station

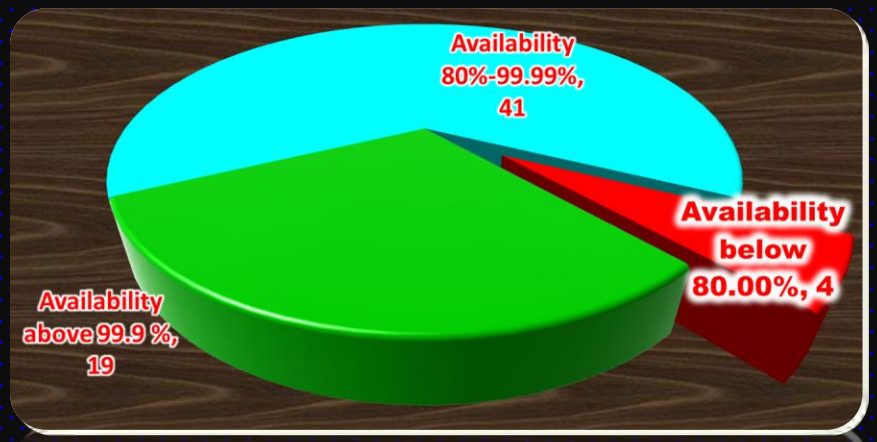
- POWERGRID may update the status of extending UPS to RTUS for Patna and Biharshariff station.
- As per input from POWERGRID ,for following listed 17 nos of stations (having communication equipments) DCPS need to be replaced.

1. RSCC, Kolkata
2. CPCC, Durgapur
3. Kanchanpur
4. Barkot
5. Jamui
6. Maldah
7. Siliguri 400 kV
8. Jamshedpur 400 kV
9. Siliguri 220 kV
10. Rengali
11. Birpara
12. Rourkela
13. Purnea 220 kV
14. Indravati
15. Muzaffarpur 400 kV
16. Biharsharif 400 kV
17. Sasaram HVDC

– **The above list is also available in Report of RTU / SAS replacement in Eastern Region dated 10-08-2017**.

Overview of real time telemetry of Eastern region for month October , 2017

AGENDA NO: B22

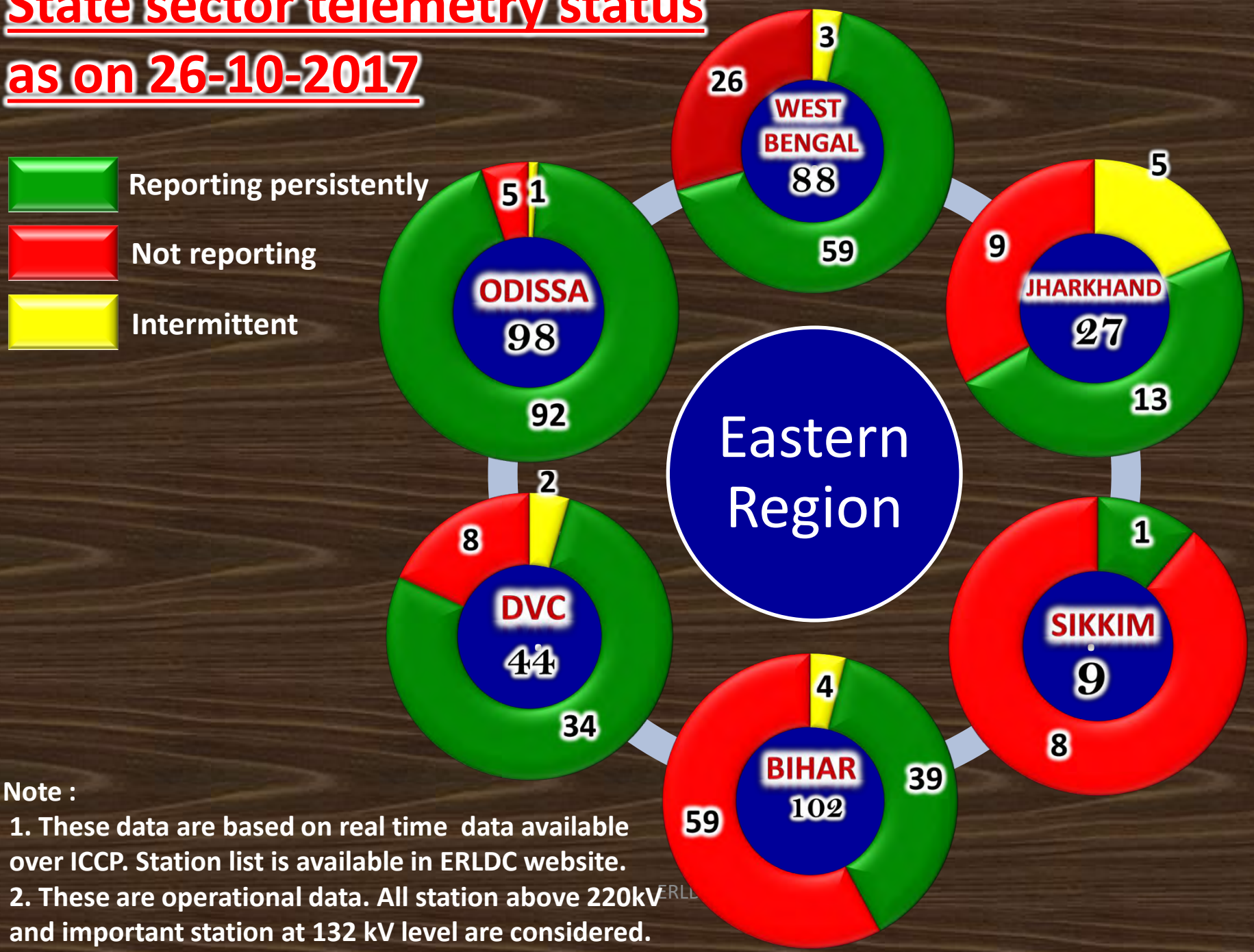


Major Concern:

Long outage of BHVDC (for 4 months)

& Farakka St #3 SAS data (for 1 months)

State sector telemetry status as on 26-10-2017



Note :

1. These data are based on real time data available over ICCP. Station list is available in ERLDC website.
2. These are operational data. All station above 220kV and important station at 132 kV level are considered.

VOIP (Voice over Internet Protocol)

Complete Outage (< 10% avl)	Partial outage (10% to 90% avl)	Availability > 90 %

Sl No	Station Name	Monthly average	01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep	08-Sep	09-Sep	10-Sep	12-Sep	13-Sep	14-Sep	15-Sep	16-Sep	17-Sep	18-Sep	19-Sep
1	Patna	0.0%																		
2	Jeypore	0.0%																		
3	Jaipur	0.0%																		
4	Indrabati	0.0%																		
5	Purnia 220	0.0%																		
6	Rengali	9.3%																		
7	Pandiavil	25.8%																		
8	Ranchi	69.0%																		
9	Kishanganj	84.1%																		
10	Birpara	41.4%																		
11	Lakshisarai	41.4%																		
12	Binaguri	41.4%																		
13	Keonjhar	41.5%																		
14	Subashgram	41.6%																		
15	Ranchi 400	41.6%																		
16	Rengali 765	43.5%																		
17	Ranchi	48.7%																		
18	Durgapur	52.9%																		
19	MALDA	62.3%																		
20	Gaya	72.8%																		
21	Siliguri	75.3%																		
22	Jharsugura	76.0%																		
23	Angul	77.6%																		

Kahalgaon NTPC
Malthon
Kusai Colony
Bhubaneswar
NERLDC
NLDC

Concerns

1. VOIP for Durgapur, Jeypore, Indravati (PG) , Purnea 220, Dalkhola and Ranchi are out since long.
2. Malda out since 22-10-2017
3. Kishanganj out since 19-10-2017
4. At present for almost 8 nos of station VOIP is not working, which is quite alarming for real time system operator.

Its our humble request to all concerned utility to provide reliable data and Voice communication to ERLDC , to ensure integrated operation of the power system in the Eastern Region.

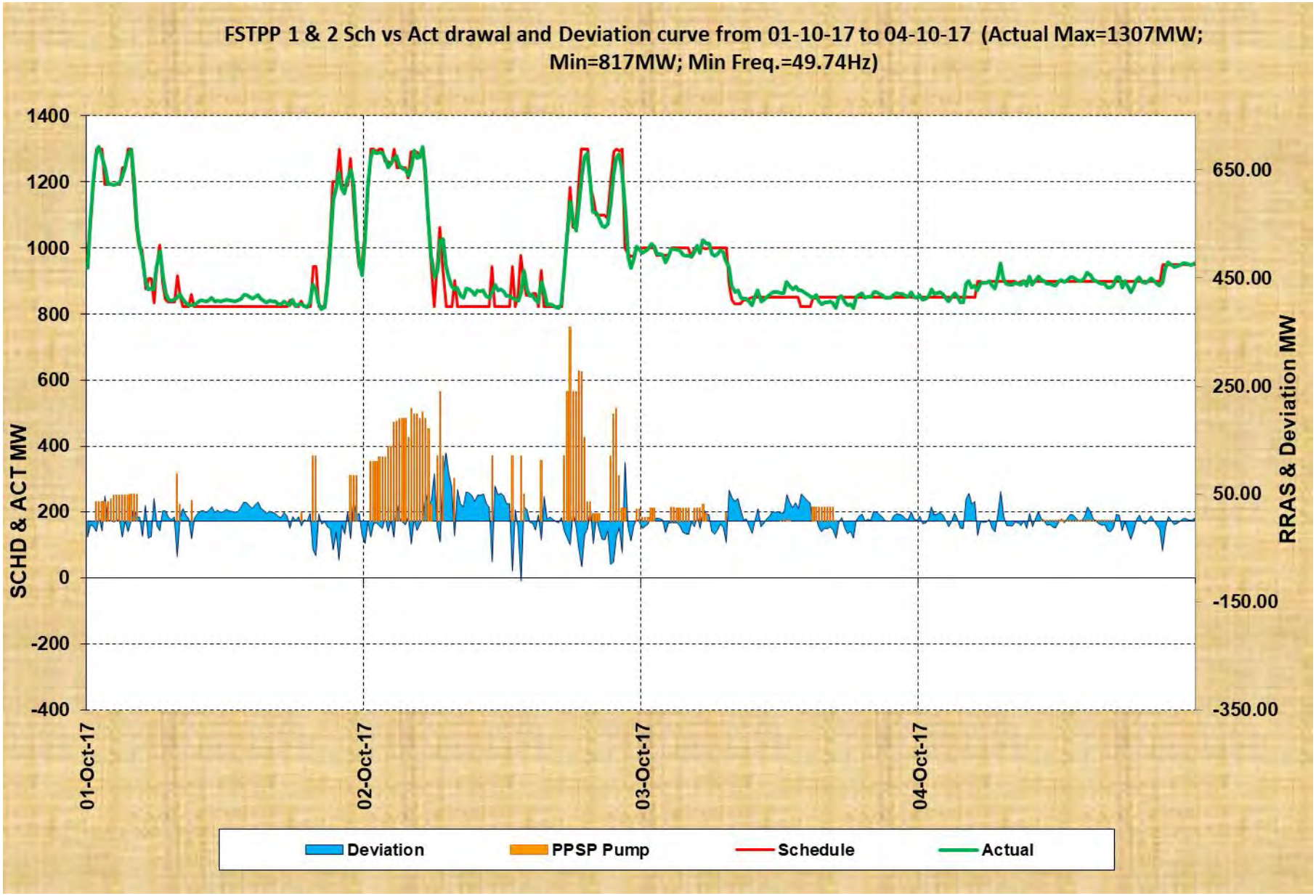
Note: Above statistics are based on result of 5 minutes interval ping response of VOIP (Voice Over Internet Protocol) handset.

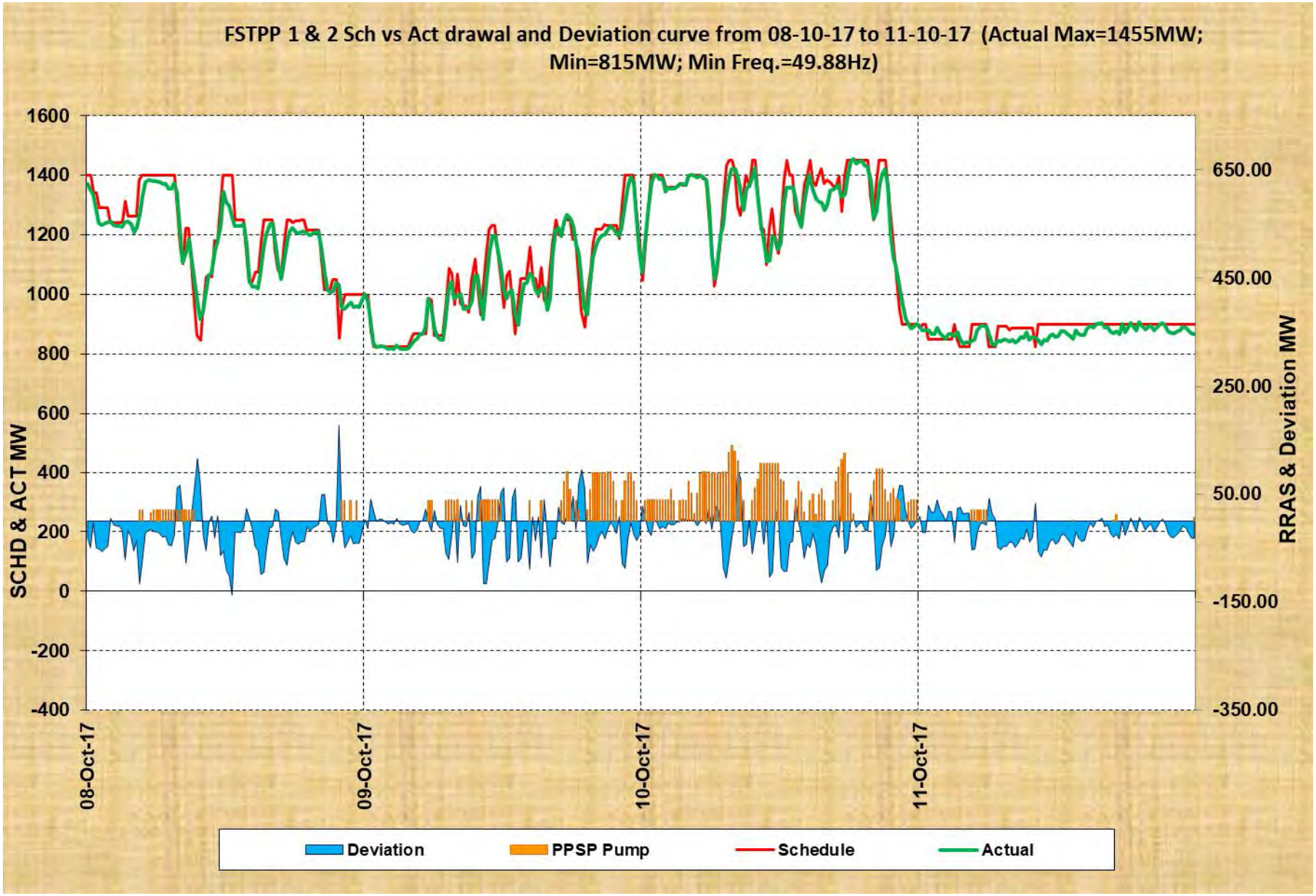
Major concerns

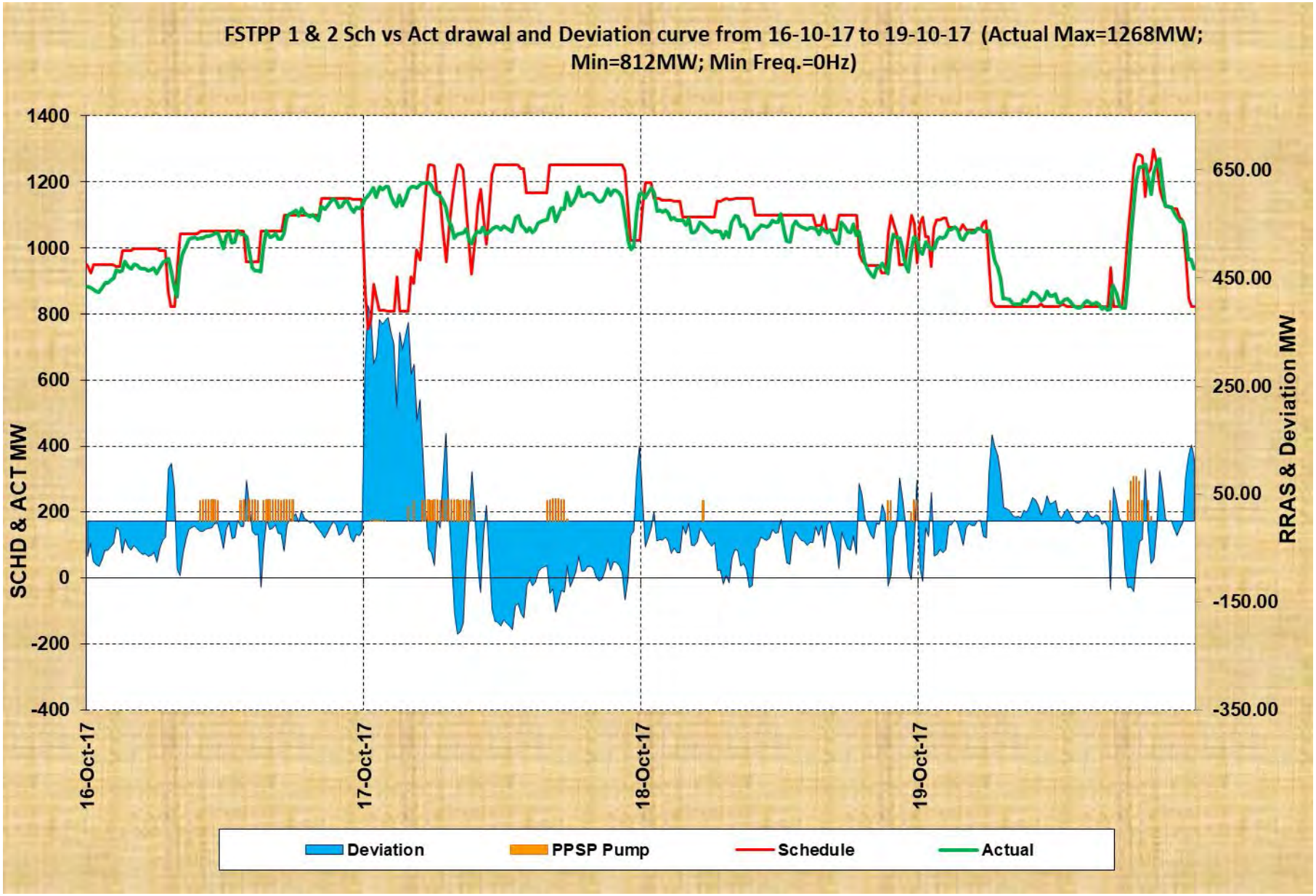
- **Long outage of Bheramar HVDC, New Farakka SCADA data.**
- **Long outage of VOIP**.
- **VOIP for JITPL yet to be provided, Commissioning PLCC for data communication via 765 kV Angul Station.**
- **No redundancy** or stand by in communication channel
- **Non availability of Unit side data**→
  - **Farakka STPS (Unit #6).**
  - **Teesta V HPS all unit (LV).**
  - **IBEUL (Unit #1 and Unit #2).**
  - **Rangit HPS (GT i.e. HV side data)**
  - **Non availability of Unit side data is affecting the FRC and MVAr response calculation. We are again requesting concerned utility to make these real time data available to real time operator at the earliest.**

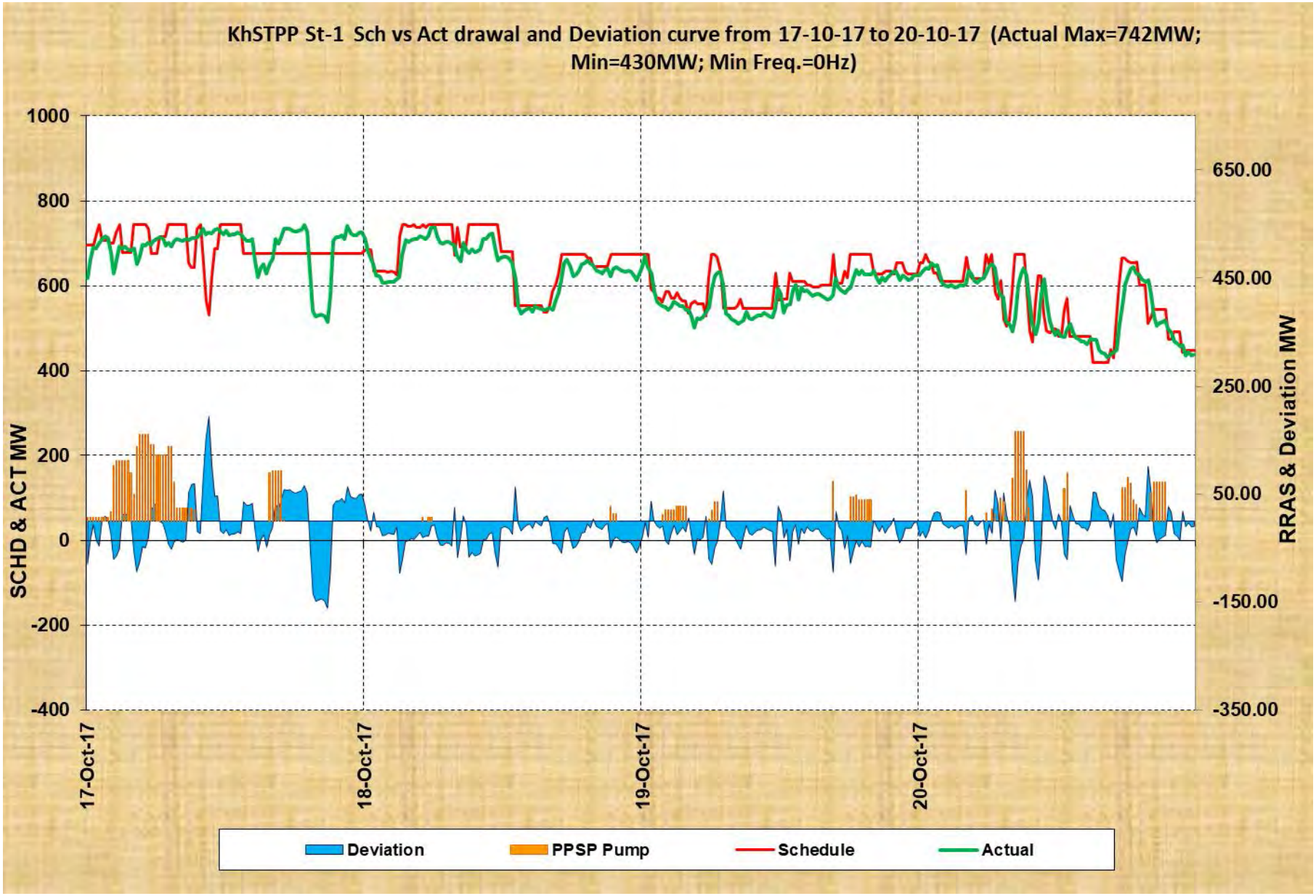
Annexure-B23A

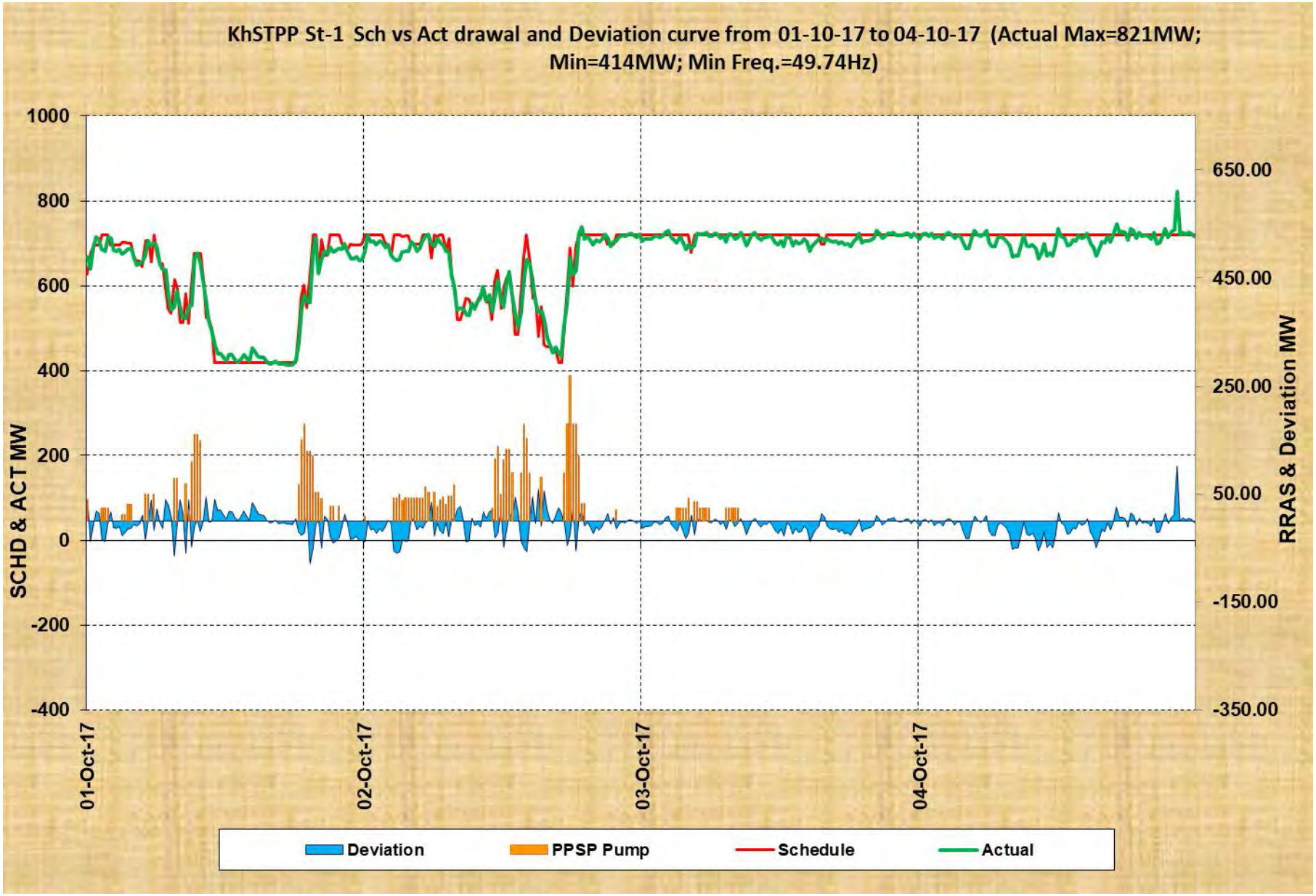
RRAS presentation

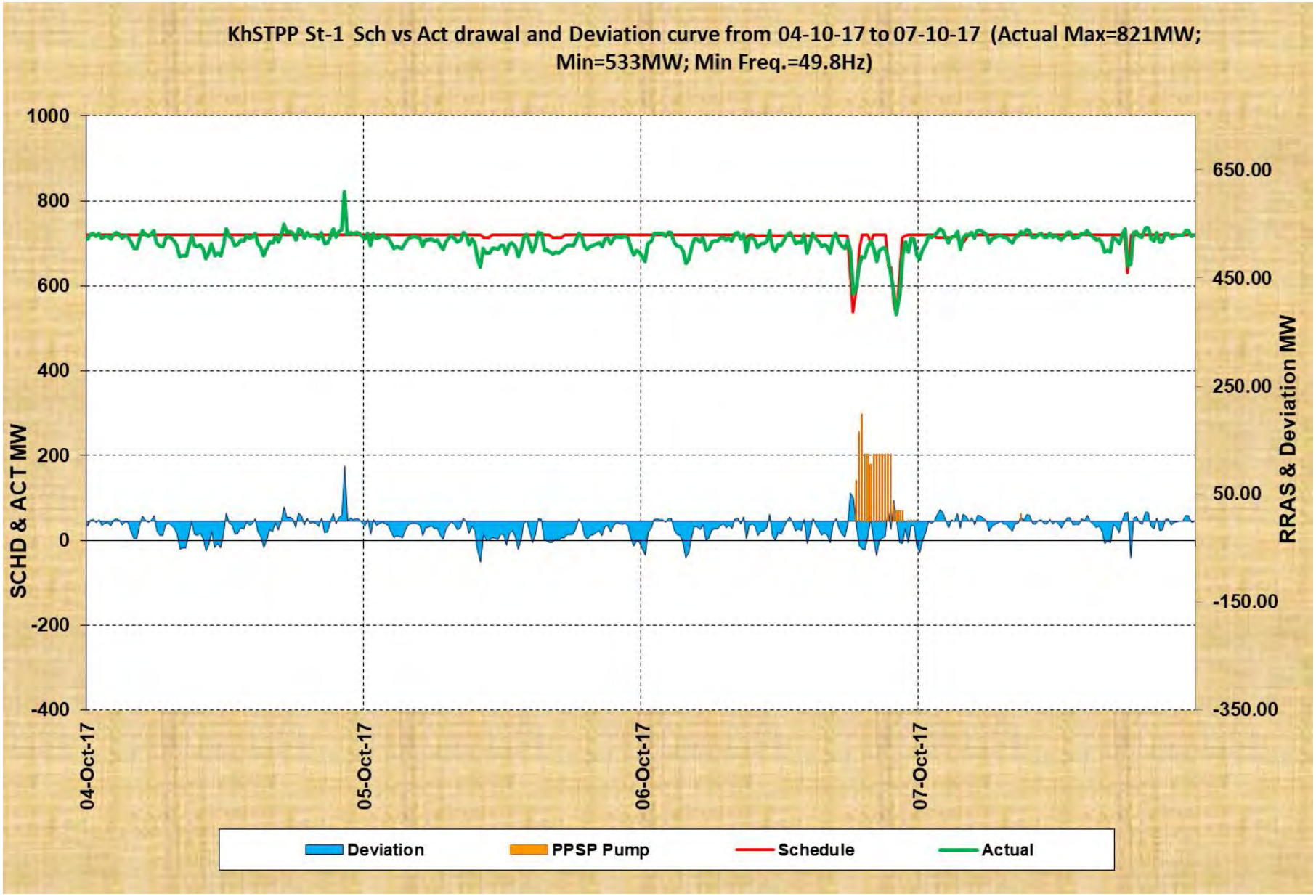

FSTPP 1 & 2 Sch vs Act drawal and Deviation curve from 01-10-17 to 04-10-17 (Actual Max=1307MW; Min=817MW; Min Freq.=49.74Hz)
SCHD & ACT MW
RRAS & Deviation MW
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
01-Oct-17
02-Oct-17
03-Oct-17
04-Oct-17
Deviation
PPSP Pump
Schedule
Actual

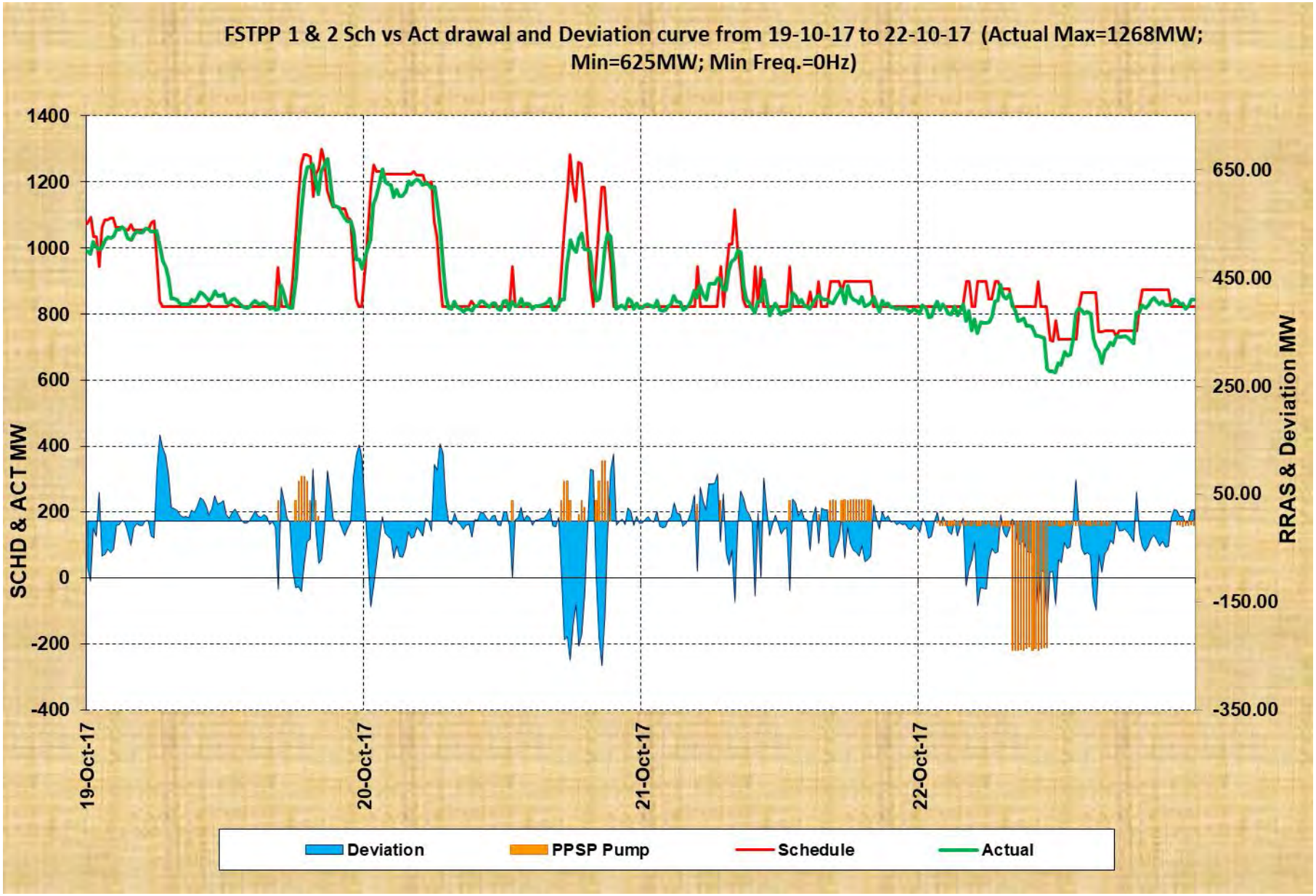

FSTPP 1 & 2 Sch vs Act drawal and Deviation curve from 08-10-17 to 11-10-17 (Actual Max=1455MW; Min=815MW; Min Freq.=49.88Hz)
SCHD & ACT MW
RRAS & Deviation MW
1600
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
08-Oct-17
09-Oct-17
10-Oct-17
11-Oct-17
Deviation
PPSP Pump
Schedule
Actual

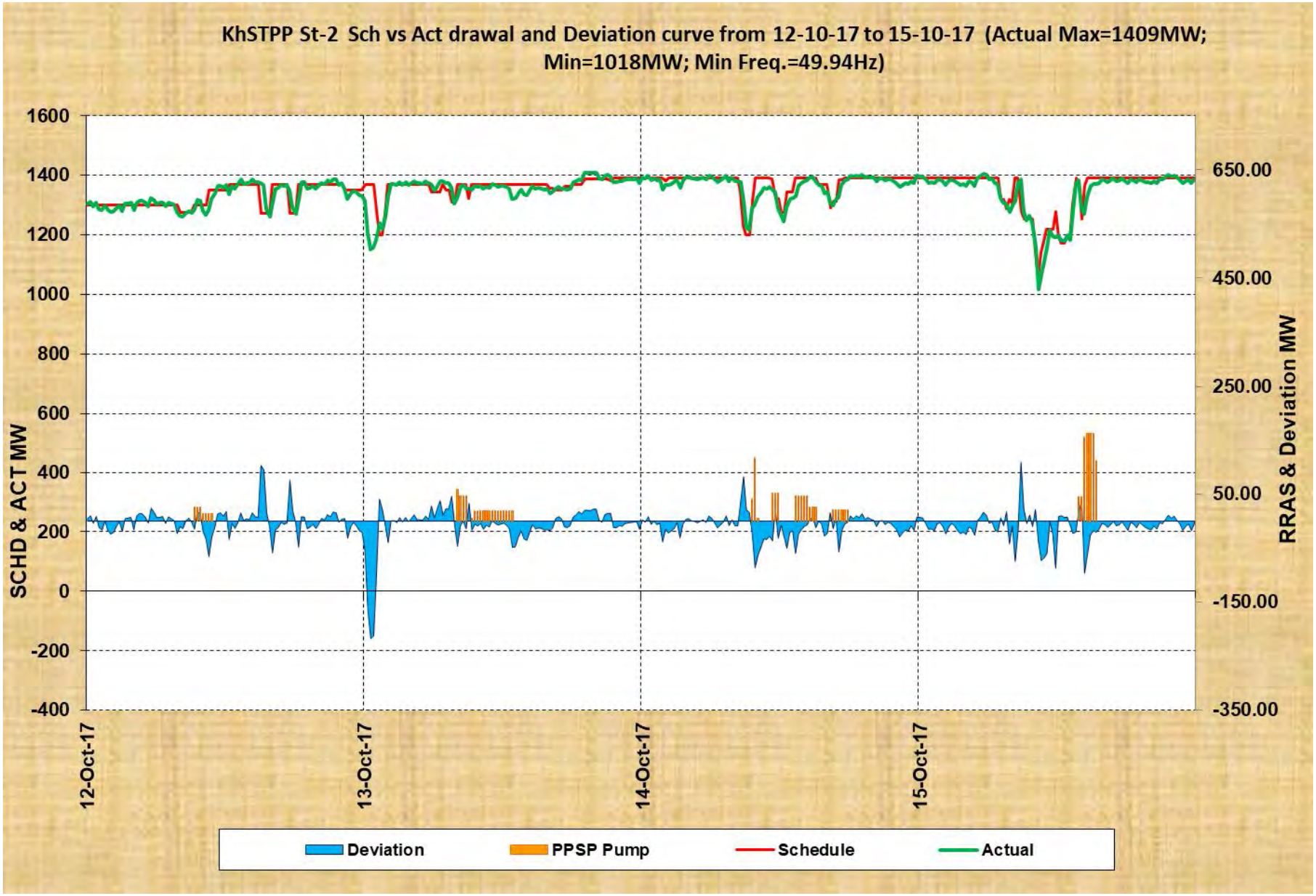

FSTPP 1 & 2 Sch vs Act drawal and Deviation curve from 16-10-17 to 19-10-17 (Actual Max=1268MW; Min=812MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
16-Oct-17
17-Oct-17
18-Oct-17
19-Oct-17
Deviation
PPSP Pump
Schedule
Actual

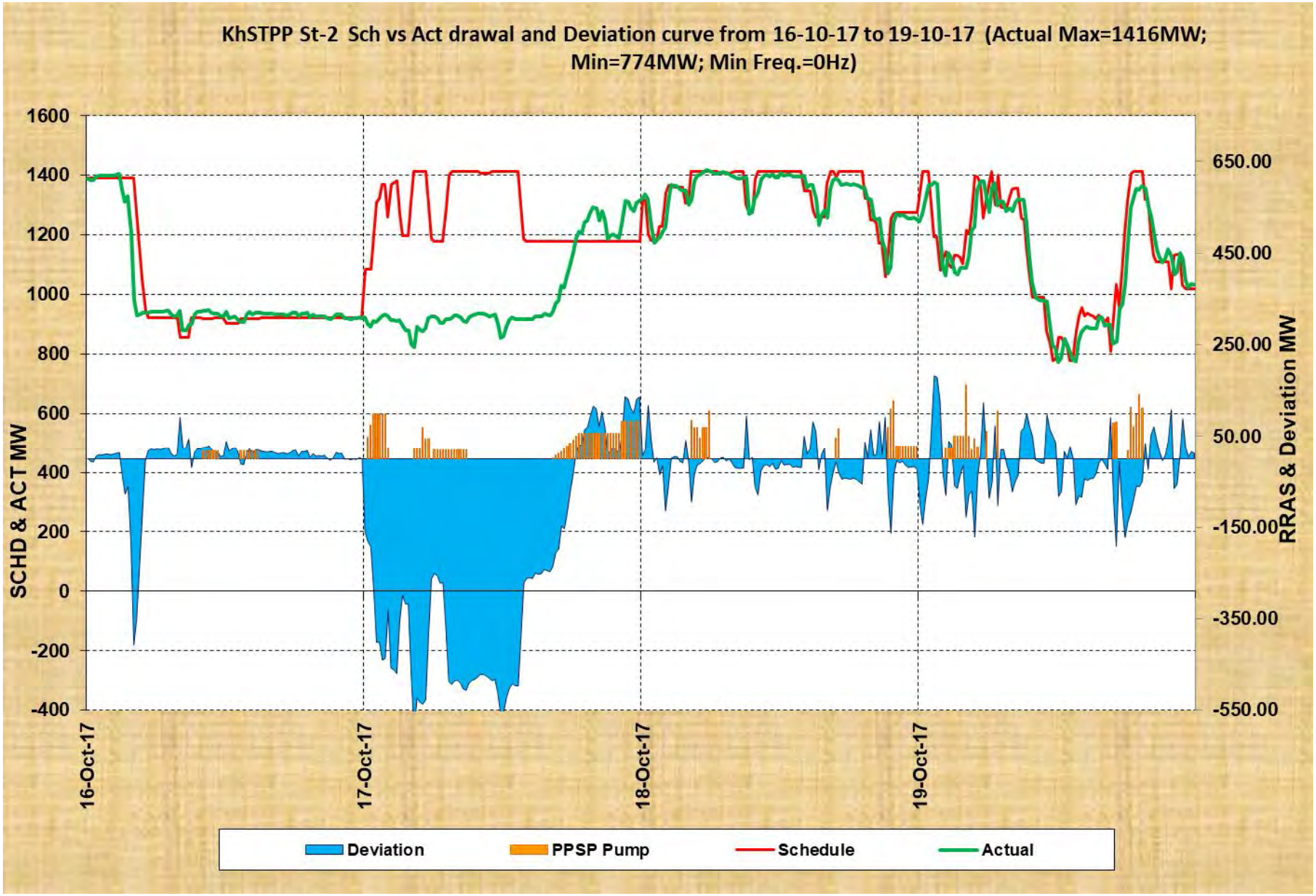

KhSTPP St-1 Sch vs Act drawal and Deviation curve from 17-10-17 to 20-10-17 (Actual Max=742MW; Min=430MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
17-Oct-17
18-Oct-17
19-Oct-17
20-Oct-17
Deviation
PPSP Pump
Schedule
Actual

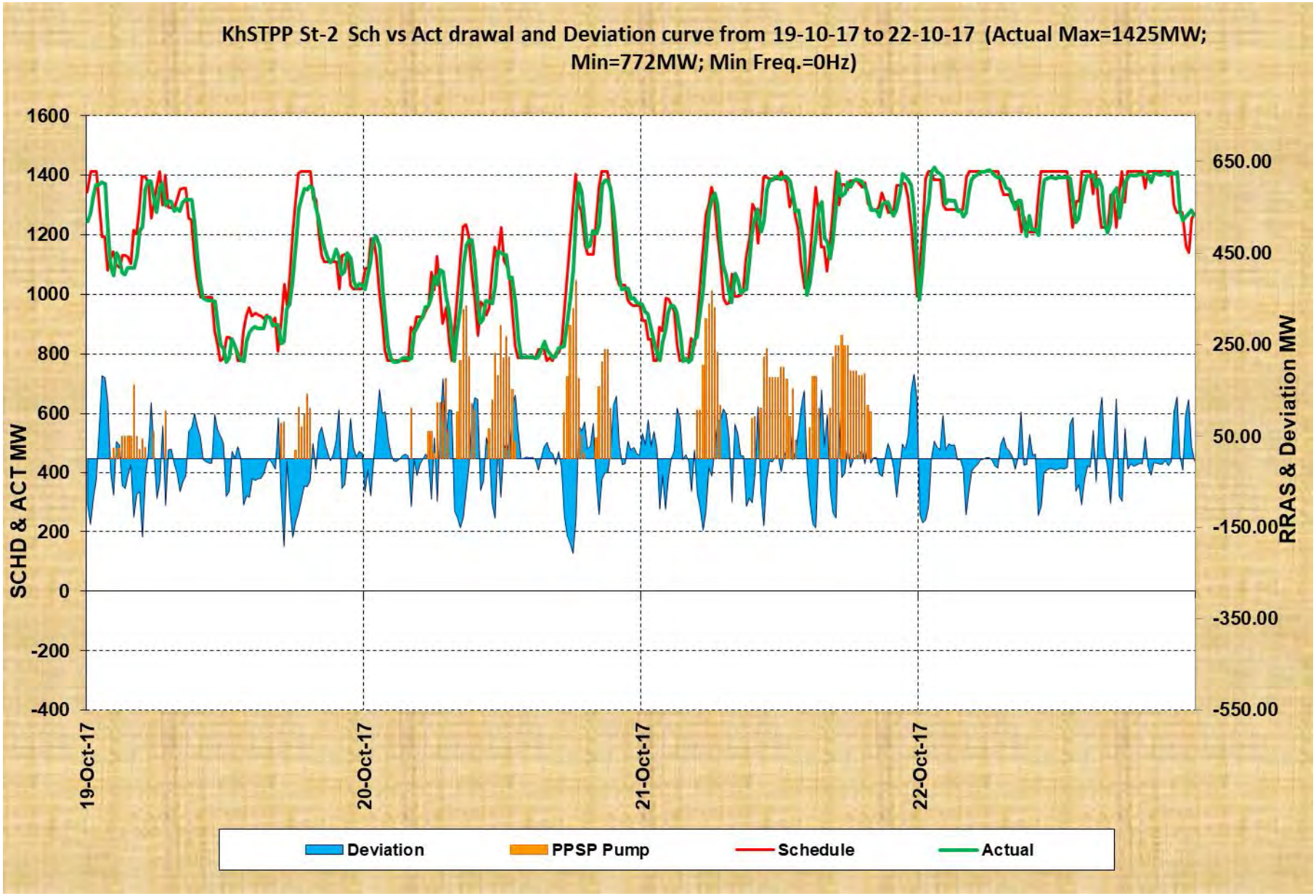

KhSTPP St-1 Sch vs Act drawal and Deviation curve from 01-10-17 to 04-10-17 (Actual Max=821MW; Min=414MW; Min Freq.=49.74Hz)
SCHD & ACT MW
RRAS & Deviation MW
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
01-Oct-17
02-Oct-17
03-Oct-17
04-Oct-17
Deviation
PPSP Pump
Schedule
Actual

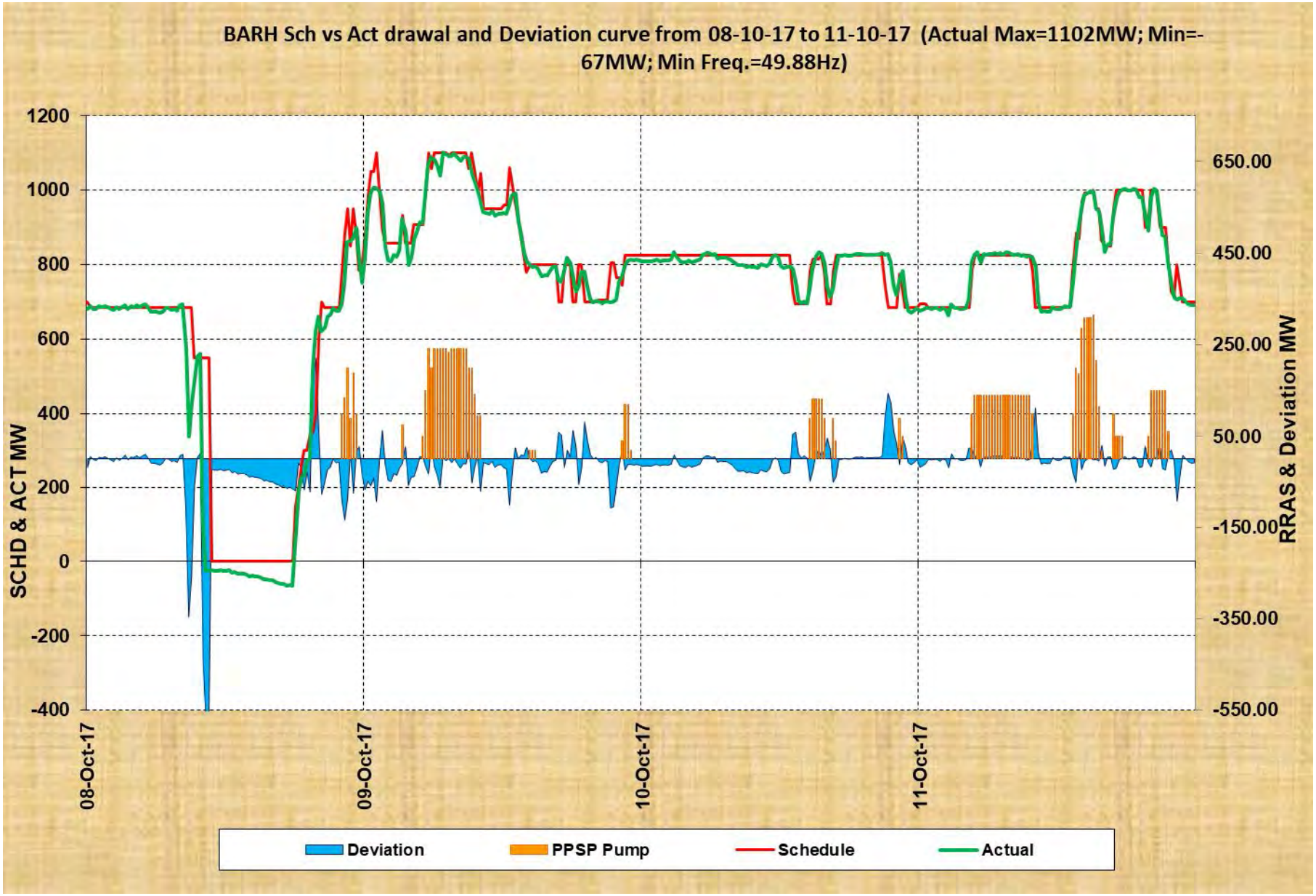

KhSTPP St-1 Sch vs Act drawal and Deviation curve from 04-10-17 to 07-10-17 (Actual Max=821MW; Min=533MW; Min Freq.=49.8Hz)
SCHD & ACT MW
RRAS & Deviation MW
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
04-Oct-17
05-Oct-17
06-Oct-17
07-Oct-17
Deviation
PPSP Pump
Schedule
Actual

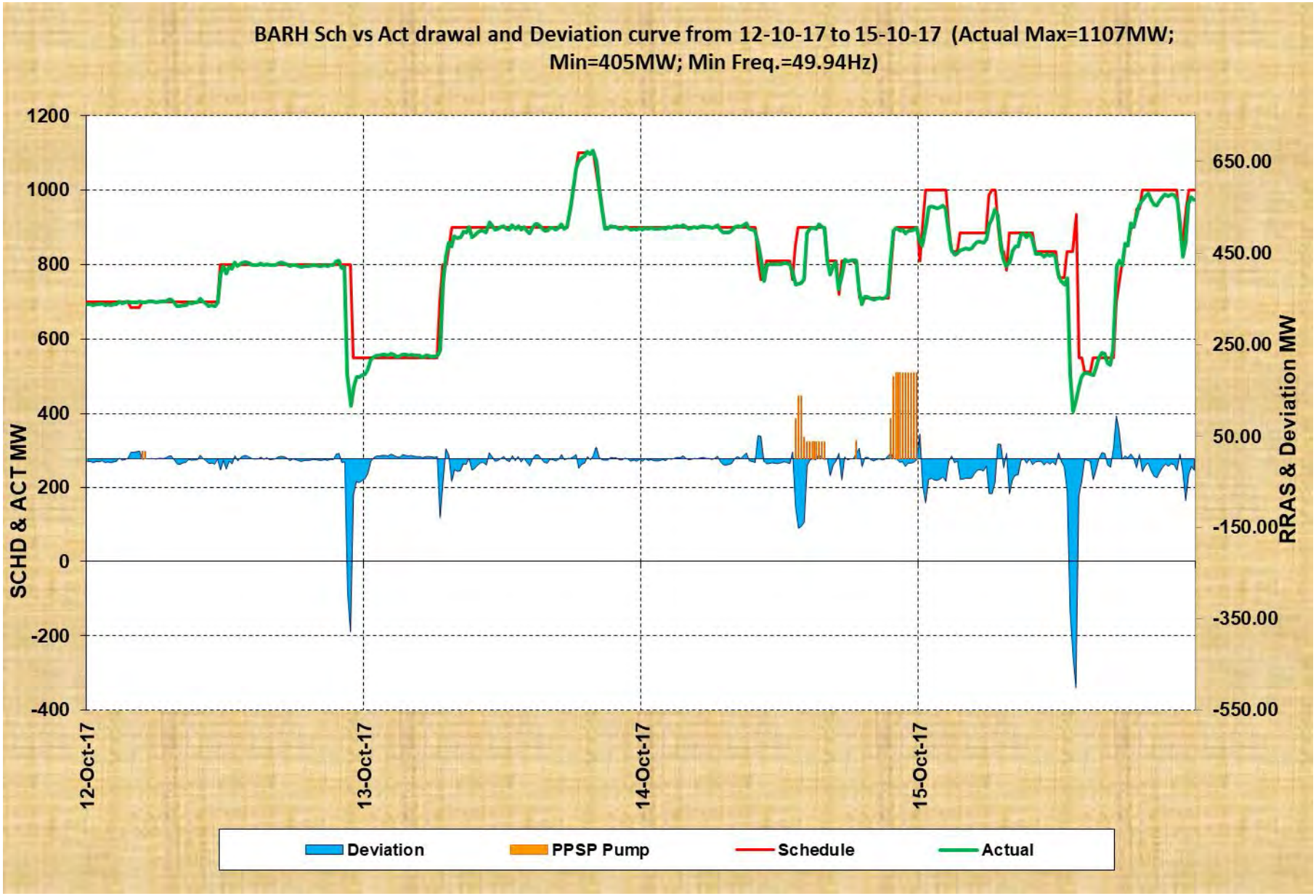

FSTPP 1 & 2 Sch vs Act drawal and Deviation curve from 19-10-17 to 22-10-17 (Actual Max=1268MW; Min=625MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
19-Oct-17
20-Oct-17
21-Oct-17
22-Oct-17
Deviation
PPSP Pump
Schedule
Actual

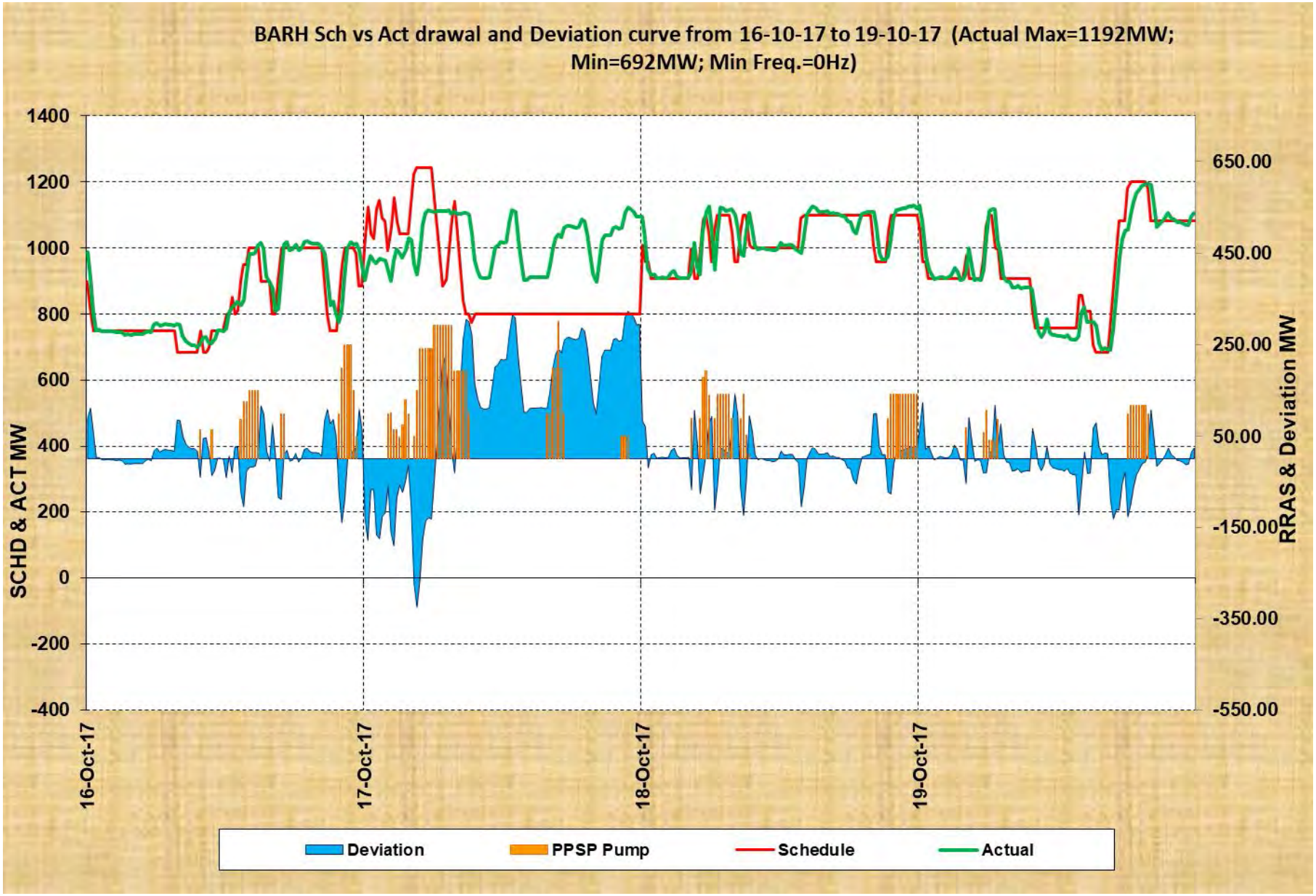

KhSTPP St-2 Sch vs Act drawal and Deviation curve from 12-10-17 to 15-10-17 (Actual Max=1409MW; Min=1018MW; Min Freq.=49.94Hz)
SCHD & ACT MW
RRAS & Deviation MW
1600
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
12-Oct-17
13-Oct-17
14-Oct-17
15-Oct-17
Deviation
PPSP Pump
Schedule
Actual


KhSTPP St-2 Sch vs Act drawal and Deviation curve from 16-10-17 to 19-10-17 (Actual Max=1416MW; Min=774MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1600
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
-550.00
16-Oct-17
17-Oct-17
18-Oct-17
19-Oct-17
Deviation
PPSP Pump
Schedule
Actual


KhSTPP St-2 Sch vs Act drawal and Deviation curve from 19-10-17 to 22-10-17 (Actual Max=1425MW; Min=772MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1600
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
-550.00
19-Oct-17
20-Oct-17
21-Oct-17
22-Oct-17
Deviation
PPSP Pump
Schedule
Actual

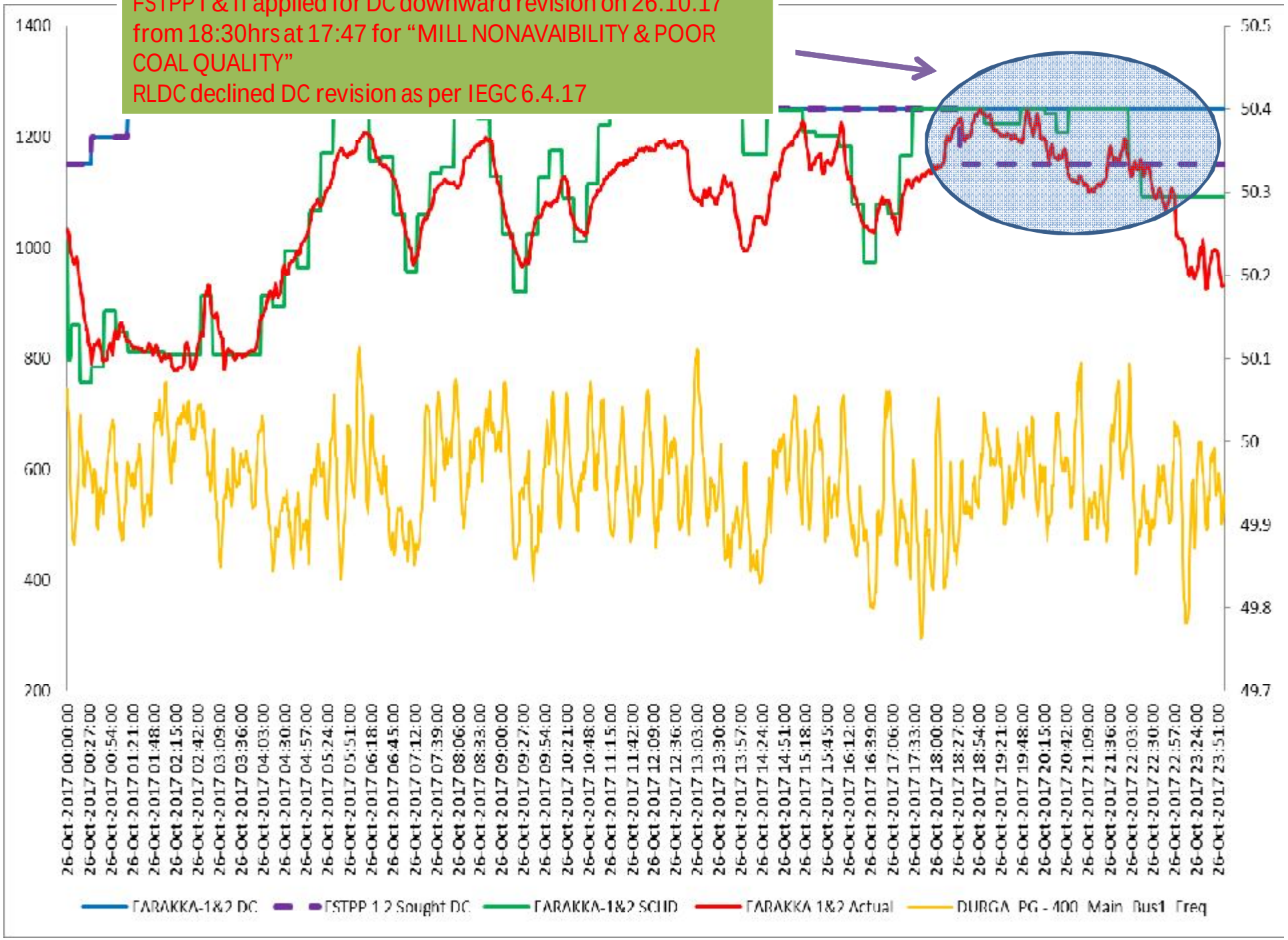

BARH Sch vs Act drawal and Deviation curve from 08-10-17 to 11-10-17 (Actual Max=1102MW; Min=-67MW; Min Freq.=49.88Hz)
SCHD & ACT MW
RRAS & Deviation MW
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
-550.00
08-Oct-17
09-Oct-17
10-Oct-17
11-Oct-17
Deviation
PPSP Pump
Schedule
Actual


BARH Sch vs Act drawal and Deviation curve from 12-10-17 to 15-10-17 (Actual Max=1107MW; Min=405MW; Min Freq.=49.94Hz)
SCHD & ACT MW
RRAS & Deviation MW
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
-550.00
12-Oct-17
13-Oct-17
14-Oct-17
15-Oct-17
Deviation
PPSP Pump
Schedule
Actual


BARH Sch vs Act drawal and Deviation curve from 16-10-17 to 19-10-17 (Actual Max=1192MW; Min=692MW; Min Freq.=0Hz)
SCHD & ACT MW
RRAS & Deviation MW
1400
1200
1000
800
600
400
200
0
-200
-400
650.00
450.00
250.00
50.00
-150.00
-350.00
-550.00
16-Oct-17
17-Oct-17
18-Oct-17
19-Oct-17
Deviation
PPSP Pump
Schedule
Actual

Annexure-B23B

DC MIS-DECLARATION
FSTPP I & II CASE


FSTPP I & II applied for DC downward revision on 26.10.17 from 18:30hrs at 17:47 for "MILL NONAVAIBILITY & POOR COAL QUALITY"
RLDC declined DC revision as per IEGC 6.4.17
1400
1200
1000
800
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400
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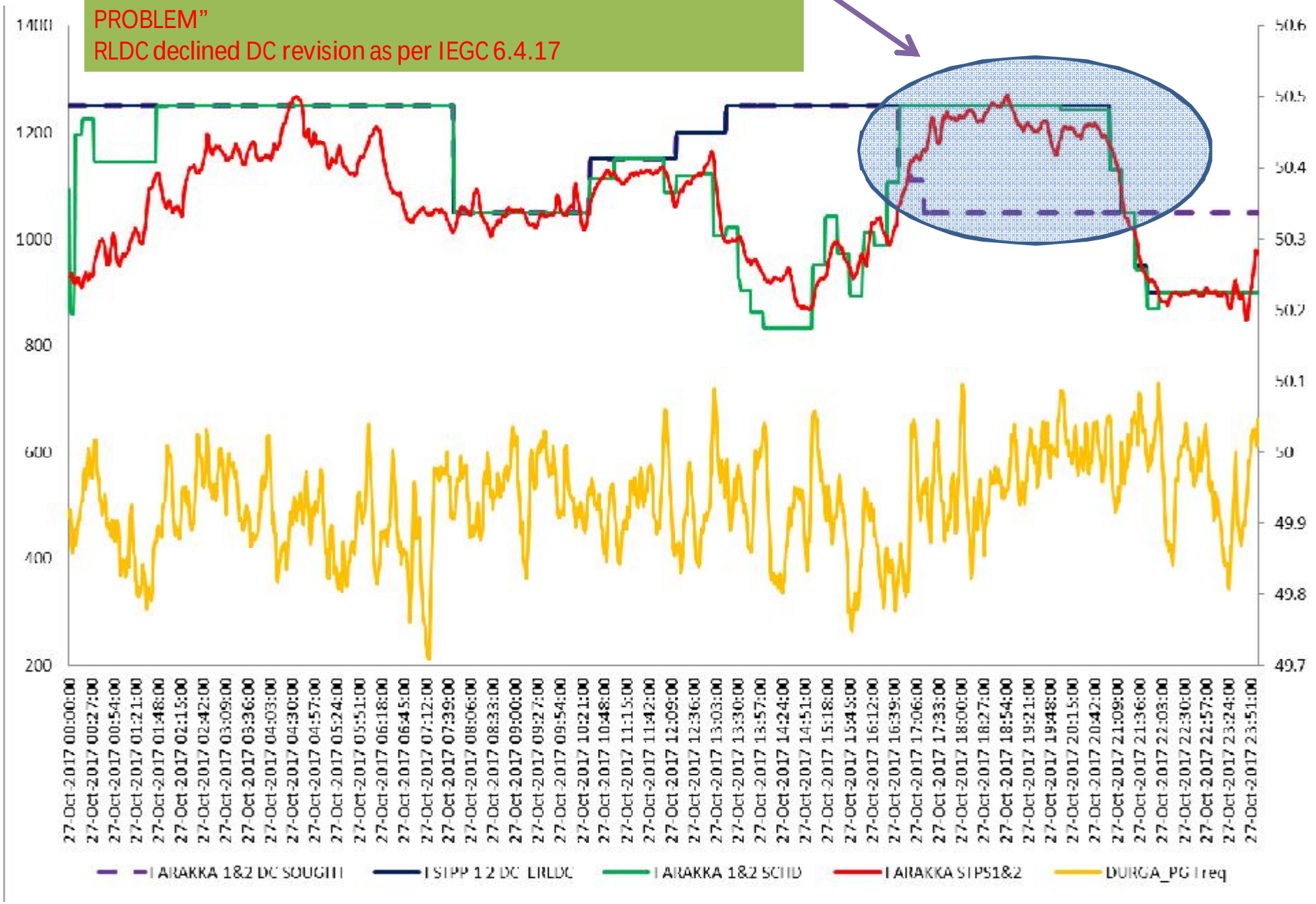
26-Oct-2017 23:51:00
FARAKKA-1&2 DC
FSTPP 1,2 Sought DC
FARAKKA-1&2 SCHD
FARAKKA 1&2 Actual
DURGA_PG - 400_Main_Bus1_Freq

FSTPP I & II applied for DC downward revision on 27.10.17 from 16:45hrs at 16:15hrs for "COAL FEEDING PROBLEM & LOW BUNKER PROBLEM"
RLDC declined DC revision as per IEGC 6.4.17



OWNERSHIP DETAILS

Annexure-B24

SL. NO	TIE-LINE	LINE OWNED BY	FROM END				TO END			
			Bay equip Ownership	Responsibility of maintaining bay eqp.	Responsibility of ensuring Real Time data	Responsibility of sending RI/DR/EL	Bay equip Ownership	Responsibility of maintaining bay eqp.	Responsibility of ensuring Real Time data	Responsibility of sending RI/DR/EL
A) 765 KV LINES										
1	GAYA-VARANASI	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
2	GAYA-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
3	PUSAULI-FATEHPUR	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
4	RANCHI(NEW)-DHARAMJAYGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
5	JHARSUGUDA-DHRAMJAYGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
6	ANGUL-SRIKAKULAM	POWERGRID	POWERGRID(ER)				POWERGRID(SR)			
7	ANGUL-JHARSUGUDA	POWERGRID	POWERGRID				POWERGRID			
B) 400 KV LINES										
7	MUZZFARPUR-GOROKHPUR	POWERLINKS	POWERGRID(ER)				POWERGRID(NR)			
8	PATNA-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
9	BIHARSHARIFF-BALIA	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
10	BIHARSHARIFF-VARANASI	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
	BARH-MOTIHARI	L(LILO)	POWERGRID(ER)				DMTCL			
	MOTIHARI-GOROKHPUR	L(LILO)	DMTCL				POWERGRID(NR)			
12	SASARAM(N) -SARNATH	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
14	SASARAM(N) -ALLAHABAD	POWERGRID	POWERGRID(ER)				POWERGRID(NR)			
15	BINAGURI-BONGAIGAON-I, II	POWERGRID	POWERGRID(ER)				POWERGRID(NER)			
16	AILPURDUAR-BONGAIGAON-I, II	**PGCIL(LILO)**	POWERGRID(ER)				POWERGRID(NER)			
20	TEESTA V-RANGPO	POWERGRID	NHPC				POWERGRID			
21	SEL-RAIGARH	POWERGRID & SEL	SEL				POWERGRID(WR)			
22	JHRASUGUDA-IBEUL	IBEUL	POWERGRID				IBEUL			
23	JHRASUGUDA-RAIGARH	IBEUL	POWERGRID(ER)				POWERGRID(WR)			
24	ROURKELA-RAIGARH	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
25	ROURKELA-SEL	POWERGRID & SEL	POWERGRID				SEL			
26	RANCHI -SIPAT	POWERGRID	POWERGRID(ER)				POWERGRID(WR)			
28	FARAKKA-BEHRAMPUR	POWERGRID	NTPC				POWERGRID			
29	FARAKKA-SAGARDIGHI	POWERGRID	NTPC				WBPDCL			
30	FARAKKA - MALDA	POWERGRID	NTPC				POWERGRID			
31	FARAKKA - PARULIA	POWERGRID	NTPC				POWERGRID			
32	KAHALGAON -BANKA	POWERGRID	NTPC				POWERGRID			
34	SAGARDIGHI-BEHRAMPUR	POWERGRID	WBPDCL				POWERGRID			
35	SAGARDIGHI-SUBHASGRAM	POWERGRID	WBPDCL				POWERGRID			
36	SAGARDIGHI-PARULIA	WBSETCL	WBPDCL				POWERGRID(ER)			
38	JEERAT-SUBHASGRAM	POWERGRID	WBSETCL				POWERGRID			
39	SUBHASGRAM(PG)-HALDIA	HEL	POWERGRID				HEL			
40	PARULIA-BIDHANAGAR	WBSETCL	POWERGRID				WBSETCL			
41	KHARAGPUR-BARIPADA	WBSETCL & OPTCL	WBSETCL				POWERGRID(ER)			
45	DSTPS - JAMSHEDPUR	POWERGRID	DVC				POWERGRID			
46	KODERMA-BIHARSARIFF	POWERGRID	DVC				POWERGRID			
51	RAGUNATHPUR-MAITHON	POWERGRID	DVC				POWERGRID			
52	JAMSEDPUR-AHUNIK	APNRL	POWERGRID				APNRL			
53	JAMSHEDPUR-TISCO	POWERGRID	DVC				POWERGRID			
55	JEYPORE-GAZUWAKA	POWERGRID	POWERGRID(ER)				POWERGRID(SR)			

58	INDRAVATI-INDRAVATI	OPTCL	POWERGRID(ER)				OPTCL				
59	TSTPP-MERAMUNDALI	POWERGRID	NTPC				OPTCL				
61	BARIPADA-NEW DUBURI	POWERGRID	POWERGRID(ER)				OPTCL				
62	MENDHASAL-NEW DUBURI	OPTCL	POWERGRID(ER)				OPTCL				
64	TSTPP - RENGALI	POWERGRID	NTPC				POWERGRID				
65	KHARAGPUR-CHAIBASA	PKTCL	WBSETCL				POWERGRID				
66	MENDHASAL-PANDIABILI	POWERGRID	OPTCL				POWERGRID				
67	BARIPADA – PANDIABILI	POWERGRID	WBSETCL				POWERGRID				
	NEW RANCHI-NEW PPSP	PKTCL	POWERGRID				WBSETCL				
71	FARAKKA-GOKARNO	POWERGRID	NTPC				WBSETCL				
72	DIKCHU-TEESTA-III	SKPPL+TPTL	DIKCHU				TEESTA-III				
73	RANGPO-TEESTA-III	POWERGRID+TPTL	POWERGRID				TEESTA-III				
2	BANKA-BIHARSARIFF	POWERGRID	POWERGRID				POWERGRID				
3	LAKHISARAI-BIHARSARIFF	POWERGRID	POWERGRID				POWERGRID				
4	KAHALGAON -LAKHISARAI	POWERGRID	NTPC				POWERGRID				
5	BIHARSHARIFF-PURNEA	ENICL	POWERGRID				POWERGRID				
6	MAITHON-GAYA	POWERGRID	POWERGRID				POWERGRID				
7	KAHALGAON -BARH	POWERGRID	NTPC				NTPC				
8	BARH -PATNA	POWERGRID	NTPC				POWERGRID				
9	PATNA- KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
10	PURNEA - BINAGURI I & II	POWERGRID	POWERGRID				POWERGRID				
11	PURNEA-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
12	BINAGURI-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID				
13	PURNEA - MUZAFFARPUR	POWERLINKS	POWERGRID				POWERGRID				
14	BIHARSHARIFF-MUZAFFARPUR	POWERGRID	POWERGRID				POWERGRID				
15	BIHARSHARIFF- PUSAULI	POWERGRID	POWERGRID				POWERGRID				
16	FARAKKA - KAHALGAON I & II	POWERGRID	NTPC				NTPC				
17	FARAKKA-KAHALGAON III & IV	POWERGRID	NTPC				NTPC				
18	BOKARO-KODERMA	POWERGRID	DVC				DVC				
19	MALDA - PURNEA	POWERGRID	POWERGRID				POWERGRID				
20	MERAMUNDALI - MENDASAL	OPTCL	OPTCL				OPTCL				
21	RENGALI-KEONJHAR	OPTCL	POWERGRID				OPTCL				
22	KEONJHAR- BARIPADA	OPTCL	POWERGRID				POWERGRID				
23	JEYPORE - INDRAVATI	POWERGRID	POWERGRID				POWERGRID				
24	INDRAVATI - RENGALI	POWERGRID	POWERGRID				POWERGRID				
25	TSTPP - ROURKELA	POWERGRID	NTPC				POWERGRID				
26	ROURKELA- JHARSIGUDA	POWERGRID	POWERGRID				POWERGRID				
27	JAMSHEDPUR - CHAIBASA	POWERGRID	POWERGRID				POWERGRID				
28	CHAIBASA- ROURKELA	POWERGRID	POWERGRID				POWERGRID				
29	KTPS - CHANDITALA	WBSETCL	WBPDCL				WBSETCL				
29	CHANDITALA - JEERAT	WBSETCL	WBSETCL				WBSETCL				
30	BAKRESWAR - JEERAT	WBSETCL	WBPDCL				WBSETCL				
31	BAKRESWAR - ARAMBAGH	WBSETCL	WBPDCL				WBSETCL				
	NEW PPSP - ARAMBAGH	WBSETCL	WBSETCL				WBSETCL				
	NEW PPSP - PPSP	WBSETCL	WBSETCL				WBSEDCL				
33	PPSP - BIDHANAGAR	WBSEDCL	WBPDCL				WBSETCL				
34	KTPS - ARAMBAGH	WBSETCL	WBPDCL				WBSETCL				
35	KTPS-KHARGPUR	WBSETCL	WBPDCL				WBSETCL				
36	KTPS-KHARGPUR	WBSETCL	WBPDCL				WBSETCL				
37	PARULIA - JAMSHEDPUR	POWERGRID	POWERGRID				POWERGRID				
38	MAITHON - JAMSHEDPUR	POWERGRID	POWERGRID				POWERGRID				
39	MAITHON - RANCHI	POWERGRID	POWERGRID				POWERGRID				
40	DSTPS-RAGHUNATHPUR I & II	DVC	DVC				DVC				
41	JAMSHEDPUR-BARIPADA	POWERGRID	POWERGRID				POWERGRID				
42	RANCHI-RANCHI NEW	POWERGRID	POWERGRID				POWERGRID				
43	RANCHI-ROURKELA-I&II	POWERGRID	POWERGRID				POWERGRID				
44	BINAGURI-RANGPO	POWERGRID	POWERGRID				POWERGRID				

45	NEW RANCHI-CHANDWA	POWERGRID	POWERGRID				POWERGRID			
46	GAYA- CHANDWA	POWERGRID	POWERGRID				POWERGRID			
47	AILPURDUAR-BINAGURI-I,II	**PGCIL(LILO)**	POWERGRID(ER)				POWERGRID(ER)			
48	MUZAFFARPUR-DARBHANGA	DMTCL	POWERGRID(ER)				DMTCL			
49	SEL- MEERAMANDALI	POWERLINKS	SEL				OPTCL			
50	BARIPADA-PANDIABILI	POWERGRID	POWERGRID				POWERGRID			
51	MEERAMUNDALI- NEW DUBURI	POWERGRID	OPTCL				POWERGRID			
	C) 220 KV LINES									
74	PATNA-SIPARA	BSPHCL	POWEGRID				BSPHCL			
76	PUSUALI-SAHUPURI	BSPHCL & UPPCL	POWERGRID				UPPCL			
78	PATNA-KHAGUAL	BSPHCL	POWERGRID				BSPHCL			
80	NEW SASARAM- ARRAH	POWERGRID	BSPHCL				POWERGRID			
81	BODHGAYA-GAYA(PG)	BSPHCL & PG	BSPHCL				POWERGRID			
82	DEHRI-GAYA(PG)	BSPHCL & PG	BSPHCL				POWERGRID			
83	MUZZFARPUR-KANTI	POWERLINKS	POWERGRID				BSPHCL			
84	MUZZAFFARPUR-HAZIPUR-I & II	BSPTCL	POWERGRID				BSPTCL			
87	BALIMELA-U.SILLERU	APTRANSCO	OPTCL				APTRASCO			
88	JINDAL-JAMSHEDPUR	OPTCL & DVC	OPTCL				DVC			
89	JODA-RAMCHANDRAPUR	OPTCL & JUSNL	OPTCL				JUSNL			
90	BUDHIPADAR-KORBA II & III	OPTCL & CSEB	OPTCL				CHATTISGARH			
91	BUDHIPADAR-RAIGARH I	POWERGRID	OPTCL				CHATTISGARH			
92	TSTPP-MERAMUNDALI	OPTCL	NTPC				OPTCL			
93	TSTPP-RENGALI HPS	OPTCL	NTPC				OPTCL			
94	BISRA(PG)-TARKERA(OPTCL)	OPTCL	POWERGRID				OPTCL			
95	JEYPORE(PG)-JAYNAGAR(OPTCL)	OPTCL	POWERGRID				OPTCL			
96	TSTPP-TALCHER	OPTCL	NTPC				OPTCL			
97	FARAKKA-LALMATIA	ECL	NTPC				NTPC			
98	RENGALI-RENGALI	OPTCL	POWERGRID				OPTCL			
99	BARIPADA-BALASORE	OPTCL	POWERGRID				OPTCL			
100	MAITHON(PG)-K'SWARI(DVC)	DVC	POWERGRID				DVC			
102	CHANDIL-SANTALDIH	WBSETCL & JUSNL	JUSNL				WBSETCL			
103	RANCHI-HATIA	JUSNL	POWERGRID				JUSNL			
105	TENUGHAT-BIHARSHARIF	BSPHCL & JUSNL	JUSNL				BSPHCL			
106	JAMSHEDPUR-RAMCHANDRAPUR	-POWERGRID	POWERGRID				JUSNL			
107	MAITHON(PG)-DHANBAD(DVC)	DVC	POWERGRID				DVC			
108	PARULIA(PG)-PARULIA(DVC)	DVC	POWERGRID				DVC			
109	WARIA-BIDHANNAGAR	DVC & WBSETCL	DVC				WBSETCL			
112	SUBH'GRM(PG) - NEWTOWN	WBSETCL	POWERGRID				WBSETCL			
113	SUBH'GRM(PG) - SUBH'GRM (WB)	WBSETCL	POWERGRID				WBSETCL			
114	SUBH'GRM(PG) - EMSS(CESC)	CESC	POWERGRID				CESC			
115	SUBH'GRM(PG) - BANTALA	WBSETCL	POWERGRID				WBSETCL			
118	BIRPARA- CHUKHA	POWERGRID	POWERGRID				POWERGRID			
119	BIRPARA-MALBASE	POWERGRID	POWERGRID				POWERGRID			
120	ALIPURDUAR-SALAKATI	POWERGRID	POWERGRID(ER)				POWERGRID(NER)			
122	NEW MELLI- JLHEP	DANS	POWERGRID				DANS			
124	DARBHANGA-MOTIPUR	BSPTCL	DMTCL				BSPTCL			
125	DARBHANGA-SAMASTIPUR(UJIYARPUR)	BSPTCL	DMTCL				BSPTCL			
127	BOLANGIR-KATAPALLI	OPTCL	POWERGRID				OPTCL			
128	BOLANGIR-SADHEPALLI	OPTCL	POWERGRID				OPTCL			
129	PANDIABILI-ATRI	OPTCL	POWERGRID				OPTCL			
130	PANDIABILI-SAMANGARA	OPTCL	POWERGRID				OPTCL			
52	BIHARSHARIFF-FATUAH	BSPHCL	BSPHCL				BSPHCL			
53	BIHARSHARIFF-BODHAGYA	BSPHCL	BSPHCL				BSPHCL			
54	BIHARSHARIFF-BEGUSARAI	BSPHCL	BSPHCL				BSPHCL			
55	MTPS-BEGUSARAI	BSPHCL	BSPHCL				BSPHCL			
56	MTPS-DARBHANGA	BSPHCL	BSPHCL				BSPHCL			
57	MTPS-GOPALGANJ	BSPHCL	BSPHCL				BSPHCL			

58	SASARAM-ARRAH	POWERGRID	POWERGRID				POWERGRID			
60	WARIA-PARULIA	DVC	DVC				DVC			
61	WARIA-MEJIA	DVC	DVC				DVC			
62	CTPS A-DHANBAD	DVC	DVC				DVC			
63	CTPS B-DHANBAD	DVC	DVC				DVC			
64	DHANBAD-GIRIDIH	DVC	DVC				DVC			
65	BOKARO-JAMSHEDPUR	DVC	DVC				DVC			
66	KASBA-EMBYPASS	CESC	WBSETCL				CESC			
67	KASBA-SUBHASGRAM(WB)	WBSETCL	WBSETCL				WBSETCL			
69	BOKARO-CTPS B	DVC	DVC				DVC			
70	KALYANESHWARI-MEJIA	DVC	DVC				DVC			
71	KALYANESHWARI-BURNPUR	DVC	DVC				DVC			
72	BURNPUR-MEJIA	DVC	DVC				DVC			
73	MEJIA-MUCHIPARA	DVC	DVC				DVC			
74	MEJIA-BARJORA	DVC	DVC				DVC			
75	PARULIA-MUCHIPARA	DVC	DVC				DVC			
76	BOKARO-RAMGARH	DVC	DVC				DVC			
77	PTPS -TENUGHAT	JUSNL	JUSNL				TVNL			
78	PATRATU-HATIA	JUSNL	JUSNL				JUSNL			
79	CHANDIL-RAMCHANDRAPUR	JUSNL	JUSNL				JUSNL			
80	JEYANAGAR-U.KOLAB	OPTCL	OPTCL				OHPC			
81	MERAMANDALI-NALCO	OPTCL	NTPC				NALCO			
82	MERAMUNDALI - BIDANASI	OPTCL	OPTCL				OPTCL			
83	MERAMUNDALI - DUBURI(OLD)	OPTCL	OPTCL				OPTCL			
84	KATAPALLI-BUDHIPADAR	OPTCL	OPTCL				OPTCL			
85	IBTPS - BUDHIPADAR	OPTCL	OPGC				OPTCL			
86	TARKERA-BUDHIPADAR	OPTCL	OPTCL				OPTCL			
87	TARKERA-CHANDIPOSH	OPTCL	OPTCL				OPTCL			
88	TARKERA-BARKOT	OPTCL	OPTCL				OPTCL			
89	RENGALI-CHANDIPOSH	OPTCL	OPTCL				OPTCL			
90	RENGALI-BARKOT	OPTCL	OPTCL				OPTCL			
91	U. KOLAB-THERUVALI	OPTCL	OHPC				OPTCL			
92	U. KOLAB-JAYANAGAR	OPTCL	OHPC				OPTCL			
93	BALIMELA-JEYNAGAR	OPTCL	OHPC				OPTCL			
94	TALCHER-MERAMUNDALI	OPTCL	NTPC				OPTCL			
95	MERAMUNDALI - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
96	MENDHASAL -BHANJNAGAR	OPTCL	OPTCL				OPTCL			
97	MENDHASAL - NAYAGARH	OPTCL	OPTCL				OPTCL			
98	NAYAGARH - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
99	THERUVALLI - BHANJNAGAR	OPTCL	OPTCL				OPTCL			
100	THERUVALLI - LAXMIPUR	OPTCL	OPTCL				OPTCL			
101	THERUVALLI - NARENDRAPUR	OPTCL	OPTCL				OPTCL			
102	MENDHASAL - NARENDRAPUR	OPTCL	OPTCL				OPTCL			
103	MENDHASAL - CHANDAKA	OPTCL	OPTCL				OPTCL			
104	JAYANAGAR - LAXMIPUR	OPTCL	OPTCL				OPTCL			
105	UIHEP-THERUVALI	OPTCL	OHPC				OPTCL			
106	KTPS-HOWRAH	WBSETCL	WBPDCL				WBSETCL			
107	BISHNUPUR-SANTALDIH	WBSETCL	WBSETCL				WBPDCL			
108	SANTALDIH-BIDHANNAGR	WBSETCL	WBDPCL				WBSETCL			
109	BIDHANNAGAR-DPL	WBSETCL	WBSETCL				DPL			
110	BIDHANNAGAR-BAKRESWAR	WBSETCL	WBSETCL				WBPDCL			
111	SATGACHIA-BAKRESWAR	WBSETCL	WBSETCL				WBPDCL			
112	KHARAGPUR- MIDNAPORE I&II	WBSETCL	WBSETCL				WBSETCL			
113	ARAMBAGH- MIDNAPORE	WBSETCL	WBSETCL				WBSETCL			
114	ARAMBAGH-N.BISHNUPUR	WBSETCL	WBSETCL				WBSETCL			
115	ARAMBAGH- DOMJUR	WBSETCL	WBSETCL				WBSETCL			
116	ARAMBAGH- RISHRA	WBSETCL	WBPDCL				WBSETCL			
117	JEERAT-NEWTOWN	WBSETCL	WBSETCL				WBSETCL			
118	JEERAT-SATGACHIA	WBSETCL	WBPDCL				WBSETCL			
119	SATGACHIA-KRISHNANAGAR	WBSETCL	WBPDCL				WBSETCL			
120	BAKRESWAR-SADAIPUR	WBSETCL	WBPDCL				WBSETCL			
120	SADAIPUR-GOKARNO	WBSETCL	WBPDCL				WBSETCL			

121	GOKARNO-SAGARDIGHI	WBSETCL	WBSETCL				WBPDCL			
122	GOKARNO-KRISHNANAGAR	WBSETCL	WBSETCL				WBPDCL			
123	SUBHASGRAM (WB)- LAKHIKANTPUR	WBSETCL	WBSETCL				WBSETCL			
124	DALKHOLA-PURNEA	POWERGRID	WBSETCL				WBSETCL			
125	BIRPARA-BINAGURI	POWERGRID	POWERGRID				POWERGRID			
	BINAGURI-SILIGURI	POWERGRID	POWERGRID				POWERGRID			
126	JEERAT-KASBA	WBSETCL	WBPDCL				WBSETCL			
127	JEERAT- DHARAMPUR	WBSETCL	WBPDCL				WBSETCL			
128	DHARAMPUR- RISHRA	WBSETCL	WBPDCL				WBSETCL			
	SILIGURI-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID			
129	DALKHOLA-KISHANGANJ	POWERGRID	POWERGRID				POWERGRID			
130	DALKHOLA-MALDA	POWERGRID	POWERGRID				POWERGRID			
131	RANGPOO- NEW MELLI	POWERGRID	POWERGRID				POWERGRID			
132	ALIPURDUAR-BIRPARA	POWERGRID	POWERGRID(ER)				POWERGRID(ER)			
	C) 132 KV LINES									
131	MUZZAFARPUR- DHALKEBAR	Cross Border Power Trans. Ltd.	POWERGRID				NEPAL			
132	BARHI - B'SHARIFF	BSPHCL & DVC	DVC				BSPHCL			
133	BARHI-RAJGIR	BSPHCL & DVC	DVC				BSPHCL			
134	DEOGHAR-SULTANGANJ	BSPTCL & JUSNL	JUSNL				BSPHCL			
135	KAHALGAON-KAHALGAON	POWERGRID	BSPHCL				NTPC			
136	ARRAH-ARRAH	POWERGRID	BSPHCL				POWERGRID			
137	DUMRAON-ARRAH	POWERGRID	BSPHCL				POWERGRID			
138	PURNEA(PG)-PURNEA(BS)	BSPHCL	BSPHCL				POWERGRID			
139	PURNEA(PG)-KISANGANJ	BSPHCL	BSPHCL				POWERGRID			
140	DEHRI--PUSUALI	POWERGRID	BSPHCL				POWERGRID			
141	KARMANASA--PUSUALI	POWERGRID	BSPHCL				POWERGRID			
142	KARMANASA-SAHUPURI	BSPHCL & UPPCL	BSPHCL				UPPCL			
143	KARMANASA-CHANDAULI	BSPHCL & UPPCL	BSPHCL				UPPCL			
144	SONENAGAR - RIHAND	BSPHCL & UPPCL	BSPHCL				UPPCL			
145	MAITHON-JAMTARA	DVC & JUSNL	DVC				JUSNL			
146	KHARAGPUR-KHARAGPUR	DVC	DVC				WBSETCL			
147	KOLAGHAT-KOLAGHAT	DVC	DVC				WBSETCL			
148	MACHKUND-VIZAG	APTRANSCO	OPTCL				APTRANSCO			
149	JODA-KENDPOSI	OPTCL & JUSNL	OPTCL				JUSNL			
150	BARIPADA-BANGIRIPOSI	OPTCL	POWERGRID				OPTCL			
151	BARIPADA-BARIPADA	OPTCL	POWERGRID				OPTCL			
152	GARWA-SONENAGAR	BSPHCL & JUSNL	JUSNL				BSPHCL			
153	LALMATIA-SABOUR	BSPHCL & JUSNL	JUSNL				BSPHCL			
154	CHANDIL-MANIQUE	JUSNL & DVC	JUSNL				DVC			
155	PATRATU-PATRATU	JUSNL & DVC	JUSNL				DVC			
156	GARWA-RIHAND	JUSNL & UPPCL	JUSNL				UPPCL			
157	RANGIT-RAMMAM	POWERGRID	NHPC				WBSETCL			
158	KAHALGAON-SABOUR	POWERGRID	NTPC				BSPHCL			
159	KAHALGAON-LALMATIA	POWERGRID	NTPC				JUSNL			
160	BIRPARA-BIRPARA	WBSETCL	POWERGRID				WBSETCL			
161	MALDA-MALDA	WBSETCL	POWERGRID				WBSETCL			
162	SILIGURI-NBU	WBSETCL	POWERGRID				WBSETCL			
	SILIGURI - NJP	WBSETCL	POWERGRID				WBSETCL			
163	RANGIT -SAGBARI	SIKKIM	NHPC				SIKKIM			
164	ARHA-JAGDISHPUR	BSPHCL	POWERGRID				BSPHCL			
165	RANGIT-RANGPO	POWERGRID	NHPC				POWERGRID			
166	RANGIT-KURSEONG	POWERGRID	NHPC				WBSETCL			
167	RANGIT-SAGBARI	SIKKIM	NHPC				SIKKIM			
168	CHUJACHEN-GANGTOK	POWERGRID & GATI	GATI INFRA				POWERGRID			
169	BANKA-SABOUR	BSPTCL	POWERGRID				BSPTCL			
170	BANKA-BANKA	BSPTCL	POWERGRID				BSPTCL			

171	RANGPO-CHUJACHEN	GATI INFRA	POWERGRID				GATI INFRA			
172	NJP-MELLI	POWERGRID	POWERGRID				SIKKIM			
173	RANGPO- MELLI	POWERGRID+GATI INFRA	POWERGRID				SIKKIM			
174	NJP-MELLI	POWERGRID	POWERGRID				SIKKIM			
175	LAKHISARAI - JAMAUI	BSPHCL	POWERGRID				BSPHCL			
176	RANGIT - RABANGLA	POWERGRID	NHPC				SIKKIM			
177	KALINGPONG-MELLI	WBSETCL & SIKKIM	WBSETCL				SIKKIM			
178	BANKA-SULTANGUNJ	BSPTCL	POWERGRID				BSPTCL			

PMU Installation and commissioning status of ER as on 20.04.2017

Annexure- B.26

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
			78			286	175	73	61	51	45	40	40	24	37	
1	ER-II	West Bengal	Arambagh	WBSETCL	CR	3	1	Yes	Yes	done	done	pending	pending	Pending	pending	CT/ PT/ DI interfacing pending due to permission issue.
2	ER-II	West Bengal	BAKRESHWAR TPS	WBSETCL	CR	4	1	Yes	Yes	done	pending	pending	pending	Pending	pending	Panel erected. Cable laying pending due to permission issue.
3	ER-II	West Bengal	Bidhannagar	WBSETCL	CR	3	1	Yes	Yes	done	done	pending	pending	Pending	pending	Panel erected. Cable laying and termination at PMU panel completed. CT/ PT/ DI interfacing pending due to permission issue.
4	ER-II	West Bengal	JEERAT	WBSETCL	CR	2	1	Yes	Yes	done	done	done	done	done	pending	SAT pending as customer didn't agree to witness SAT.
5	ER-II	West Bengal	Kolaghat TPS	WBSETCL	CR	4	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
6	ER-II	West Bengal	KASBA	WBSETCL	CR	3	1	Yes	Yes	done	done	done	done	done	pending	SAT pending as customer didn't agree to witness SAT.
7	ER-II	DVC	DSTPS	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
8	ER-II	DVC	Kodarma TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	Communication panel does not exist.
9	ER-II	DVC	MEJIA-B	DVC	CR	2	1	Yes	Yes	done	done	done	done	done	done	Integrated on 07.12.2016
10	ER-II	DVC	Maithon RB TPS	DVC	CR	2	1	Yes	Yes	pending	pending	pending	pending	Pending	pending	Work started on 04.07.2016. Panel shifted. Team demobilised due to access issue and panel location issue.
11	ER-II	DVC	Raghunathpur TPS	DVC	CR	3	1	Yes	Yes	done	done	done	done	Pending	done	Communication link was not available during work.
12	ER-II	DVC	MEJIA	DVC	CR	5	2	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
13	ER-II	DVC	Bokaro	DVC	CR	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.06.2016
14	ER-II	DVC	CTPS(Chanderpura)	DVC	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
15	Odisha	Orissa	Budhipadar	OPTCL	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
16	Odisha	Orissa	MENDHASAL	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	OPTCL is not providing CT/ PT connection for Meeramundali-2 feeder.
17	Odisha	Orissa	MERAMANDALI	OPTCL	CR	6	2	Yes	Yes	done	under progress	pending	pending	Pending	pending	
18	Odisha	Orissa	RENGALI	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Integration delayed because CAT-6 cable is faulty.
19	Odisha	Orissa	U.KOLAB	OPTCL	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	
20	Odisha	Orissa	BALIMELA(H)	OPTCL	CR	3	1	Yes	Yes	done	done	partially done	pending	Pending	done	OPTCL denied to provide DC connection. CT/PT/DI interfacing pending due to permission issue.
21	ER-II	West Bengal	Durgapur	Powergrid	CR	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 30.05.2016.
22	ER-II	West Bengal	FARRAKA	NTPC	CR	5	2	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
23	Odisha	Orissa	Indrawati	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
24	Odisha	Orissa	Indrawati HPS	OPTCL	CR	1	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	OPTCL denied to provide DC connection.
25	Odisha	Orissa	JEYPORE	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
26	ER-II	West Bengal	MAITHON	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.06.2016.
27	ER-II	West Bengal	MALDA	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.06.2016
28	Odisha	Orissa	Rengali	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 04.05.2016
29	Odisha	Orissa	ROURKELA	Powergrid	Kiosk	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.04.2016
30	ER-II	West Bengal	Binaguri	Powergrid	CR	7	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 28.07.2016
31	ER-II	West Bengal	SUBHASHGRAM	Powergrid	Kiosk	2	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 22.06.2016
32	Odisha	Orissa	Baripada	Powergrid	CR	3	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 30.01.2017.
33	Odisha	Orissa	Bolangir	Powergrid	CR+Kiosk	2	3	Yes	Yes	done	done	done	done	Pending	done	Communication Link not available.
34	Odisha	Orissa	ANGUL	Powergrid	Kiosk	10	11	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.03.2017.

PMU Installation and commissioning status of ER as on 20.04.2017

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
35	Odisha	Orissa	Keonjhar	Powergrid	CR	2	3	Yes	Yes	done	done	done	done	done	done	PMU integrated on 18.01.2017.
36	Odisha	Orissa	Jharsuguda	Powergrid	Kiosk	8	9	Yes	Yes	done	done	done	done	done	done	PMU integrated on 29.07.2016
37	Odisha	Orissa	GMR	GMR	Kiosk	3	4	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
38	ER-II	Sikkim	RANGPO	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mtrs. Will be integrated on Mar 2017.
39	ER-II	West Bengal	Baharampur	Powergrid	CR	2	3	Yes	Yes	done	done	done	done	done	done	PMU integrated on 10.05.2016
40	ER-II	West Bengal	Birpara	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 15.07.2016.
41	ER-II	DVC	CTPS B	DVC	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
42	ER-II	DVC	KALYANESWARI	DVC	CR	4	1	Yes	Yes	done	done	done	done	done	done	PMU integrated on 02.01.2017.
43	ER-II	DVC	PARULIA	DVC	CR	5	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 21.02.2017.
44	ER-II	West Bengal	Purulia PSP	WBSETCL	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
45	ER-II	Jharkhand	Bokaro TPS	DVC	CR	1	1	Yes	Yes	done	pending	pending	pending	Pending	pending	
46	ER-II	West Bengal	Durgapur TPS	DVC	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
47	Odisha	Orissa	TTPS(Talcher)	OPTCL	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
48	Odisha	Orissa	TALCHER	NTPC	CR	5	2	No	No	N/A	N/A	N/A	N/A	N/A	N/A	NTPC is not allowing to deliver mterial.
49	ER-II	Sikkim	TEESTA	Powergrid	CR	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
50	Odisha	Orissa	Uttara	Powergrid	CR	2	1	Yes	Yes	done	done	done	done	Pending	pending	Communication link from s/s to ERLDC and NTAMC to be provided by PGCIL.
51	Odisha	Orissa	Jindal	JITPL	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
52	Odisha	Orissa	Monnet	Monnet	CR	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
53	Odisha	Orissa	Strelite	Strelite	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
54	Odisha	Orissa	Ind barath	Ind barath	Kiosk	1	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
55	ER-II	Sikkim	New Melli	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
56	ER-II	Sikkim	TT Pool	Powergrid	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.
57	ER-II	West Bengal	Alipurduar	Powergrid	CR	6	7	Yes	Yes	partially done	partially done	pending	pending	Pending	pending	Work started on 22.12.2016. 4 PMU panels and network panel installed. Rest 2 PMU panels could not be erected because location not finalised. Cable laying and termination at PMU panel completed for 6 feeders. CT/PT interfacing pending due to unavailability of shutdown. PGCIL is asking to take DI points from field, which is not in scope. Work is held up. Team demobilised.
58	ER-II	West Bengal	Rajarhat	Powergrid	CR	2	1	Yes	Yes	done	pending	pending	pending	Pending	pending	Work withheld due to localite agitation issue.
59	ER-I	Jharkhand	JAMSHEDPUR	Powergrid	CR	6	2	Yes	Yes	done	done	done	done	done	done	PMU integrated on 14.02.2017
60	ER-I	BIHAR	Kahalgaon(KHSTPP)	NTPC	CR	6	2	Yes	Yes	done	done	pending	pending	Pending	pending	Work withheld due to gate pass issue.
61	ER-I	BIHAR	Purnea	Powergrid	CR	6	2	Yes	Yes	done	done	pending	pending	done	pending	PMU integrated on 13.04.2017
62	ER-I	BIHAR	PATNA	Powergrid	Kiosk	6	7	Yes	Yes	done	done	done	done	done	done	PMU integrated on 11.04.2017
63	ER-I	Jharkhand	RANCHI	Powergrid	Kiosk	12	13	Yes	Yes	done	under progress	pending	pending	Pending	pending	
64	ER-I	BIHAR	SASARAM(Pusauli)	Powergrid	CR+Kiosk	9	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
65	ER-I	BIHAR	BARH	NTPC	CR	4	1	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
66	ER-I	BIHAR	LakhiSarai	Powergrid	Kiosk	4	5	Yes	Yes	done	done	done	done	Pending	done	SAT completed. PMU not integrated because FO cable was not delivered due to road permit issue.
67	ER-I	BIHAR	BANKA	Powergrid	Kiosk	4	5	Yes	Yes	done	done	done	done	Pending	pending	SAT pending. PMU not integrated because switch was not delivered to site. Switch in transit.

PMU Installation and commissioning status of ER as on 20.04.2017

S.No	Region	State	Sub-Station	Owner/ Utility	S/S type	PMU	TOTAL PANEL QTY	PMU Delivery status	Cable Delivery status	Erection	Cable laying	CT/PT/DI termination	Commissioning	Integration	SAT	Remarks
68	ER-I	Jharkhand	Chaibasa	Powergrid	Kiosk	4	5	Yes	Yes	done	under progress	pending	pending	Pending	pending	
69	ER-I	BIHAR	765kv Gaya	Powergrid	Kiosk	11	12	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.02.2017
70	ER-I	Jharkhand	765/400kV Ranchi (N)	Powergrid	Kiosk	8	9	Yes	Yes	done	done	done	done	done	done	PMU integrated on 24.02.2017
71	ER-I	Bihar	Biharshariff	Powergrid	CR	9	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	
72	ER-I	Bihar	MUZAFFAPUR	Powergrid	CR	5	2	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
73	ER-I	Jharkhand	Daltonganj	Powergrid	Kiosk	2	3	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Road permit for Switch is pending.
74	ER-I	Bihar	Kishanganj (karandegh	Powergrid	CR	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mts.
75	ER-I	Jharkhand	Jharkhand Pool (Chan	Powergrid	Kiosk	4	1	Yes	Yes	done	done	done	done	Pending	done	S/S couldn't be integrated because distance between PMU panel and SDH is more than 100 mts.
76	ER-I	Jharkhand	Patratu	Jharkhand	CR	3	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
77	ER-I	Jharkhand	Tenughat	Jharkhand	CR	2	1	Yes	No	N/A	N/A	N/A	N/A	N/A	N/A	
78	ER-I	Bihar	Barauni PP	Bihar	CR	0	0	No	No	N/A	N/A	N/A	N/A	N/A	N/A	BOQ not finalized.

ER PMU site activity Summary:

Sl. No.	Region	Utility	As per approved BOQ		Supplied		Installed		Commissioned		Integrated to ERLDC/ SLD	
			No. of Substations	No. of PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU
1	ER-I	Powergrid	15	94	15	94	11	69	8	47	5	37
2	ER-I	NTPC	2	10	2	10	1	6	0	0	0	0
3	ER-I	Jharkhand	2	5	2	5	0	0	0	0	0	0
4	ER-I	Bihar	1	0	0	0	0	0	0	0	0	0
	ER-I	**Total**	**20**	**109**	**19**	**109**	**12**	**75**	**8**	**47**	**5**	**37**
1	ER-II	Powergrid	13	42	11	42	10	39	8	33	7	29
2	ER-II	NTPC	1	5	1	5	0	0	0	0	0	0
3	ER-II	DVC	13	37	13	37	10	29	9	28	4	13
4	ER-II	WBSETCL	7	21	7	21	5	15	2	5	2	5
	ER-II	**Total**	**34**	**105**	**32**	**105**	**25**	**83**	**19**	**66**	**13**	**47**
1	Odisha	Powergrid	10	38	10	38	10	38	10	38	6	30
2	Odisha	OPTCL	8	19	6	16	5	15	3	6	0	0
3	Odisha	NTPC	1	5	1	5	0	0	0	0	0	0
4	Odisha	IPP	5	10	5	10	0	0	0	0	0	0
	Odisha	**Total**	**24**	**72**	**22**	**69**	**15**	**53**	**13**	**44**	**6**	**30**
	ER	**Total**	**78**	**286**	**73**	**283**	**52**	**211**	**40**	**157**	**24**	**114**

Status of PDS system Installation and commissioning at ER as on 20.04.2017

Sl. No.	Site Name	Work Progress
1	ERLDC	Installed, powered up, functioning and integrated with DVC, WBSETCL and OPTCL PDS system.
2	Backup-NLDC	POSOCO did not provide space for PDS system installation.
3	SLDC, Maithon	Installed, powered up, functioning and integrated with ERLDC PDS system.
4	SLDC, Bhubaneswar	Installed, powered up, functioning and integrated with ERLDC PDS system.
5	SLDC, Howrah (WBSETCL)	Installed, powered up, functioning and integrated with ERLDC PDS system.

Annexure – B.27

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	

Annexure- B.28

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	ERS towers in use
1	Durgapur, ER-II	1 Set (8 towers)	
2	Rourkela, ER-II	3 towers incomplete shape	
3	ER-I (located at Jamshedpur)	15 towers (10 nos Tension tower and 5 nos suspension tower)	

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

- 220 kV ERS towers: 42 nos located at Mancheswar, Chatrapur & Budhipadar
- 400 kV ERS towers: 2 nos located at Mancheswar.
- 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) WBSETCL informed that they have placed order for 2 sets of ERS towers on 31.10.2014 and expected by June, 2015.

4) The 25th ERPC meeting held on 21.09.2014, the board 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.

Availability of Emergency Restoration System in BSPTCL system

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**	

Note:-

- 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 is currently available in our system** (as mentioned in above table with remarks "New").
- Same ERS tower is used in both 220 Kv and 132 kV circuits.

Annexure-B29

List of drifted meters to be replaced in Phase-II

SNO	LOCATION	METER SNO	FEEDER NAME
1	MUZAFFARPUR(PG)	NP-5074-A	400 KV MUZAFARPUR (PG)-GORAKHPUR(NR)-1
2	MUZAFFARPUR(PG)	NP-9981-A	400 KV MUZAFARPUR (PG)-GORAKHPUR(NR)-2
3	MEJIA(DVC)	NP-5226-A	MEJIA END OF MAITHON(PG)-1
4	MEJIA(DVC)	NP-5227-A	MEJIA END OF MAITHON(PG)-2
5	RANCHI(PG)	NP-5835-A	400 KV RANCHI-SIPAT-1 (WR)
6	RANCHI(PG)	NP-5836-A	400 KV RANCHI-SIPAT-2 (WR)
7	BINAGURI(PG)	NP-5884-A	BINAGURI END OF BONGAIGAON (NER)-1
8	BINAGURI(PG)	NP-5885-A	BINAGURI END OF BONGAIGAON (NER)-2
9	ROURKELLA(PG)	NP-5933-A	ROURKELA END OF TARKERA (GRIDCO)-2
10	KHARAGPUR(PG)	NP-7563-A	400 KV KHARAGPUR -BARIPADA(PG)
11	MPL	NP-7970-A	MAITHON RB END OF RANCHI (PG)-1 (MAIN)
12	MPL	NP-7971-A	MAITHON RB END OF RANCHI (PG)-2 (MAIN)
13	MPL	NP-7564-A	MAITHON RB END OF MAITHON (PG)-1 (MAIN)
14	MPL	NP-6518-A	MAITHON RB END OF MAITHON (PG)-2 (MAIN)
15	RANCHI NEW(PG)	NP-7847-A	765 KV RANCHI NEW -DHARAMJAYGARH-1
16	RANCHI NEW(PG)	NP-8753-A	765 KV RANCHI NEW -DHARAMJAYGARH-2
17	STERLITE	NP-7572-A	400 KV STERLITE - RAIGARH(WR)-II(MAIN)
18	STERLITE	NP-7372-A	400 KV STERLITE - ROURKELLA(PG)-II(MAIN)
19	ROURKELLA(PG)	NP-5928-A	400 KV ROURKELLA(PG)-RAIGARH(WR)
20	MIRAMUNDALI(OPTCL)	NP-5977-A	400 KV MIRAMUNDALI-ANGUL-1
21	MIRAMUNDALI(OPTCL)	NP-5976-A	400 KV MIRAMUNDALI-ANGUL-2
22	SUNDERGARH(PG)	NP-7634-A	765 KV SUNDERGARH-DHARAMJAYGARH-1
23	SUNDERGARH(PG)	NP-7638-A	765 KV SUNDERGARH-DHARAMJAYGARH-2

Annexure-B35

Details of stations/Units required to operate under RGMO/FGMO as per IEGC							Whether operating under RGMO	indicate in case of status is not available
Name of State	Type	Name of Uitlity	Sector (CS/SS/Private)	Name of Station	Name of Stage/ Unit	Installed capacity (MW)		
JHARKHAND	Thermal	TVNL	SS	Tenughat	1	210	No	Difficulties in implementing RGMO & exemption not
			SS		2	210	No	
	Hydro	JSEB	SS	Subarnrekha	1	65	Yes	
			SS		2	65	Yes	
WEST BENGAL	Termal	WBPDCL	SS	Bandel TPS	1	82.5	No	
			SS		2	82.5	No	
			SS		3	82.5	No	
			SS		4	82.5	No	
			SS		5	210	No	
			SS	Santaldih	5	250	No	Unit#6 could not be implemented because of some technical problem
			SS		6	250	No	
			SS	Kolaghat	1	210	No	Nil
			SS		2	210	No	Nil
			SS		3	210	No	Nil
			SS		4	210	No	Nil
			SS		5	210	No	Nil
			SS		6	210	No	Nil
			SS	Bakreshwar	1	210	Yes	
			SS		2	210	Yes	
			SS		3	210	Yes	
			SS		4	210	Yes	
			SS		5	210	Yes	
			SS	Sagardighi	1	300	No	Without OEM support it is not possible to put in FGMO/RGMO. At present OEM support is not
			SS		2	300	No	
	Hydro		SS	PPSP	1	225	Yes	In 134th OCC WBPDCL informed that the units are in RGMO/FGMO mode
			SS		2	225	Yes	
			SS		3	225	Yes	
			SS		4	225	Yes	
	Thermal	CESC	SS	Budge-Budge	1	250	Yes	
			SS		2	250	Yes	
			SS		3	250	Yes	
			SS	Haldia	1	300	Yes	
			SS		2	300	Yes	
	Thermal	DPL	SS	DPL	7	300	Yes	
Orissa		OPGC	SS	IB TPS	1	210	No	Not adequate response in RGMO
			SS		2	210	No	
	Hydro	OHPC	SS	Burla	1	49.5	No	
			SS		2	49.5	No	
			SS		3	32	No	
			SS		4	32	No	
			SS		5	37.5	No	
			SS		6	37.5	No	
			SS		7	37.5	No	
			SS	Balimela	1	60	No	
			SS		2	60	No	
			SS		3	60	No	
			SS		4	60	No	
			SS		5	60	No	
			SS		6	60	No	
			SS		7	75	No	
			SS		8	75	No	
			SS	Rengali	1	50	No	
			SS		2	50	No	
			SS		3	50	No	
			SS		4	50	No	
			SS		5	50	No	
			SS	Upper Kolab	1	80	No	
			SS		2	80	No	
			SS		3	80	No	
			SS		4	80	No	
			SS		1	150	No	

			SS	Indravati	2	150	No	
			SS		3	150	No	
			SS		4	150	No	
			64					
Central Sector	Thermal	DVC	CS	Bokaro-A	1	500	No	RGMO will be service once the unit comes in CMC mode of operation. It will be done shortly in presence of BHEL experts.
			CS	Bokaro-B	1	210	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS		2	210	No	
			CS		3	210	No	
			CS	CTPS	2	140	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS		3	140	No	
			CS		7	250	Yes	
			CS		8	250	Yes	
			CS	DTPS	4	210	No	Not possible due to non availability of Electro hydraulic governing. The units will be decommissioned shortly.
			CS	Mejia	1	210	No	Not possible due to non availability of Electro
			CS		2	210	No	
			CS		3	210	No	Action has been initiated to put in RGMO, but testing is not yet completed.
			CS		4	210	Yes	
			CS		5	250	Yes	
			CS		6	250	Yes	
			CS	Mejia - B	7	500	Yes	
			CS		8	500	Yes	
			CS	DSTPS	1	500	Yes	
			CS		2	500	Yes	
			CS	KODERMA	1	500	Yes	
			CS		2	500	Yes	
			CS	RTPS	1	600	Yes	
			CS		2	600	Yes	
	Hydro		CS	Panchet	1	40	No	RGMO mode of operation
			CS		2	40	No	would not be possible for
	Thermal	NTPC	CS	Farakka STPP-I	1	200	Yes	
			CS		2	200	Yes	
			CS		3	200	Yes	
			CS	Farakka STPP-II	1	500	Yes	
			CS		2	500	Yes	
			CS	Farakka-U#6		500	Yes	Kept in RGMO mode from April, 2014
			CS	Kahalgoan STPP	1	210	Yes	
			CS		2	210	Yes	
			CS		3	210	Yes	
			CS		4	210	Yes	
			CS		5	500	Yes	
			CS		6	500	Yes	
			CS		7	500	Yes	
			CS	Talcher STPP Stg-I	1	500	Yes	
			CS		2	500	Yes	
			CS	Barh	5	660	Yes	
			CS	Barh	6	660	Yes	
	Hydro	NHPC	CS	Teesta HEP	1	170	Yes	
			CS		2	170	Yes	
			CS		3	170	Yes	
			45					
	Thermal	IPP	PS	Maithon RB TPP	1	525	Yes	
			PS		2	525	Yes	
			PS	Sterlite	1	600	Yes	
			PS		2	600	Yes	
			PS		3	600	Yes	
			PS		4	600	Yes	
			PS	Adhunik Power	1	270	Yes	
			PS		2	270	Yes	

IPP	Hydro	IPP	PS	JLHEP	1	48	No	(RoR project with 3 hours pondage)
			PS		2	48	No	
			PS	Chujachen HEP	1	49.5	No	(RoR project with 3 hours pondage)
			PS		2	49.5	No	
			PS	Teesta Urja	1	200	No	could be put in RGMO mode but because of transmission evacuation constraint RGMO/FGMO is disabled
			PS		2	200	No	
			PS		3	200	No	
			PS		4	200	No	
			PS		5	200	No	
			PS		6	200	No	
			PS	Dikchu	1	48	No	(RoR project with 3 hours pondage)
			PS		2	48	No	

20

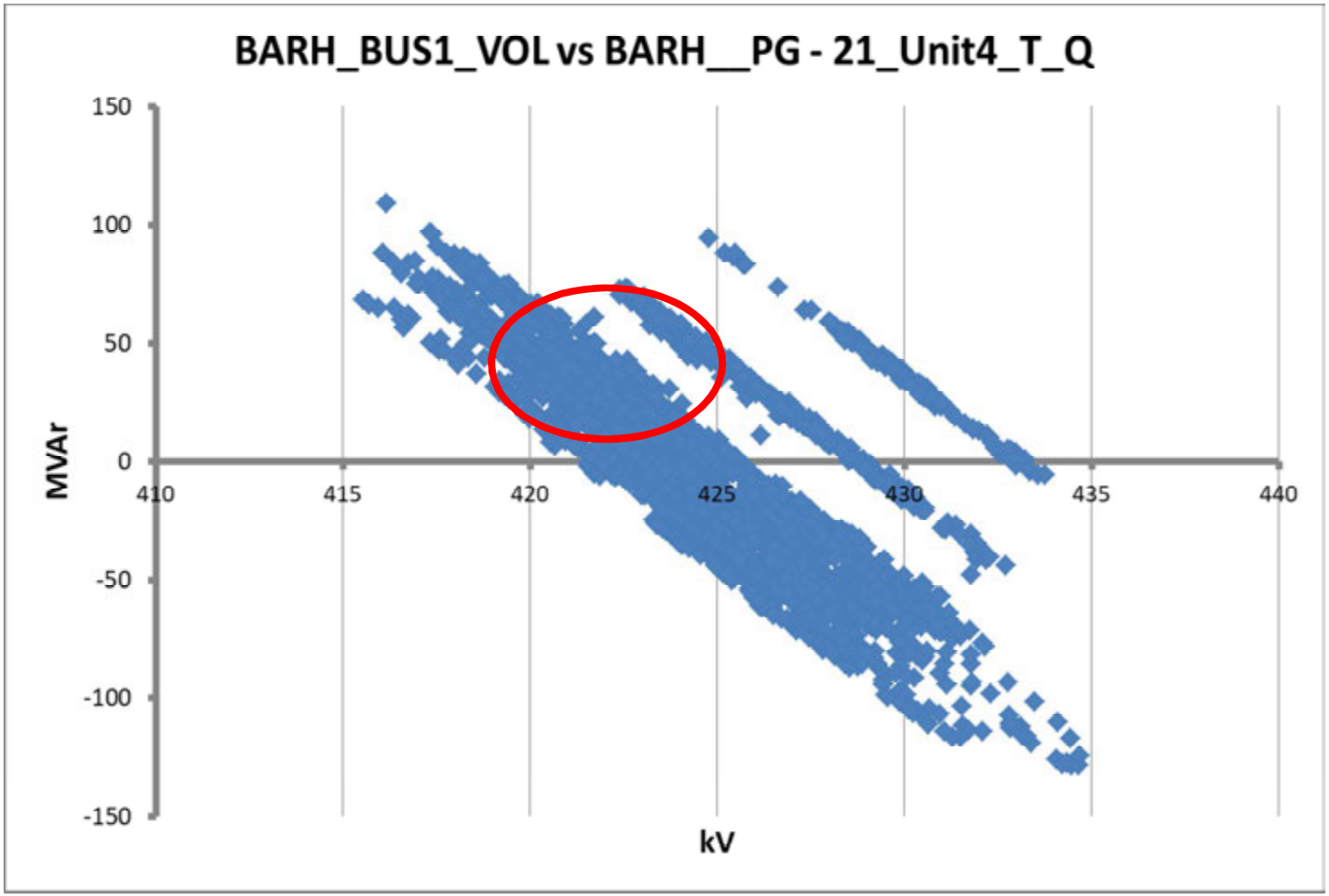
Reactive power performances of various units in the month of September, 2017

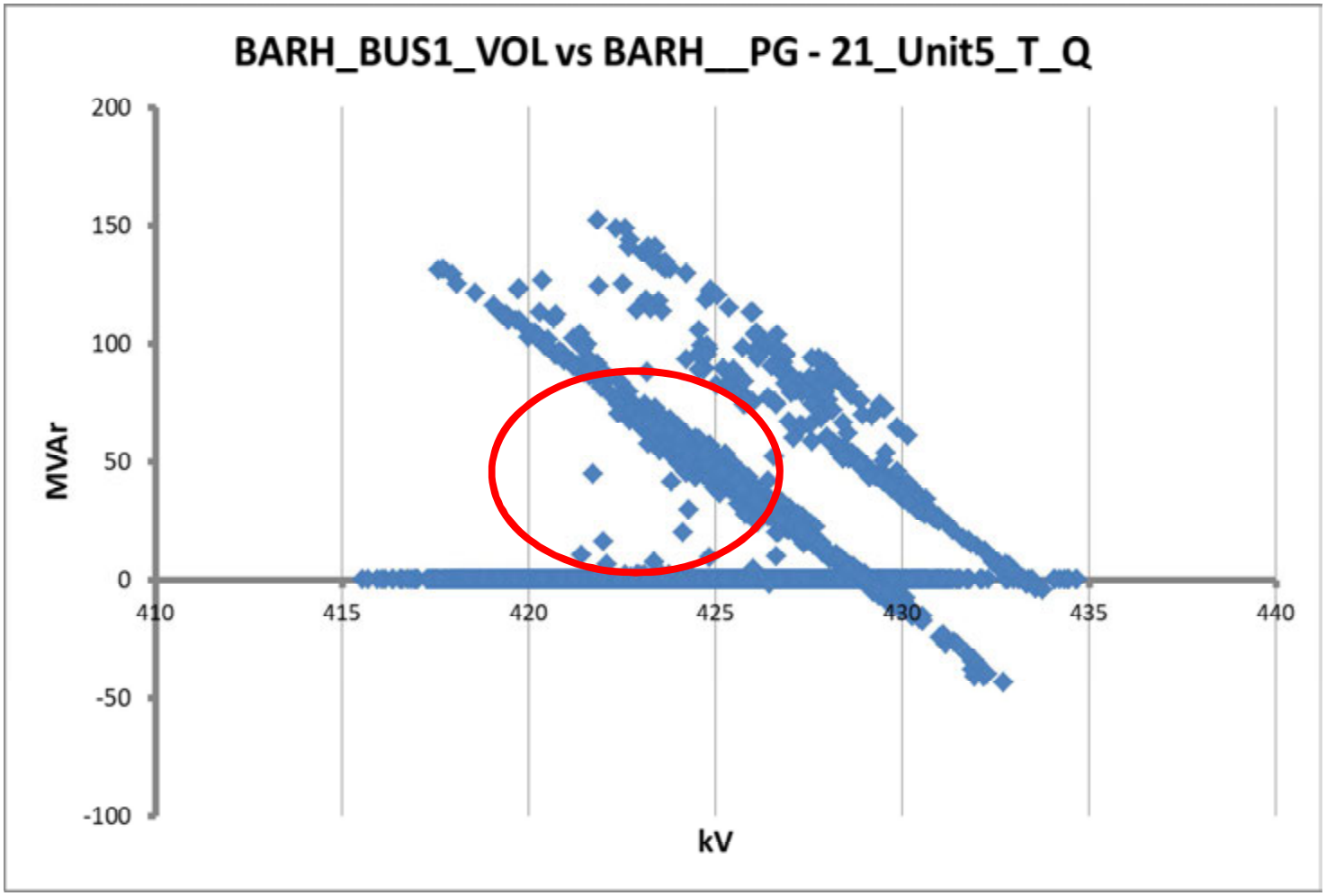
Voltage & reactive power injection (Unit MVAr injection-MVAr absorption in GT) at terminal point of generating units are compared for various generating units in ER.

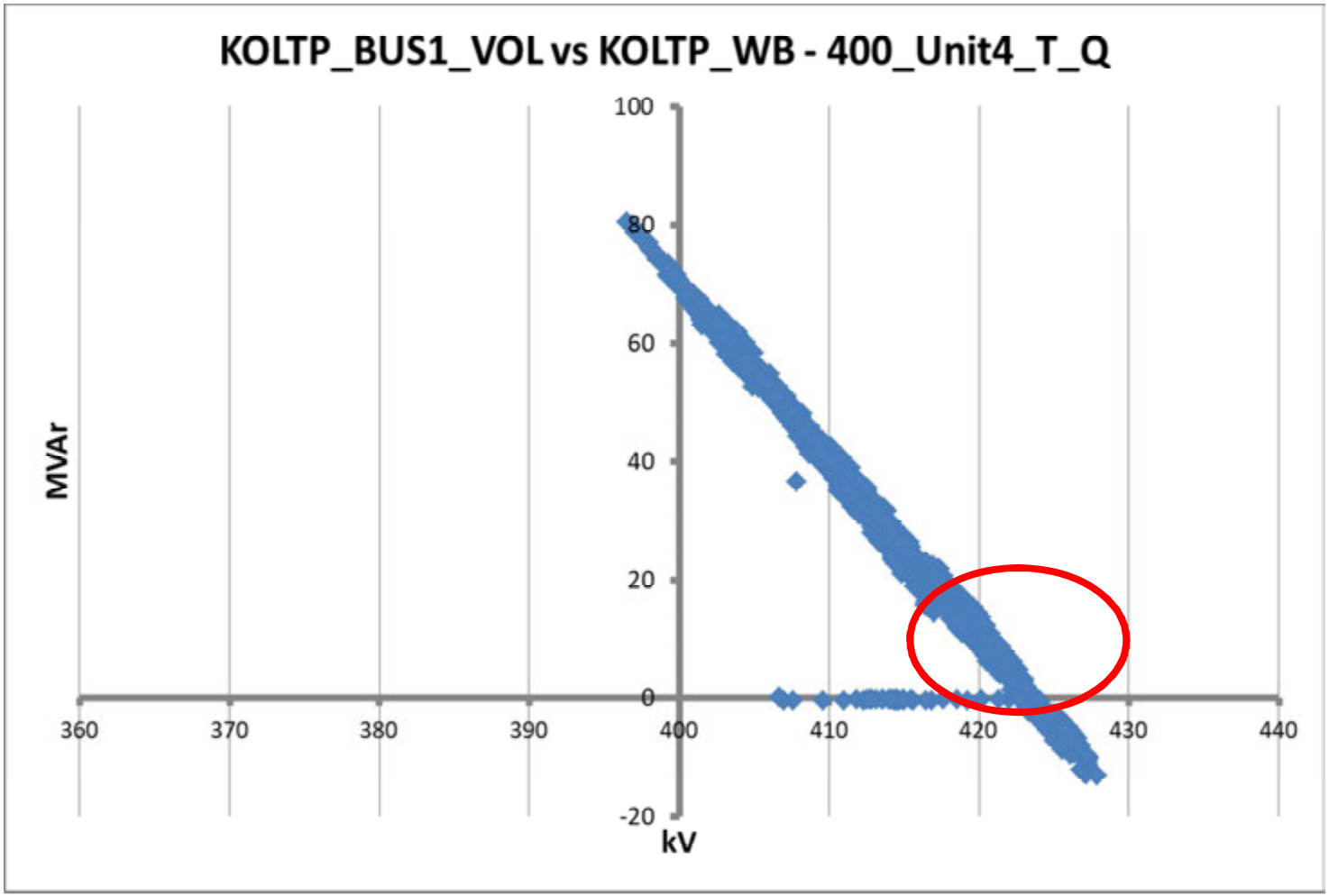
- Scatter plot is plotted with taking
  - Terminal voltage across x axis
  - Reactive power injection across y axis
  - (Nominal terminal voltage (kV), 0 MVAr) as origin
- MVAr injection should reduce with increase in terminal voltage

Annexure-B37

Response of the units whose MVAr injection decreases with increase in voltage but does not absorb reactive power even in high voltage period


BARH_BUS1_VOL vs BARH__PG - 21_Unit4_T_Q
150
100
50
0
-50
-100
-150
MVAr
410
415
420
425
430
435
440
kV


BARH_BUS1_VOL vs BARH__PG - 21_Unit5_T_Q
200
150
100
50
0
-50
-100
MVAr
410
415
420
425
430
435
440
kV


KOLTP_BUS1_VOL vs KOLTP_WB - 400_Unit4_T_Q
MVAr
100
80
60
40
20
0
-20
360
370
380
390
400
410
420
430
440
kV

Annexure-C1

Power System Operation Corporation Ltd.

138th OCC Meeting

At ERPC, Kolkata

30th October, 2017

ER Grid Performances

ERLDC POSOCO

Highlights for the month of September-17

Frequency Profile

Average Freq:- 49.97 Hz

Avg FVI: - 0.141

Lowest FVI:- 0.02

Max- 50.32Hz on 17th September' 17

Min- 49.62 Hz on 23rd September' 17

78.50% of the time freq was with in IEGC Band

Peak Demand

ER: 21081 MW on 26th September 2017 at 18:45 hrs

% Growth in Average Demand Met w.r.t. last year- 10.65%

BSPHCL : 4488 MW ; ON 26/09/17

JUVNL: 1212 MW; ON 26/09/17

DVC: 3048 MW; ON 27/09/17

GRIDCO: 4390 MW; ON 26/09/17

WB: 8224 MW; ON 06/09/17

SIKKIM: 99 MW; ON 15/09/17

Energy met

Max. 458 MU on 25th Sep 2017

%Growth w.r.t. last year on Max energy – 12.81%

Avg. 429 MU in September *2017*

%Growth w.r.t. last year on Avg. energy – 11.72%

New Element

Generating Units-NIL

Transmission Lines-276 CKM

Open Access

STOA transactions approved -262 nos.

Energy Approved- 629.4 MUs

1. Achievements during the month

a. New generating units synchronized:

NIL

b. New transmission elements charged:

1. 400kV Kharagpur-New Chanditala I & II (WBSETCL) Charged for the first time at 15:21 hrs. of 06.09.17 and at 15:33 hrs. of 07.09.17 respectively.

2. 315 MVA, 400/220/33 kV ICT # II at New Chanditala (WBSETCL) charged for the first time at 17:05 hrs. of 15.09.17.

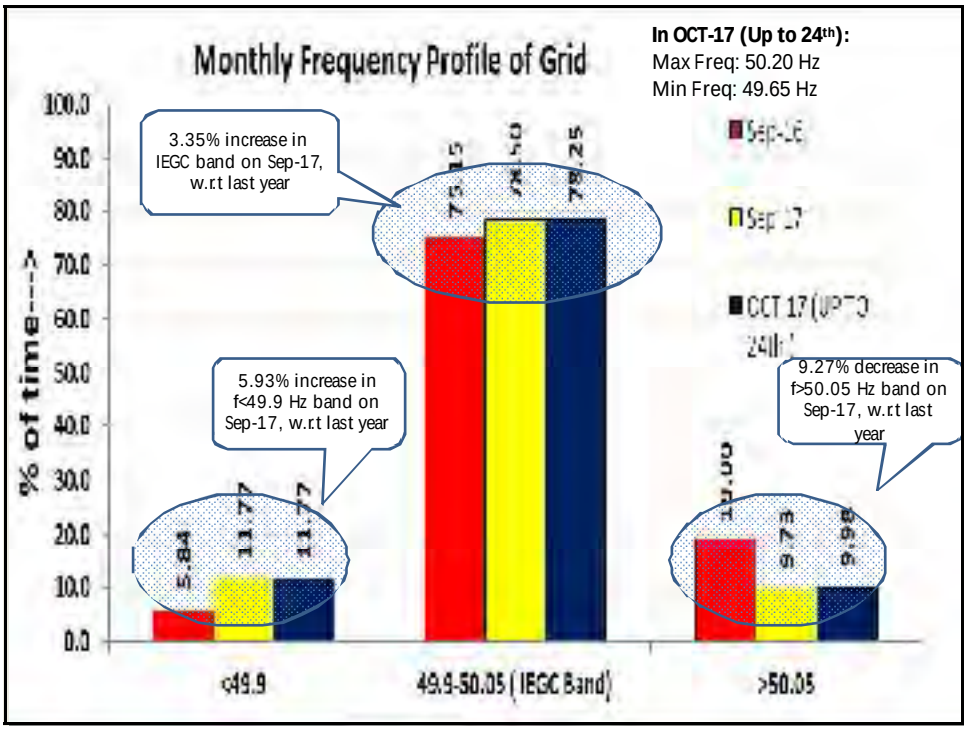
3. 132 kV Baripada - Jaleswar charged for the First Time at 18:48 hrs. of 23/09/17.

4. 132 kV Baripada- Bhograi first time charged at 18:54 hrs. of 25/09/17.

Eastern Regional stations outage under coal shortage

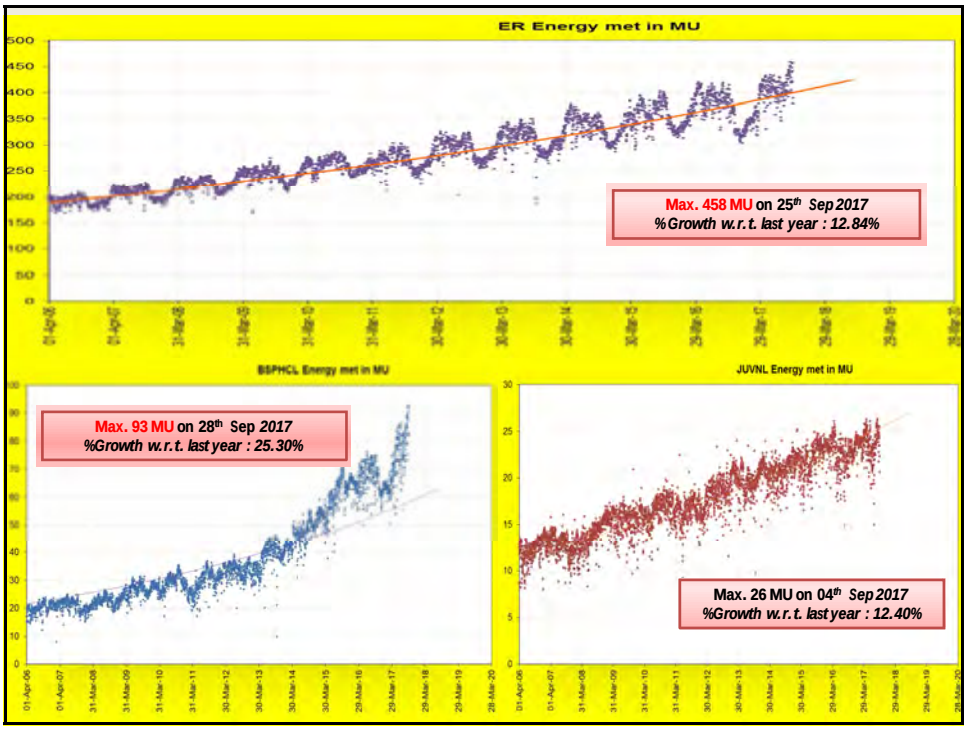
S.No	Station	Owner	Unit No	Capacity (MW)	Outage	
					Date	Time
1	JITPL	JITPL	1	600	5-May-17	0:03
2	GMR	GMR	1	350	27-Sep-17	18:43
3	FSTPP	NTPC	1	200	23-Oct-17	05;15
4	RAGHUNATHPUR	DVC	2	600	9-Aug-17	23:43
5	RAGHUNATHPUR	DVC	1	600	27-Sep-17	19:45
6	MEJIA	DVC	3	210	22-Oct-17	2:05
7	DSTPS	DVC	2	500	12-Oct-17	12:47
8	BOKARO B	DVC	3	210	2-Oct-17	1:38
9	BAKRESHWAR	WBPDCL	4	210	19-Oct-17	20:18
10	SAGARDIGHI	WBPDCL	1	300	24-Oct-17	23:00
11	DPL	WBPDCL	7	300	20-Oct-17	19:30
			TOTAL	4080		

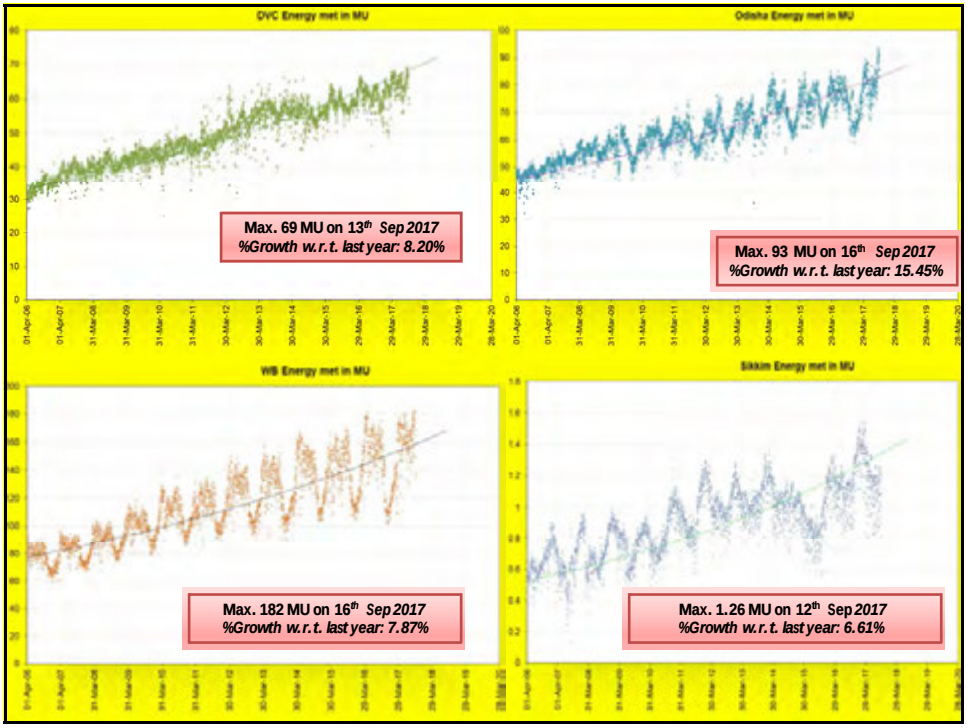
DVC: 2120 MW, WBPDCL: 820 MW, IPP:950 MW and NTPC: 200 MW



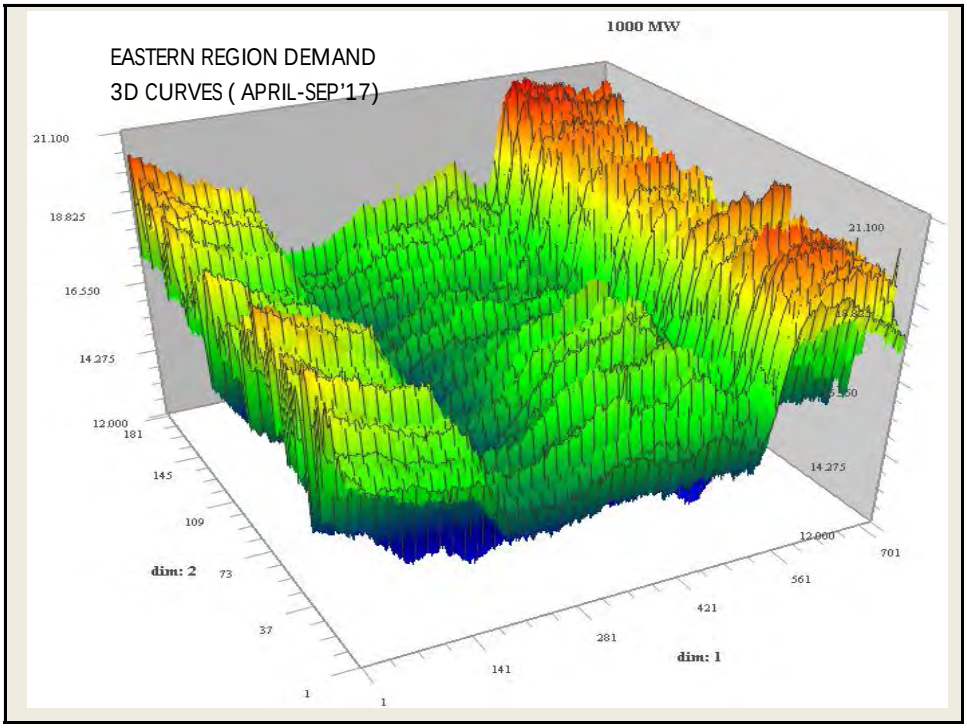
So Far Highest Demand				
Constitute	Demand (in MW)	Date	Time	Dmd met on 18th Oct'17(max dmd met day)
Bihar	4488	09-Oct-17	20:38	4426
DVC	3333	10-Apr-16	20:57	2958
Jharkhand	1262	10-Jun-17	19:54	1062
Odisha	4656	10-Oct-17	19:37	4010
W. Bengal	8605	12-Apr-17	19:56	7961
Sikkim	117	28-Oct-16	18:59	83
ER	21116	18-Oct-17	19:43	21116

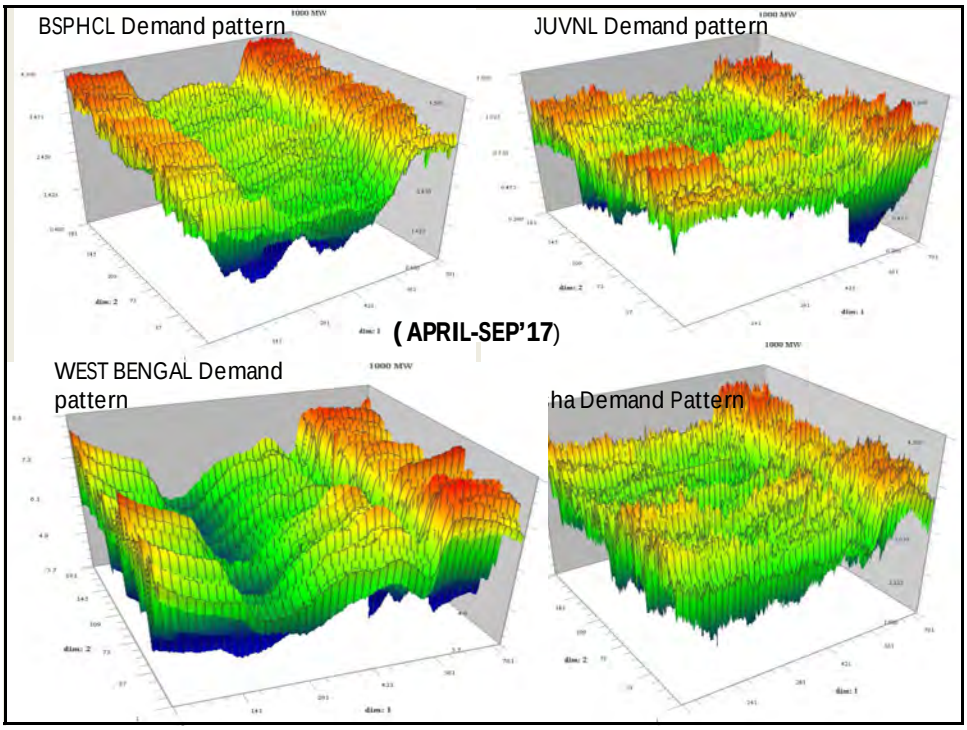
So Far Highest Energy Consumption			
Constitute	Energy consumption (in MUs)	Date	Dmd met on 18th Oct'17(max dmd met day)
Bihar	90.3	26-Sep-17	84.4
DVC	75	23-Mar-17	62.3
Jharkhand	26	20-Apr-16	21.1
Odisha	91.5	16-Sep-17	85.9
West Bengal	181	27-Apr-16	155.6
Sikkim	2	24-Mar-17	1.3
ER	451	26-Sep-17	425

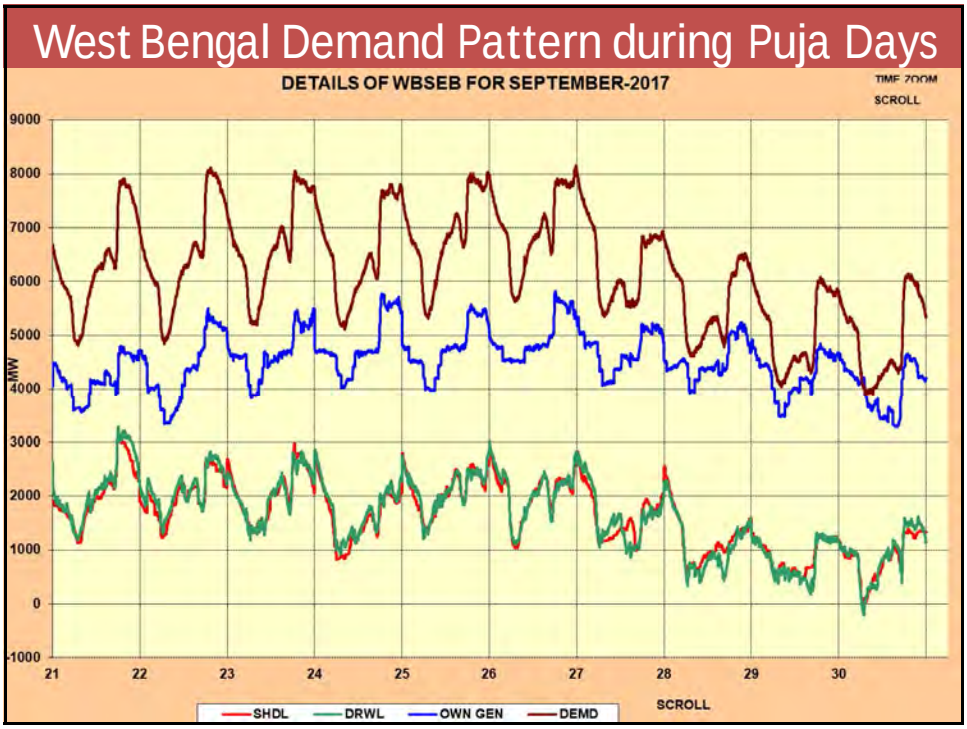

ER Energy met in MU
Max. 458 MU on 25th Sep 2017
%Growth w.r.t. last year : 12.84%
BSPHCL Energy met in MU
Max. 93 MU on 28th Sep 2017
%Growth w.r.t. last year : 25.30%
JUVNL Energy met in MU
Max. 26 MU on 04th Sep 2017
%Growth w.r.t. last year : 12.40%

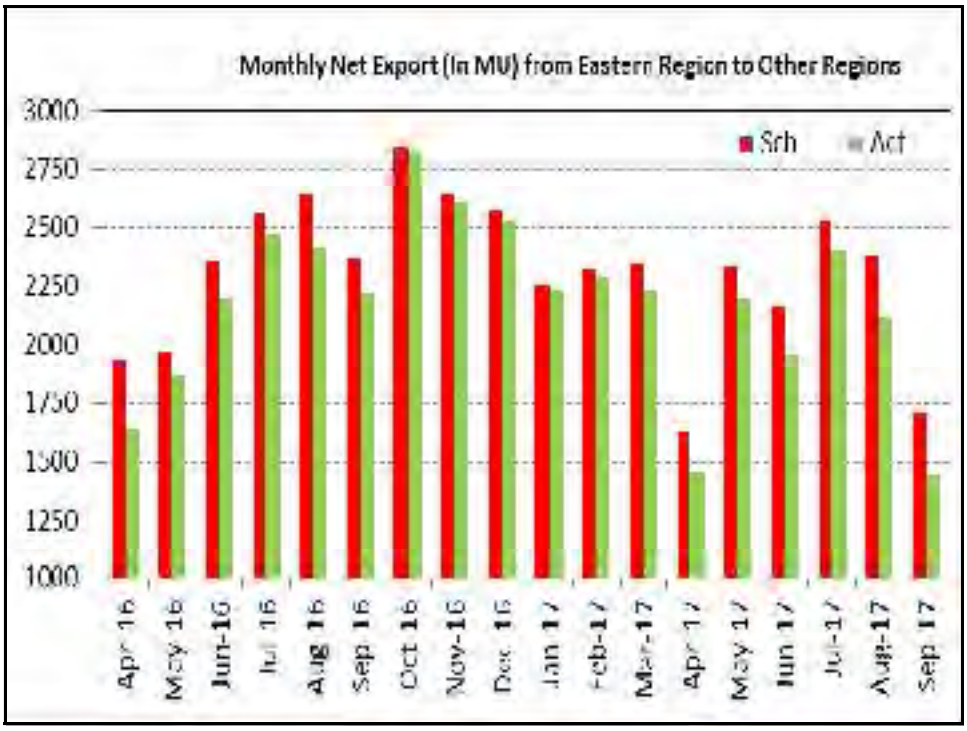

DVC Energy met in MU
Max. 69 MU on 13th Sep 2017
%Growth w.r.t. last year: 8.20%
Odisha Energy met in MU
Max. 93 MU on 16th Sep 2017
%Growth w.r.t. last year: 15.45%
WB Energy met in MU
Max. 182 MU on 16th Sep 2017
%Growth w.r.t. last year: 7.87%
Sikkim Energy met in MU
Max. 1.26 MU on 12th Sep 2017
%Growth w.r.t. last year: 6.61%

3D VIEW OF ER DEMAND PATTERN (APR-17 TO SEP-17)

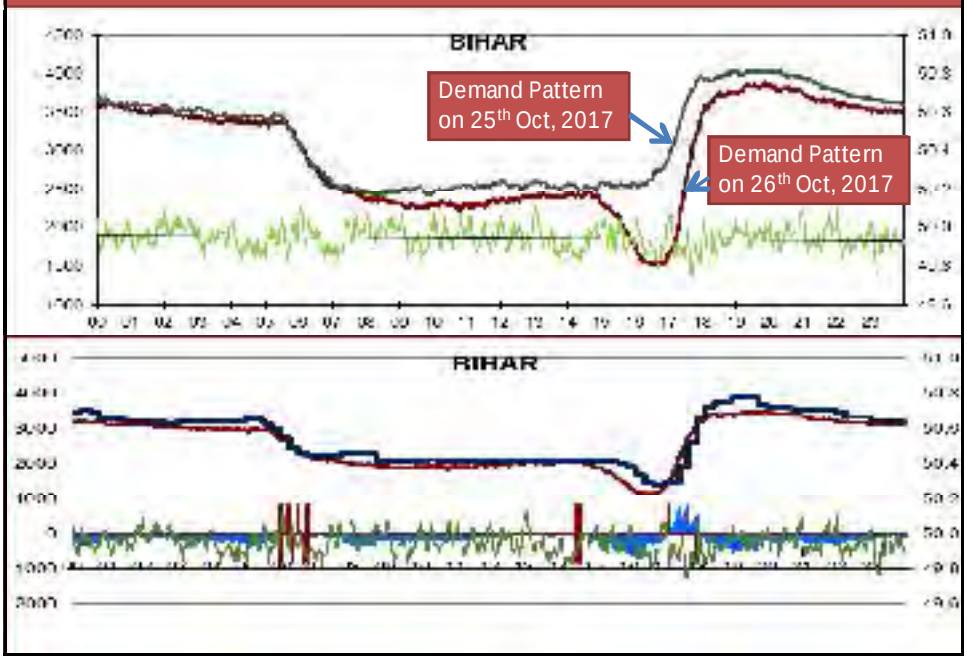


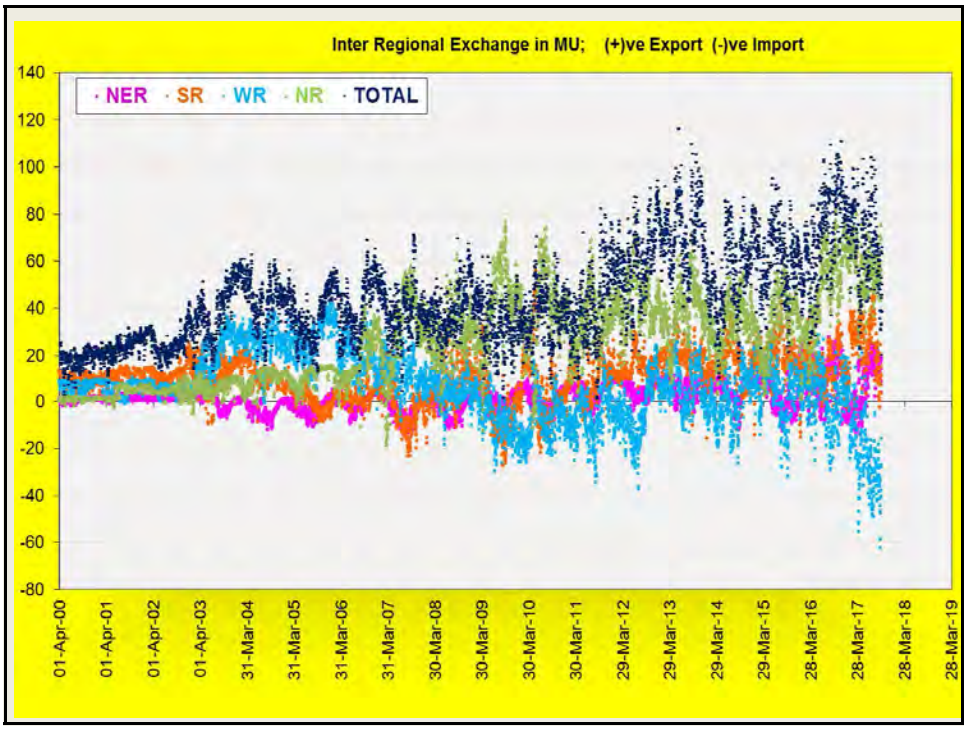

BSPHCL Demand pattern
JUVNL Demand pattern
(APRIL-SEP'17)
WEST BENGAL Demand pattern
ha Demand Pattern

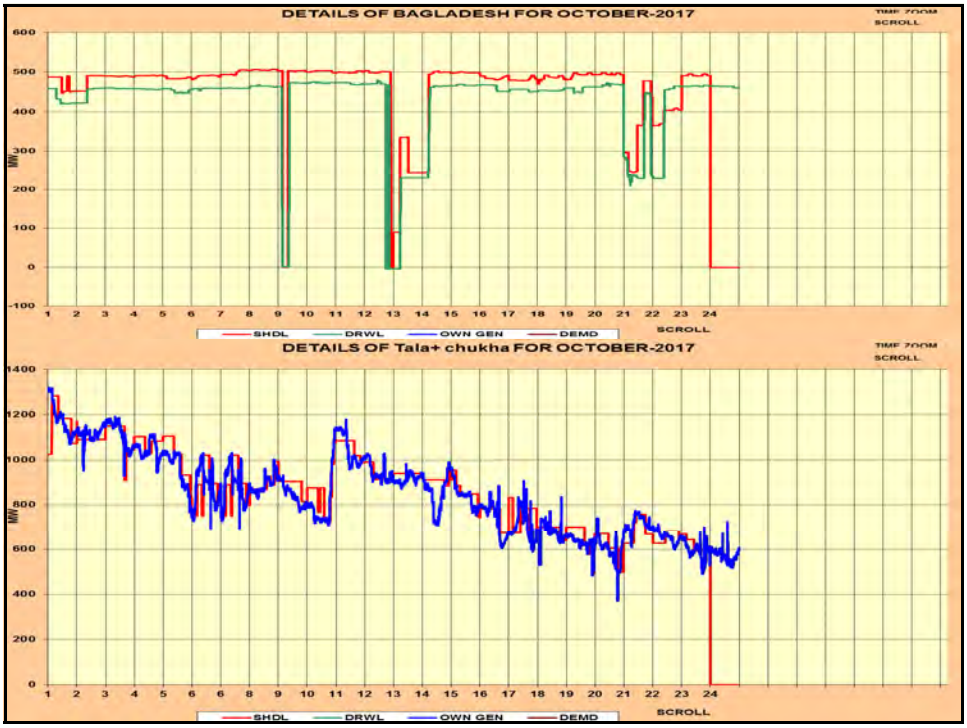

West Bengal Demand Pattern during Puja Days
DETAILS OF WBSEB FOR SEPTEMBER-2017
TIME ZOOM
SCROLL
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
-1000
MW
21
22
23
24
25
26
27
28
29
30
SCROLL
SHDL
DRWL
OWN GEN
DEMD

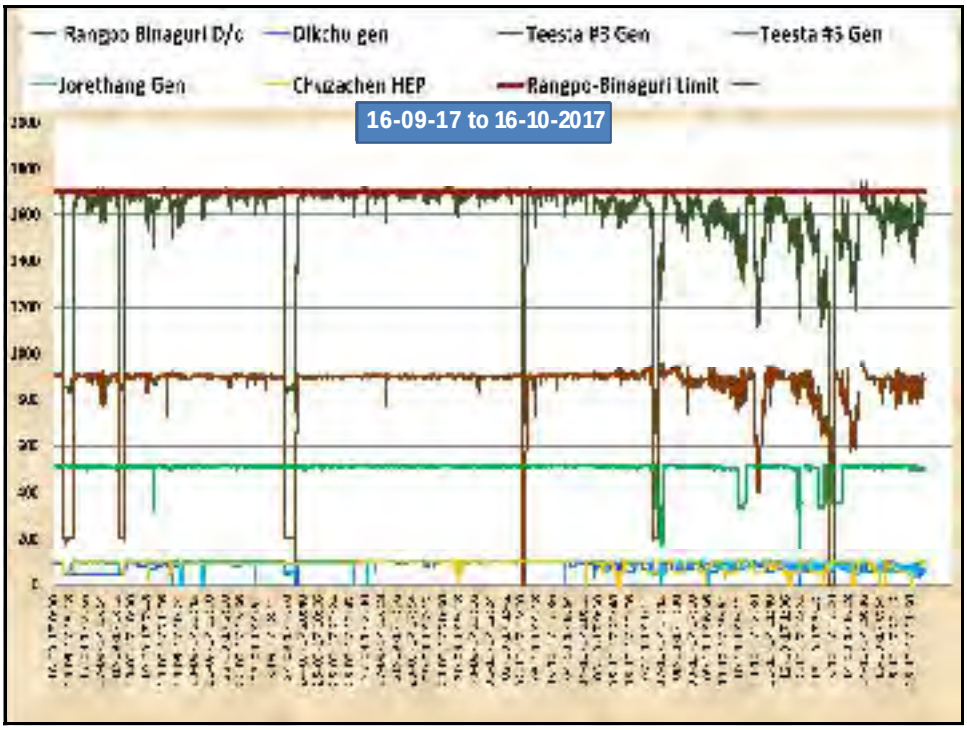


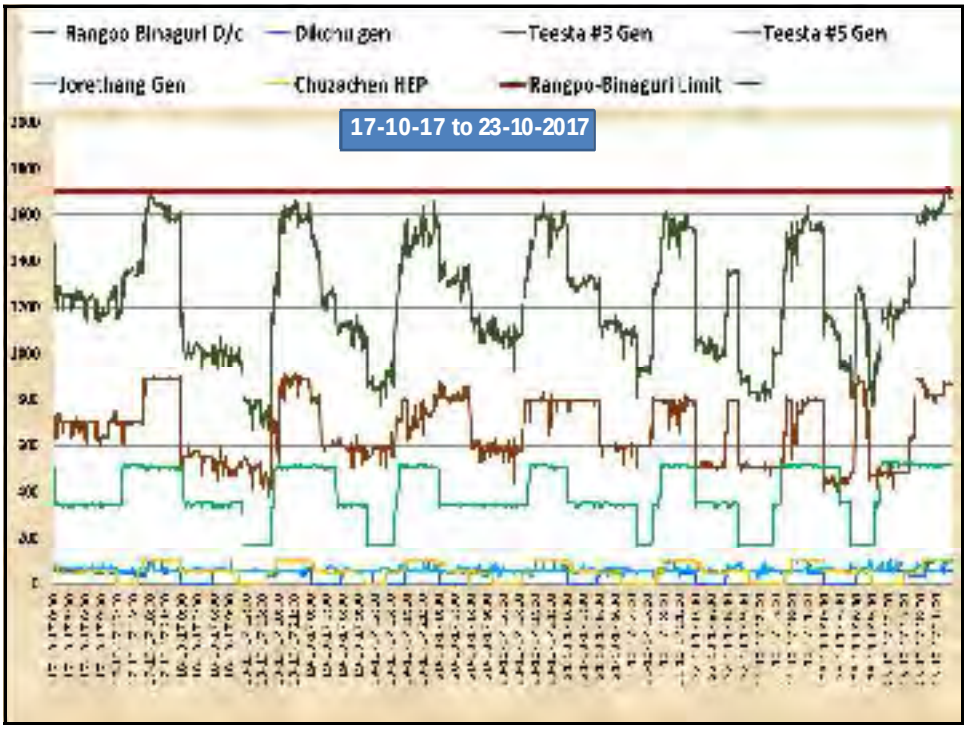
Bihar Demand Pattern on Chat Festival(26/10/2017)



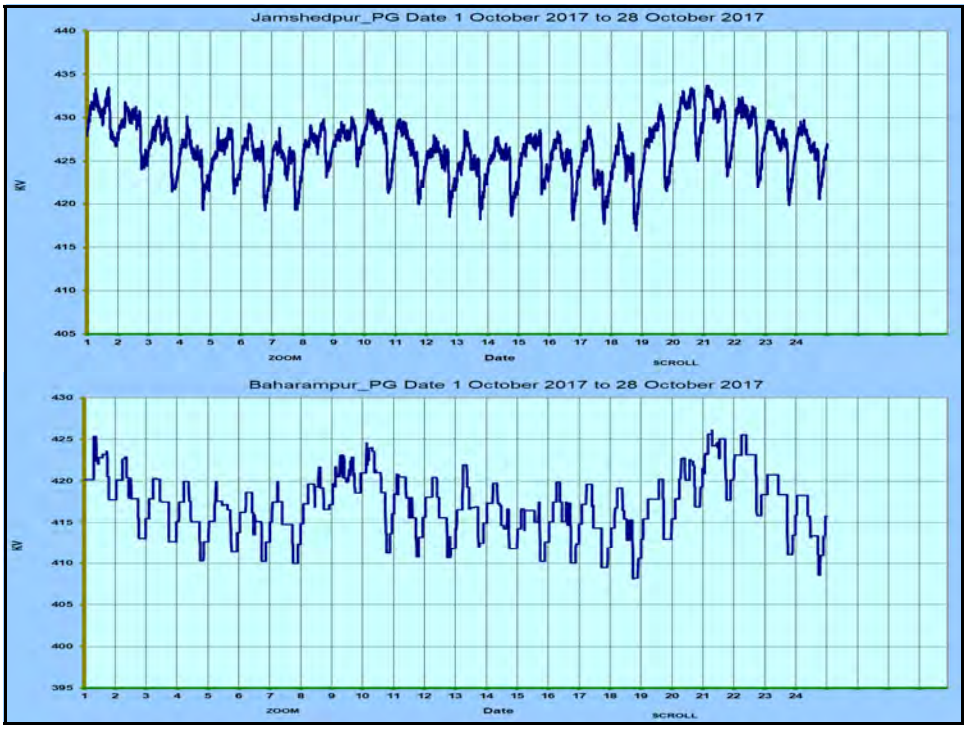

Inter Regional Exchange in MU; (+)ve Export (-)ve Import
NER
SR
WR
NR
TOTAL
140
120
100
80
60
40
20
0
-20
-40
-60
-80
01-Apr-00
01-Apr-01
01-Apr-02
01-Apr-03
31-Mar-04
31-Mar-05
31-Mar-06
31-Mar-07
30-Mar-08
30-Mar-09
30-Mar-10
30-Mar-11
29-Mar-12
29-Mar-13
29-Mar-14
29-Mar-15
28-Mar-16
28-Mar-17
28-Mar-18
28-Mar-19

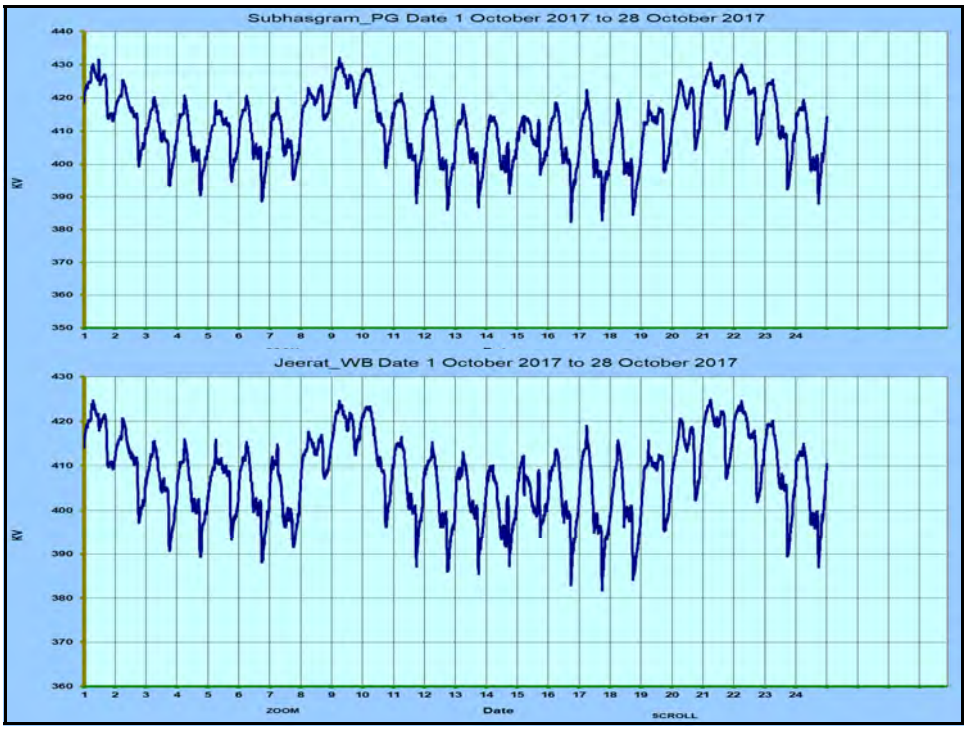

DETAILS OF BAGLADESH FOR OCTOBER-2017
SCROLL
MW
SHDL
DRWL
OWN GEN
DEMD
SCROLL
DETAILS OF Tala+ chukha FOR OCTOBER-2017
SCROLL
MW
SHDL
DRWL
OWN GEN
DEMD
SCROLL


Rangpo Binaguri D/c
Dikchu gen
Teesta #3 Gen
Teesta #5 Gen
Jorethang Gen
Chuzachen HEP
Rangpo-Binaguri Limit
16-09-17 to 16-10-2017


Rangpo Binaguri D/c
Dikchu gen
Teesta #3 Gen
Teesta #5 Gen
Jorethang Gen
Chuzachen HEP
Rangpo-Binaguri Limit
17-10-17 to 23-10-2017

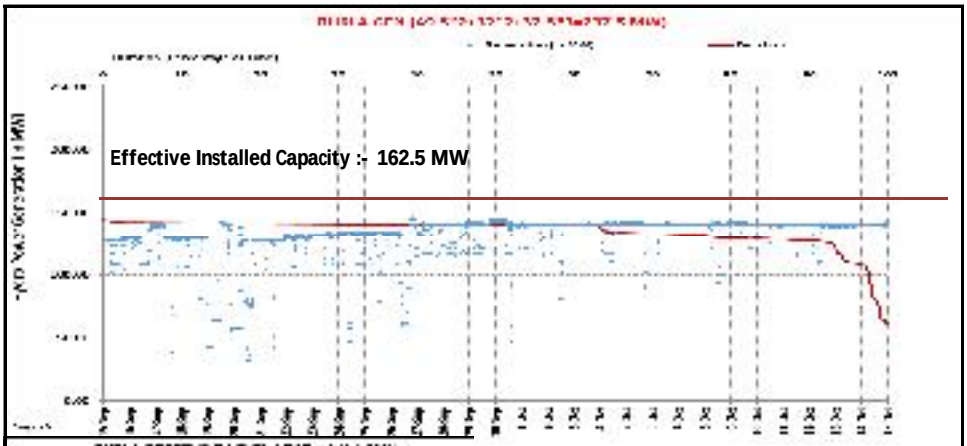
Voltage Performance

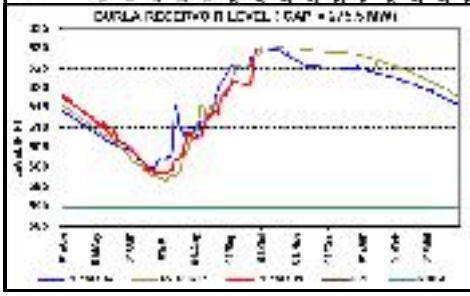



Subhasgram_PG Date 1 October 2017 to 28 October 2017
KV
Jeerat_WB Date 1 October 2017 to 28 October 2017
KV
ZOOM
Date
SCROLL

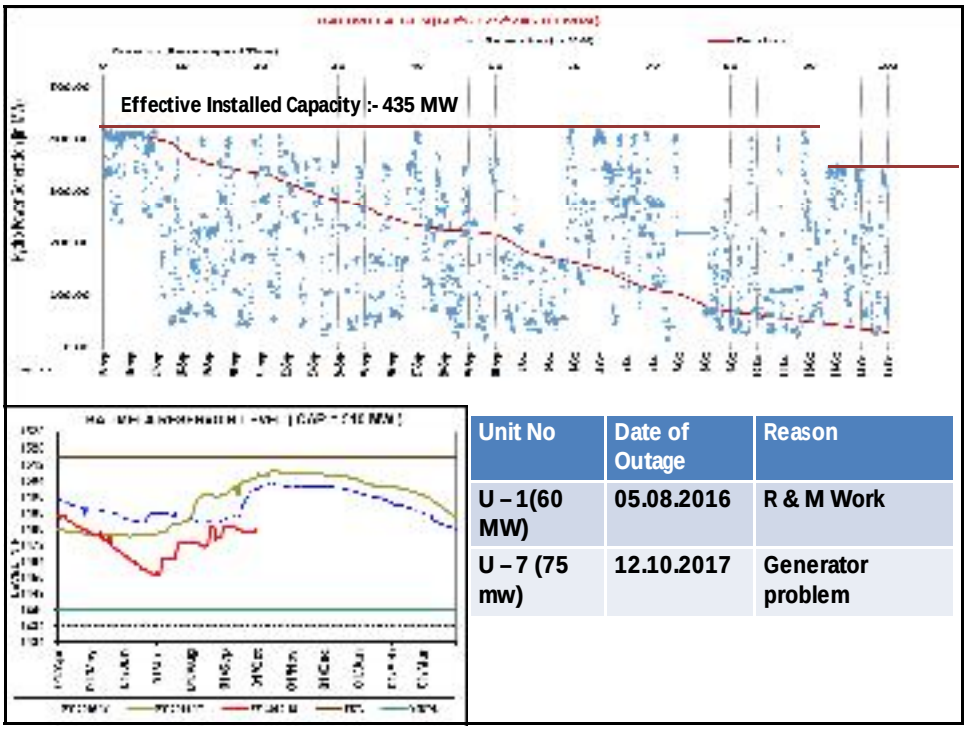
Annexure-C2

State Hydro Generators Performance

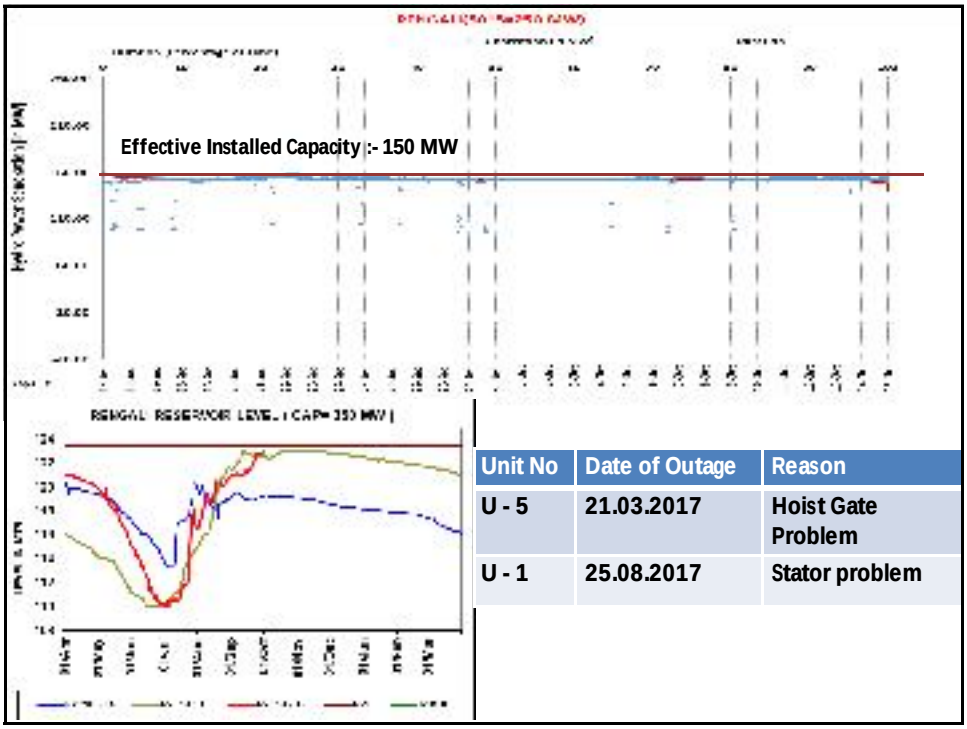




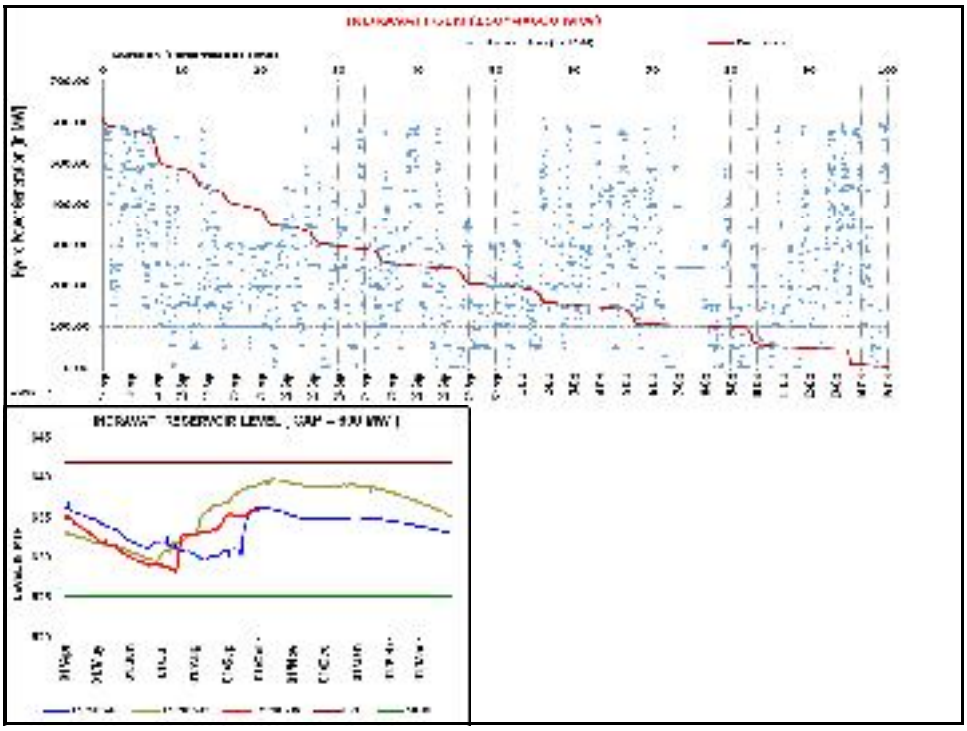
Unit No	Date of Outage	Reason
U - 5	25.10.2016	R & M Work
U - 6	16.10.2015	R & M Work

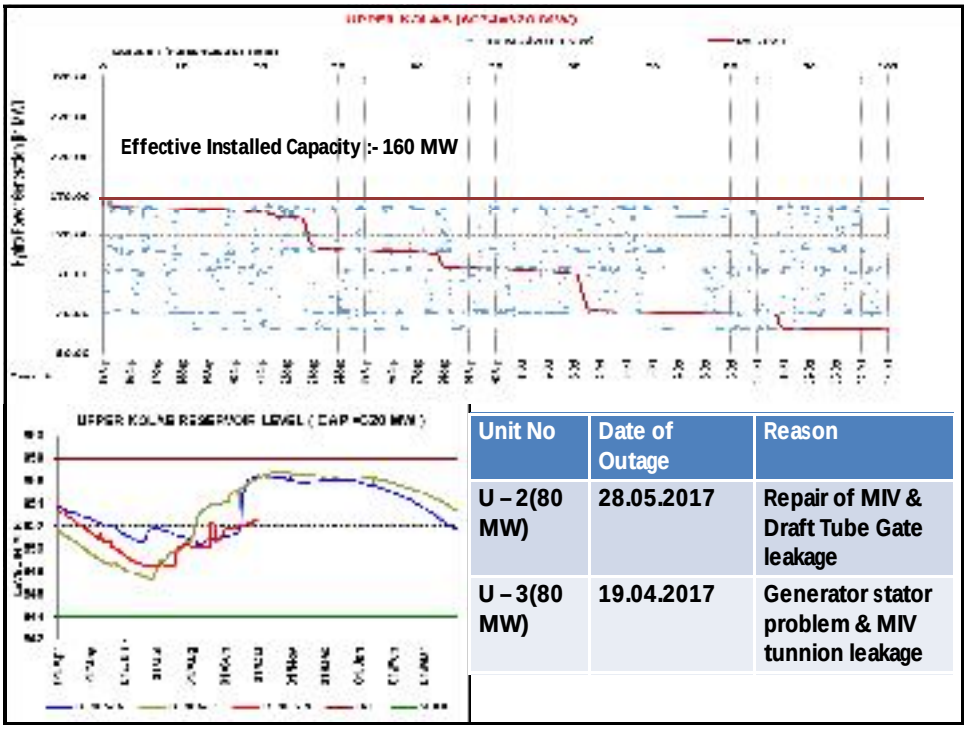


Unit No	Date of Outage	Reason
U – 1(60 MW)	05.08.2016	R & M Work
U – 7 (75 mw)	12.10.2017	Generator problem

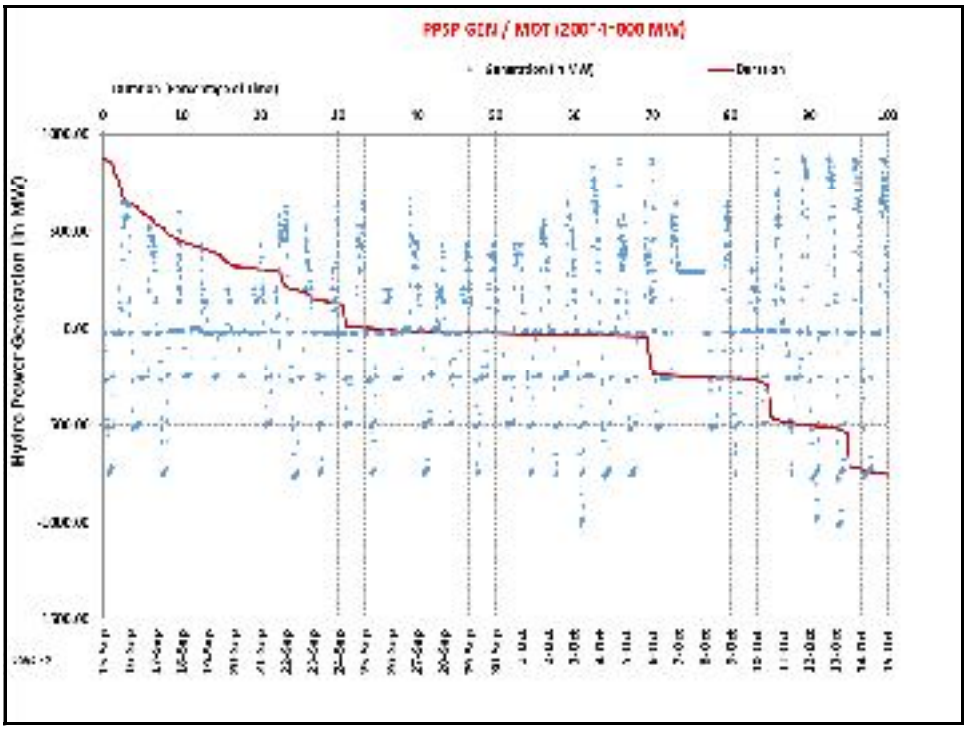


Unit No	Date of Outage	Reason
U - 5	21.03.2017	Hoist Gate Problem
U - 1	25.08.2017	Stator problem





Unit No	Date of Outage	Reason
U – 2(80 MW)	28.05.2017	Repair of MIV & Draft Tube Gate leakage
U – 3(80 MW)	19.04.2017	Generator stator problem & MIV tunnion leakage


PPSP GEN / MDT (200*1-000 MW)
Hydro Power Generation (in MW)

Annexure-C.3

Anticipated Power Supply Position for the month of
Nov-17

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	3950	2250
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	670	158
		- Central Sector	2300	1441
	iii)	SURPLUS(+)/DEFICIT(-)	-980	-651
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1230	780
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	450	264
		- Central Sector	700	289
	iii)	SURPLUS(+)/DEFICIT(-)	-80	-227
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2750	1652
	ii)	NET POWER AVAILABILITY- Own Source	4906	2668
		- Central Sector	504	322
		Long term Bi-lateral (Export)	1300	936
	iii)	SURPLUS(+)/DEFICIT(-)	1360	402
4		**ORISSA**		
	i)	NET MAX DEMAND	4000	2412
	ii)	NET POWER AVAILABILITY- Own Source	3156	1772
		- Central Sector	1050	607
	iii)	SURPLUS(+)/DEFICIT(-)	206	-33
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	5345	2599
	ii)	CESC's DRAWAL	0	0
	iii)	TOTAL WBSEDCL's DEMAND	5345	2599
	iv)	NET POWER AVAILABILITY- Own Source	3324	1875
		- Import from DPL	10	0
		- Central Sector	2168	1105
	v)	SURPLUS(+)/DEFICIT(-)	157	381
	vi)	EXPORT (TO B'DESH & SIKKIM)	10	7
5.2		**DPL**		
	i)	NET MAX DEMAND	240	174
	ii)	NET POWER AVAILABILITY	250	136
	iii)	SURPLUS(+)/DEFICIT(-)	10	-38
5.3		**CESC**		
	i)	NET MAX DEMAND	1740	802
	ii)	NET POWER AVAILABILITY - OWN SOURCE	460	434
		FROM HEL	540	328
		FROM CPL/PCBL	40	0
		Import Requirement	700	40
	iii)	TOTAL AVAILABILITY	1740	802
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	7325	3575
	ii)	NET POWER AVAILABILITY- Own Source	4034	2445
		- Central Sector+Others	3448	1433
	iii)	SURPLUS(+)/DEFICIT(-)	157	303
7		**SIKKIM**		
	i)	NET MAX DEMAND	85	37
	ii)	NET POWER AVAILABILITY- Own Source	3	2
		- Central Sector+Others	115	64
	iii)	SURPLUS(+)/DEFICIT(-)	33	28
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	18777	10706
		Long term Bi-lateral by DVC	1300	936
		EXPORT BY WBSEDCL	10	7
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	21336	11464
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	1249	-185

Annexure- C.4

Proposed Maintenance Schedule of Thermal Generating Units of ER during November, 2017

System	Station	Unit	Size (MW)	Period		No. of Days	Reason
				From	To		
WBPDCL	KTPS	4	210	15.11.17	05.12.17	20	BTG Overhauling
	Bakreswar	1	210	01.11.17	05.12.17	36	TG+TPR+(EHG+DAVR) Upgradation+GT O
	Sagarighi	1	300	01.11.17	06.11.17	6	Boiler License
CESC	BUDGE-BUDGE	3	250	01.11.17	15.11.17	15	Not Specified
	TITAGAR	4	60	15.11.17	18.11.17	4	Not Specified
NTPC	FSTPS	1	200	15.11.17	19.12.17	35	Boiler, Turbine, Gen., ESP R&M
		6***	500	04.11.17	11.11.17	7	Boiler, Turbine
	KhSTPS	1	210	16.11.17	20.11.17	5	Boiler, Gen., DDCMIS R&M
		2	210	21.11.18	15.12.17	25	Boiler, DAVR

H

Annexure-D4

पावर सिस्टम ऑपरेशन कॉरपोरेशन लिमिटेड
(भारत सरकार का उद्यम)
POWER SYSTEM OPERATION CORPORATION LIMITED
(A Government of India Enterprise)

पूर्वी क्षेत्रीय भार प्रेषण केन्द्र, 14, गोल्फ क्लब रोड, टालिगंज, कोलकाता 700 033
दूरभाष : 033 2423 5867/5875, फैक्स : 033 2423 5809/5704/5029, ई-मेल : erldc@posoco.in / www.erldc.org
EASTERN REGIONAL LOAD DESPATCH CENTRE, 14, Golf Club Road, Tollygunge, Kolkata - 700 033
Tel. : 033 2423 5867/5875, Fax : 033 2423 5809/5704/5029, E-mail : erldc@posoco.in / www.erldc.org

ERLDC/SS & MIS/2017/VDI/ 3100

Date: 04-10-17

To,

Member Secretary
Eastern Regional Power Committee
14, Golf Club Road, Kolkata – 33

Sub: Reporting of voltage deviation indices (VDI) for selected Substations in ER, for September 2017.
विषय: September 2017 के लिए पूर्वी क्षेत्र में चयनित सबस्टेशन के लिए वोल्टेज विचलन सूचकांक (VDI) की रिपोर्टिंग

Sir/ महोदय,

Enclosed please find VDI for selected 765 & 400kV buses of Eastern Region, computed for the month of September, 2017, for deliberation in next OCC meeting of ERPC.

संलग्न ERPC की अगली OCC बैठक में विचार विमर्श के लिए, September, 2017 के लिए गणना की गई पूर्वी क्षेत्र के चयनित 765 और 400 केवी बसों के लिए VDI को ढूंढें।

आपको धन्यवाद,

आपका विश्वस्त / Yours faithfully,

(पी मुखोपाध्याय) / (P Mukhopadhyay)
कार्यकारी निदेशक/ Executive Director

VDI of Selected 765 kV & 400 kV in Eastern Region in the month of September - 2017

नई रांची / Ranchi New			जमशेदपुर / Jamshedpur			मुजफ्फरपुर / Muzaffarpur		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
797	768	0.00	433	415	84.26	414	380	0.00

बिहार शरीफ / Bihar Sariff			बिनागुरी / Binaguri			जीरत / Jeerat		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
418	394	0.00	418	397	0.00	422	378	0.75

राउरकेला / Rourkela			जयपोर / Jeypore			कोडरमा / Koderma		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
420	407	0.00	419	0	0.00	423	401	0.63

मैथन / Maithon			तीस्ता / Teesta			रांगपो / Rangpo		
MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)	MAX	MIN	VDI (% of Time)
419	404	0.00	413	396	0.00	412	394	0.00