Agenda

for

126th OCC Meeting

Date: 21.10.2016

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700 033

Eastern Regional Power Committee

Agenda for 126th OCC Meeting to be held on 21st October, 2016 at ERPC, Kolkata

Item no. 1: Confirmation of minutes of 125th OCC meeting of ERPC held on 20.09.2016

The minutes of 125th OCC meeting were uploaded in ERPC website and circulated vide letter dated 06.10.2016 to all the constituents.

Members may confirm the minutes.

PART A

(List of Items to be discussed for which the details are given at "Part B")

B.1. Commissioning of new transmission elements in Eastern Region
B.2. Status of projects funded under PSDF schemes
B.3. PSDF funding for the schemes of State utilities for installation of capacitors in their respective network
B.4. Operational load flow study for Off-peak period
B.5. Data for Electricity Generation Targets for the year 2017-18
B.6. Preparation of Load Generation Balance Report (LGBR) of ER for 2017-18
B.7. Persistent under-generation in NTPC plants
B.8. Status of UFRs healthiness installed in Eastern Region
B.9. Healthiness of SPS existing in Eastern Region
B.10. Status of Islanding Schemes of Eastern Region
B.11. Restoration of PLCC system of important lines
B.12. Status update of previous decisions/follow up actions
B.13. Third Party Protection Audit
B.14. Inspection of UFR relays
B.15. Preparation of crisis management plan for Cyber Security in Power Sector in line with CERT-IN
B.16. Certification through BIS as per IS 18001:2007 to all generating/ transmission units
B.17. Formulation of a Skill Plan for Power Sector based on the assessed skill gap in the sector
B.18. Energy Generation data management from Renewable Energy Sources
B.19. Compilation of data for meeting Renewable Energy targets of 175 GW by 2020 -- Reference from MNRE
B.20. Reporting of Energy generated from renewable resources on daily basis
B.21. Data of Peak Demand – Submission of hourly power cut data
B.22. Recovery Procedures of ER Constituents – ERLDC
B.23. Implementation of Automatic Demand Management Scheme (ADMS)
B.24. Transfer capability determination by the states -- Agenda by NPC
B.25. Reasons for demand –supply gap and its variation -- Agenda by NPC
B.26. Long outage of important transmission lines
B.27. Partial commissioning of switchyard equipments at BRBCL, Nabinagar end
B.28. Update on status of telemetry
B.29. Interruption of real time data due to all control centres in ER
B.30. Installation of PMUs in Eastern Region under URTDSM project
B.31. Status of Disturbance Recorder, Stand alone Event Logger and Time Synchronization equipment.
B.32. Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents
B.33. Pollution mapping for Eastern Region
B.34. Mock Black start exercises in Eastern Region

B.35. Restricted Governor Mode of Operation
B.36. Reactive Power performance of Generators and GT tap position optimization
B.37. Consideration of 400kV lines/line segments owned and maintained by DVC as ISTS lines
B.38. Erroneous recording/Non-receipt of data by Interface Meters

PART B: ITEMS FOR DISCUSSION

(Items to be discussed as listed in "Part A")

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.

The list of new Transmission Elements commissioned/charged during **September, 2016** as informed by ERLDC is given below:

1. 220kV GIS Bays No-211 & 212 of 220kV Gaya-Sonenagar-I & II at Gaya were charged for the first time at 20:20Hrs of 03/09/16.
2. 400/220kV, 315MVA ICT-I & II at Gokarna S/s (WB) were charged for the first time at 18:44Hrs and 19:02Hrs respectively of 15/09/16 from 220kV side no load.
3. 400/220kV, 500MVA ICT-II at New Purnea was charged for the first time on no load at 13:13Hrs of 20/09/16 from HV side and subsequently loaded at 19:58Hrs of 28/09/16.
4. 400/220kV, 500MVA ICT-I at Patna was charged for the first time on no load at 00:18Hrs of 21/09/16 from HV side and subsequently loaded at 02:02Hrs of 22/09/16.
5. Opening of LILO of 400kV Sasaram-Varanasi at Saranath and charging of 400kV Sasaram-Varanasi (direct ckt) was done at 16:17Hrs of 28/09/16.
6. 400/220kV, 500MVA ICT-III at Baripada was charged for the first time on no load at 14:28Hrs of 29/09/16 and subsequently loaded at 22:48Hrs of 30/09/16.
7. 125MVAr B/R-I at Maithon was charged for the first time at 19:59Hrs of 29/09/16.
8. 125MVAr B/R at Baripada was charged for the first time at 05:52Hrs of 30/09/16.

JUSNL informed that following has been charged on September, 2016:

9. 132/33 KV GSS Manoharpur charged on dated: 08/09/2016 with
    a. 132 KV, Goelkera-Manoharpur TL charge on dated 08/09/2016, time-1:02PM.
    b. 50 MVA, T/F No-1,charge on dated 08/09/2016, time-1:55PM
    c. 50 MVA, T/F No-2,charge on dated 08/09/2016, time-5:40PM
    d. 33Kv, bay no-302, charge on dated 08/09/2016, time-6:50PM
    e. Load taken by supply Manoharpur on dated 09/09/2016, time-7:05PM.

Other constituents may update (if any).

Item No. B.2: Status of projects funded under PSDF schemes

In the PSDF review meeting held on 29.04.16 at N. Delhi, 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. The latest status as updated by WBSETCL, OPTCL & ERPC is as given below:

SN	Name of Constituent	Name of Project	Date of approval from PSDF	Target Date of Completion	Amount approved (in Rs.)	Amount drawn till date (in Rs.)	Status as updated in 122nd OCC
1	WBSETCL	Renovation & up-gradation of protection system of 220 kV & 400 kV Substations in West Bengal	31-12-14		120.67 Cr	11.04 Cr.	95 % Supply Completed
2	WBSETCL	Transmission System Improvement of WBSETCL					
3	OPTCL	Renovation & Up-gradation of protection and control systems of Sub-stations in the State of Odisha in order to rectify protection related deficiencies.	11.05.15	10.05.17	162.5 Cr.	4.91 Cr.	Erection work of the already procured equipment is going on. LOA for eight different types of Testing equipment already placed worth about Rs.4 Cr. Placement of LOA for balance equipment is under process. Tender for Sub-station automation will be floated in July-2016.
4	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.	1st Milestone completed
5	*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*	*1.219 crore*	*Project is on going*
6		*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)*
7		*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.*

In 124th OCC, OHPC informed that they have also applied for PSDF funding for Renovation and up-gradation of protection and control system of OHPC in 2014 and resubmitted again.

OCC also advised JUSNL to prepare a DPR for renovation and up-gradation of Protection & control system as per the recommendations of ERPC team report and submit their proposals to PSDF appraisal committee.

In 125th OCC, MS, ERPC informed that as approved in 124th OCC & 46th PCC the following two DPRs for training of ER constituents are ready for submission to PSDF Appraisal Committee for PSDF funding.

1) *Training for Power System Engineers*
2) *Training on Integration of Renewable Energy resources*

Subsequently, the DPR for the above projects were submitted on 22.09.2016.

Other constituents may update.

Item No. B.3: PSDF funding for the schemes of State utilities for installation of capacitors in their respective network

MS, PSDF Appraisal Committee vide letter dated 22.06.16 & 30.09.16 intimated that the Assessment of the Capacitor requirement may be carried out at regional level by the utilities or by engaging expert agency (like CPRI). Letters from PSDF Secretariat are attached at **Annexure- B.3**.

The outcome may be intimated to the PSDF Secretariat on urgent basis for consideration of these projects.

WBSETCL may respond.

Item No. B.4: OPERATIONAL LOAD FLOW STUDY FOR OFF-PEAK PERIOD

Under PSDF funded project for Creation of protection database M/s PRDC have carried out an operational load flow study based on peak data of 26.05.2016. The report is available in ERPC website. During discussions on the study a need was felt for a similar study based on Off-peak conditions.

In 124th OCC, after detailed deliberation, OCC decided that all constituents should provide the relevant data as per the format available in ERPC website for two instances:

- *13:00hrs on 27th August, 2016 &*
- *03:00hrs on 28th August, 2016*

OCC advised all the constituents to update the Network Data format with network augmentation from 31st May 2016 to 31st of August 2016 in the given format.

Constituents noted and assured to provide the requisite information.

In 125th OCC, PRDC presented the status of the project. PRDC informed that they need snap shot of off-peak data of each sub-station for carrying out off-peak load flow analysis similar to peak load analysis.

Off peak Data are not yet submitted by Powergrid, DVC, BSPTCL & JUSNL.

OCC requested the respective utilities to submit the off-peak data as collected during 27th & 28th August, 2016 and also the changes in network during the period of May-August, 2016.

PRDC/ Members may update.

Item No. B.5: Data for Electricity Generation Targets for the year 2017-18

The annual exercise of assessment and finalization of the generation targets and the planned maintenance schedules of the generating units for the year 2017-18 is being initiated by CEA. **As decided by Ministry of Power and CEA, this activity needs to be preponed by two monthsfor some Planning and Managerial activity**. Although the generation performance of the various stations and their planned & forced outages are regularly monitored in CEA but for a more realistic projection of month-wise generation targets the respective Station Authorities are requested to tweak their maintenance schedule.

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.5)**:

i) The unit wise yearly generation (with unit -wise monthly breakup) proposed during 2017-18 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 (2 to 6))**

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 7)**).

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 8 (a) and (b)**). Production cost, Unit wise cost of generation and rate of sale of power may also be furnished. **(Annex – I (point 9))**

iv) 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 2017-18, 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** 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 officers may be approached.

1. Sarita Sewak, Director, sewak_sarita@nic.in - 9810506491
2. Anil Kawrani, Deputy Director, anilkawrani@nic.in -01126732650

ERPC vide fax message dated 31.08.16 has requested all the respective utilities to submit the desired information.

125th OCC requested all the utilities to furnish the desired data in the format **(given at Annexure-B.5)** *to CEA at the email address* ***targetopmcea@gmail.com*** *with a copy to ERPC (e-mail:* ***mserpc-power@nic.in****).*

Subsequently, CEA vide letter dated 26.09.16 intimated that the following information is required at the earliest for realistic assessment of Generation targets from all utilities:

- Maintenance schedule of various power stations during the year 2017-18.
- Statewise Energy requirement in the following format:

State Name	Energy Requirement during 2016-17 (MU)	Energy Requirement during 2017-18 (MU)	% growth in Energy Requirement

Also please note that above data is required for the Annual Exercise of assessment and finalization of Generation Target for the year 2017-18 and in this regard all generating utilities / power stations in your region has already been sent the data formats for submission of the required data by CEA.

CEA vide letter dated 28.09.16 intimated that the assessment and finalization of generation targets is the annual exercise of CEA which is going on for year 2017-18. Since this exercise has

been pre-poned by two months as per instructions of MoP, the demand assessment and maintenance schedule of each generating units for the year 2017-18 has to be assessed on the basis of actual demand and actual machine position of generating stations upto September,2016.

It is requested to all the State Load Dispatch Centre of Eastern region to arrange data in regard to energy requirement and the demand growth of their respective state and submit in the monthly OCC meeting to be held in October,2016.

Members may furnish the above data. CEA may elaborate.

Item No. B.6: Preparation of Load Generation Balance Report (LGBR) of ER for 2017-18.

As per the IEGC under Clause 5.7.4 of Principal Regulations, first amendment in 2012 under sub-Regulation (a), (b), (c) and (d) states that

a) "The RPC Secretariat shall be primarily responsible for finalization of the Annual Load Generation Balance Report (LGBR) and the annual outage plan for the following financial year by **31st December of each year**. The LGBR shall be prepared by the respective RPC Secretariat for Peak as well as Off-peak scenarios".

b) "Each SLDC shall submit LGBR for its control area, for Peak as well as Off-Peak scenario, by **31st October** for the next financial year, to respective RPC Secretariat".

c) "RPC Secretariat shall then come out with draft LGBR and draft outage plan for the next financial year by **30th November** of each year for the regional grid taking …."

d) "The outage plan shall be finalized in consultation with NLDC and RLDCs. The final LGBR after considering comments/observations of the stakeholders shall be prepared by RPC Secretariat by **31st December of each year**. The……"

So, the planning of maintenance of generating units of various generating companies of the region as well as outage of transmission system on annual basis in respect of Eastern Region for the year 2017-18 is to be finalised by **31st December, 2016**. To facilitate the preparation of LGBR of Eastern Region by ERPC Secretariat within the above schedule period, the following data/ information for the year **2017-18** in respect of the constituents/ generators of Eastern Region is required:

State and Central Sector Generators/ IPPs/CPPs

i) The unit wise and station wise monthly energy generation proposed from existing units during 2017-18 (thermal/hydro/RES).
ii) Annual maintenance programme for each of the generating units (thermal and hydro both).
iii) Generating units under R&M/ long outage indicating date of outage and reasons of outage and expected date of return (thermal and hydro both).
iv) Partial and forced outage figures (in %) of generating units for the last 3 years.
v) Month wise peak demand (MW) – restricted and unrestricted peak demand.
vi) Month wise energy requirement (in MU).
vii) Schedule of commissioning of new generating units during 2017-18 and unit-wise monthly generation programme (in MU).
viii) Allocation of power from new generating units.

CTU / STU / Powerlinks / ENICL/CPTC/PKTCL

Month wise annual planned outage of transmission systems (Transmission lines 220kV and above/ICTs/Reactors/other elements).

It is therefore requested to please send the above information (as applicable) on or before **31.10.2016** for compilation of data and preparation of **LGBR of ER for the year 2017-18.**

Information should be submitted in the form of soft copy through email (mail ID: **rpc.erpc@gov.in / mserpc-power@nic.in**).

Members may submit the data for LGBR by 31.10.2016.

Item No. B.7: Persistent under-generation in NTPC plants

It has been observed that NTPC stations(specially FSTPP/KhSTPP) in ER are resorting to persistent under-generation with no generation increase even after issual of messages. At times even when the full DC was scheduled, NTPC has continued under-generation and has hence failed to demonstrate DC even after messages from ERLDC Control room. Also, in several occasions, there was failure in achieving scheduled generation even when schedule of the NTPC stations was increased vide Regulation Up Ancillary services. It may be noted that the above matters had already been brought to the notice of the OCC forum in the 123rd OCC meeting and it was confirmed that NTPC would need to follow the schedule strictly. However, NTPC has continued such under-generation and in case of failure to generate uptoDC(when full DC is scheduled), NTPC is resorting to downward revision of DC stating reasons as wet coal,etc. Instances depicting above violations would be presented by ERLDC for discussions/suggestions and for conclusion regarding the corrective actions. It may be noted that in case of such continued under-generation, ERLDC may be constrained to resort to classifying such cases as incorrect declaration of DC and proceed as per Clauses of 6.4.19 and 6.4.20 of IEGC. ERLDC may also be compelled to file a petition before CERC in this regard.

In 125th OCC, NTPC explained that the under generation is because of wet coal in the monsoon periods.

OCC took serious note of under generation by NTPC stations of Eastern Region and advice NTPC to strictly follow the schedule. After detail discussion it was decided that ERLDC will monitor the performance of NTPC stations for 15 days and even if the generation does not improve, ERLDC may file a petition before CERC.

ERLDC/NTPC may update.

Item No. B.8: Status of UFRs healthiness installed in Eastern Region

UFR Healthiness Certification for the month of September, 2016 has been received from JUSNL, WBSETCL and CESC only.

Other constituents (DVC, BSPTCL & OPTCL) may submit.

Item No. B.9: Healthiness of SPS existing in Eastern Region

JITPL, Vedanta & CESC have submitted the healthiness certificate for the month of September, 2016.

GMR, Chuzachen, Powergrid-Odisha & Powergrid ER-II & NTPC may submit the healthiness certificate for September, 2016.

Respective members may update.

Item No. B.10: Status of Islanding Schemes of Eastern Region

B.10.1: 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

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

The healthiness certificate for Islanding Scheme for September, 2016 has been received from BkTPS, Tata Power and CESC.

CTPS, DVC may submit.

B.10.2: FSTPS Islanding Scheme, NTPC

In 123rd OCC, NTPC informed that cable laying completed and interfacing is pending. Interfacing will be done after completion of the PLCC installation work by PGCIL at JUSNL sub-stations.

In 125th OCC, Powergrid informed that PLCC installation work has been completed and commissioning is under progress.

NTPC/Powergrid may update.

B.10.3: Bandel Islanding Scheme, WBPDCL

In 33rd TCC, WBPDCL informed that DPR has been submitted to NLDC on 22-06-2016 for funding from PSDF.

In 124th OCC, it was informed that PSDF appraisal committee meeting will be held in September, 2016.

Subsequently, PSDF Secretariat vide mail dated 07.10.2016 informed that the Scheme was examined on 28.09.2016 and has sought some clarification from WBPDCL.

WBPDCL may update the latest status.

Item No. B.11: Restoration of PLCC system of important lines

In 119th OCC, JUSNL informed that the following:

a) In 220 KV Chandil –Ramchandrapur line auto-reclosure has been enabled and linked with PLCC panels on 09.03.16.
b) In 220 KV Chandil –Ranchi line auto-reclosure has been enabled and termination done in PLCC panels (Auto-reclosure will be in service after testing of PLCC scheduled on 22.03.16)
c) In 220 KV Chandil –Santaldih line auto-reclosure has been enabled and termination done in PLCC panels at Chandil end but due to non-availability of PLCC panels at Santaldih(WBPDCL) end the A/R and PLCC scheme could not be activated.

d) In 220 KV Ramchandrapur-Joda line auto-reclosure has been enabled and termination done in PLCC panels at Ramchandrapur end but due to non-availability of PLCC panels at Joda (OPTCL) end the A/R and PLCC scheme could not be implemented.

Further, it was informed that JUSNL is ready to share their standby PLCC panels (BPL make) with WBPDCL (for Snataldih end) and OPTCL (for Joda end) to complete the PLCC schemes of both the above lines.

In 33rd ERPC Meeting, WBPDCL and OPTCL agreed to settle the issue bilaterally with JUSNL. JUSNL was advised to resolve the AMC related issues with West Bengal & Odissa. All are requested to inform the development to CERC .

Subsequently, a special meeting was convened by JUSNL on 11.07.2016 at Ranchi to resolve the issue at the earliest.

In 125th OCC, OPTCL informed that the order has been placed for PLCC panels without 5 years AMC.

WBPDCL informed that PLCC panels are expected to be delivered by September, 2016.

JUSNL/OPTCL/WBPDCL may update.

Item No. B.12: Concerned members may update the latest status.

B.12.1: Commissioning of 400 kV Ind-Bharath to Jharsuguda D/C (dedicated line)

In 121st OCC, IBEUL updated the status as follows:

- All the 125 towers foundations have been completed and 125 have been erected.
- Due to route alignment one tower (i.e. 126th tower) has been increased which is under construction.
- Stringing work of 36.81 km out of 39.74 km line has been completed.
- The bay work at 400 kV Jharsuguda (Kenapalli) S/s has also been completed.
- The line will be commissioned by end of June, 2016.

In 33rd TCC/ERPC it was decided that in line with the direction from CERC (in CERC vide order dated 07.I0.2015 on Petition No. 112/TT'/2013) the LILO may be removed if the target (i.e. July, 2016) is not adhered by Ind-Barath on and from 1st August, 2016 IBEUL will not be permitted to do any transaction—Infirm or firm through the LILO.

In 125th OCC, Ind-Bharath informed that the stringing work for the last stretch is going on and will be completed by October, 2016.

MS, ERPC advised IBEUL to submit all the clearances (CEA clearance etc) by 12th October, 2016 so that a special meeting may be convened within a week after getting the desired information as decided in CEA meeting held on 16.09.16 for issues related to commercial power transaction from IBEUL.

Further, on concurrence from GRIDCO, OCC accepted the COD of Unit-1 of IBEUL with derated capacity of 339.6 MW with effective from 00.00 hours of 20.07.16.

IBEUL may update.

B.12.2: Status of construction of 400 kV Sterlite-Jharsuguda D/C sections

In 31st TCC/ERPC followed by 115th OCC Vedanta informed that out of 66 tower foundations, 21 have been completed and rest is expected to be completed by December, 2015. Commissioning of line is expected by 15 April, 2016.

32nd TCC advised Vedanta to strictly adhere to the schedule.

33rd ERPC extended the dead line for removal of LILO till November, 2016 as a last extension.

As a final measure, ERPC decided that Vedanta should give an undertaking in affidavit form to CTU and ERPC stating that the dedicated line will be completed by 30.11.2016. Failing which, CTU/ERLDC is authorized to open the LILO with effect from 01.12.2016. No further discussion would be entertained in ERPC forum on extension/disconnection of LILO after 01.12.2016 and then onwards no power transaction will be allowed through LILO on commercial purpose.

In 123rd OCC, *Vedanta updated that 56 out of 66 foundations and installation of nine towers out of 64 have been completed.*

In 125th OCC, Vedanta updated that 57 out of 66 foundations and installation of 26 towers out of 64 have been completed.

MS, ERPC advised Vedanta to submit the weekly progress report on regular basis.

Vedanta vide mail dated 10.10.16 has submitted the weekly report on progress of line which is given at ***Annexure- B.12.2.***

Vedanta may update.

Regarding charging of 400kV Meramundali-Vedanta line I&II through one main & tie CB from Vedanta end due to incomplete dia, TCC felt that this is violation of CEA regulations.

Vedanta informed that bay extension work is in progress and dia would complete by November, 2016. TCC advised the Secretariat to review the progress in monthly OCC meetings.

In 123rd OCC, Vedanta informed that the scheme was approved by CEA and bay extension work would be completed by November, 2016.

OCC advised Vedanta to submit a copy of the CEA Inspectorate's approval.

Vedanta vide mail dated 26.07.2016 submitted a copy of CEA approval but without the list of equipment for which the approval was granted.

In 124th OCC, Vedanta informed that bay extension work is in progress and dia would be completed by October, 2016.

In 125th OCC, Vedanta informed that bay extension work is in progress and dia would be completed by November, 2016.

Vedanta may update the latest status.

Subsequently, a special meeting, on the issues related to Vedanta Ltd. was held on 14.10.2016 in the presence of CEA, CTU, OPTCL, GRIDCO, Vedanta, ERLDC & ERPC.

Vedanta may update the latest development.

B.12.3: Status of construction of Chuzachen bay at Rangpo S/s.

In 125th OCC, Powergrid informed that the tender document has been submitted to Sikkim in last week. The tender will be floated by Sikkim on e-tender portal of NIC.

Sikkim/Powergrid may update.

B.12.4: Status of Bus Splitting schemes in Eastern Region

A. Bus Splitting of Powergrid Sub-stations

In 11th SCM held on 20.09.2010 the bus-splitting arrangement with tie line breaker for the following 400kV substations in Eastern Region was agreed to contain the short circuit level below 40kA.

- Maithon
- Durgapur
- Biharshariff
- Kahalgaon

In 118th OCC, Powergrid updated the status as follows:

- Maithon ---Completed
- Durgapur--Completed
- Biharshariff—Foundation work has been completed but shutdown are yet to be received to complete the work.

In 121st OCC, Powergrid informed that they are not getting shutdown to complete the work at 400kV Biharshariff S/s.

BSPTCL informed that shutdown for 400kV Biharshariff S/s is not possible before September, 2016.

In 125th OCC, Bihar informed that Biharshariff shutdown can be given after the agumentation of Patna and Purnea ICTs

Powergrid/BSPTCL may update.

In 33rd TCC/ERPC, TCC advised CTU to carry out a final study post bus-splitting and inform ERLDC and ERPC.

In 125th OCC, Powergrid informed that CTU has done the study and they will submit the report soon.

CTU/Powergrid may update.

B. 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 33rd TCC, 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 package awarded, expected to be completed by August, 2016.
- Transformer package and Shunt reactor– Will be awarded by July, 2016.

In 123rd OCC, NTPC updated that transformer package and Shunt reactor will be awarded within 10 to 15 days.

In 124th OCC, NTPC updated that transformer package and Shunt reactor have been awarded.

NTPC may update.

B.12.5: Maintenance (AMC) of RTU panel installed at Rangit Power Station for Data Telemetry

NHPC vide letter dated 28.07.16 submitted that Rangit Power Station has one no.RTU panel (Make-Alstom, Model-S900) which is being used for telemetering of generation data from Rangit Power Station to ULDC & ERLDC Control Rooms. M/s. PGCIL supplied this RTU panel at Rangit Power Station under ULDC Project at ISGS Station in year 2004. Presently, maintenance of RTU panel is being carried out by M/s PGCIL (owner of said panel) which is going to be expired by July, 2016.

As per 33rd TCC meeting M/s PGCIL has informed that they are not going to do maintenance of above RTU and NHPC has to take care of maintenance / procurement of RTUs. However, M/s PGCIL is agreed to extend the AMC of these RTUs for further one year. Therefore, NHPC has requested Powergrid to extend the AMC of these RTUs for further one year till the issue gets resolved bilaterally

In 125th OCC, Powergrid informed that AMC for Rangit RTU has been approved by their authorities and the order will be placed shortly.

NHPC/Powergrid may update.

B.12.6: 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 125th 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 Dec, 2016.
b.	LILO of one circuit of Katapalli-Sadeipalli220 kV D/C line at Bolangir S/S	Charged on 04.05.16
2.	**400/220 kV Keonjhar S/S**	
a.	Keonjhar (PG)-Keonjhar (OPTCL) 220 kV D/C line	By 2017.
b.	Keonjhar (PG)-Turumunga(OPTCL) 220kV D/C line	By 2019.
3.	**400/220kV Pandiabil Grid S/s: Expected by June'16**	
a.	Pratapsasan(OPTCL)-Pandiabil (PG) 220 kV D/C line	Dec, 2017.

b.	LILO of one circuit of Atri-Puri (Samangara) 220 kV D/C line at Pandiabil (PG)	December, 2016

OPTCL may update.

B.12.7: 220 kV inter-connecting lines of JUSNL with 2x315 MVA, 400/220 kV sub-stations at Chaibasa, Daltonganj & Dhanbad

In 125th 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 (POWERGRID) – Chaibasa (JUSNL) 220kV D/c	Completed.
b.	Chaibasa (POWERGRID) – Ramchandrapur (JUSNL) 220kV D/c	December, 2016
2.	**Daltonganj 400/220/132kV S/s: Expected by Mar'17**	
a.	Daltonganj (POWERGRID) – Latehar 220kV D/c	By 2017.
b.	Daltonganj (POWERGRID) – Garhwa 220kV D/c	Matching with S/s
C	Daltonganj (POWERGRID) – Daltonganj (JUSNL) 132kV D/c	Matching with S/s
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.

B.12.8: 220 kV inter-connecting lines of WBSETCL with 400/220 kV, 2x315 MVA Alipurduar & 2x500 MVA Rajarhat sub-stations

In 125th 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***)	**Mar, 2017**
2.	**2x500MVA, 400/220kV Rajarhat West Bengal S/S- Expected by Oct, 2016**	
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.

Item No. B.13: Third Party Protection Audit

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	16	47.06
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.

2. Schedule for 2nd Third Party Protection Audit:

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

1)	Jeerat (PG)	Completed on 15th July 2015
2)	Subashgram (PG)	Completed on 16th July 2015
3)	Kolaghat TPS (WBPDCL)-	Completed on 7th August 2015
4)	Kharagpur (WBSETCL) 400/220kV -	Completed on 7th August 2015
5)	Bidhannagar (WBSETCL) 400 &220kV	Completed on 8th September, 2015
6)	Durgapur (PG) 400kV S/s	Completed on 10th September, 2015
7)	DSTPS(DVC) 400/220kV	Completed on 9th September, 2015
8)	Mejia (DVC) TPS 400/220kV	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

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.

In 125th OCC, it was decided to carry out the Third Party Protection audit of 765 kV Gaya, 400 kV Bihar Sharif of PGCIL, 400 kV Nabinagar and 220 kV Bihar Sharif of BSPTCL in Sept/Oct, 2016.

Further, it was also decided that the audit team will be comprised of one member each from DVC, West Bengal, Powergrid, ERLDC and ERPC.

Subsequently, the team has planned to carry out the audit from 01.11.2016.

Members may note.

Item No. B.14: Inspection of Under Frequency Relays (UFR)

In 124th OCC, DVC informed that the UFR relays will be delivered by August, 2016 and the UFRs at 220/132/33 KV Ramgarh S/s will be replaced by next month.

In 125th OCC, DVC informed that the UFR relays are in transit and the UFRs at 220/132/33 KV Ramgarh S/s will be replaced by next month.

DVC may update the status.

The proposed UFR audit schedule for second quarter of 2016-17 is placed below:

Sl No	Proposed Date	Substation/feeder inspected by the sub-group
1	Sep/Oct, 2016	132/33 KV Bari Pahari (Bihar Sharif) of BSPTCL
2		132/33 KV Purnea of BSPTCL
3		220/132/33 KV Sampatchak of BSPTCL
4	Nov, 2016	220/132/33 KV Kalyaneswari of DVC
5	NOV, 2016	220/132/33 KV New Bishnupur of WBSETCL
6		132/33 KV Old Bishnupur of WBSETCL
7	Dec , 2016	BRS (Liluah S/Stn.) of CESC

In 125th OCC, it was decided that the third party audit team will carry out the UFR inspection along with third party audit of 132/33 KV Bari Pahari (Bihar Sharif), Nalanda and Rajgir sub-stations of BSPTCL in Sept/Oct, 2016

Subsequently, the team has planned to carry out the audit from 01.11.2016.

Members may update.

Item No. B.15: 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 and comply.

Item No. B.16: 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.

In 85th OCC NTPC informed that, NTPC-Farakka has been certified with IS 18001. Other constituents including OHPC requested to interact with BIS with intimation to ERPC and get certified as per CEA direction. The matter is getting reviewed by highest authorities with top priority.

In 88th OCC NTPC informed that, all NTPC stations in Eastern Region are certified with IS 18001. NHPC informed that, Teesta is also certified with IS 18001. After that, OHPC and CESC informed that their stations are certified with IS18001.

In 104th OCC, WBPDCL informed that Bandel TPS is certified with IS 18001.

OPTCL vide letter No. TB-SO-MISC-9/2010/1914 dated 20.12.2014 had proposed to go for IS 18001:2007 certification as per direction of CEA.

In 113th OCC, CESC informed that Budge-Budge Generating station (3x250 MW) has renewed their certification of BS 18001:2007.

In 121st OCC, it was informed that Kolaghat Generating station of WBPDCL has also received certification of IS 18001:2007 from BIS on 29.04.2016.

In 124th OCC, WBPDCL informed that Bakreswar Generating station is also received certification of IS 18001:2007 from BIS.

Members may note and update the status.

Item No. B.17: FORMULATION OF A SKILL PLAN FOR POWER SECTOR BASED ON THE ASSESSED SKILL GAP IN THE SECTOR

CEA vide letter dated 04.07.16 intimated that a meeting on the above subject was held in the Ministry of Power, New Delhi on 1st July,2016. The meeting was Chaired by the Additional Secretary Shri B.P.Pandey. Power Sector Skill Council (PSSC) made a presentation on the subject. The meeting was attended by the representatives of BEE, PSUs, CEA, PGCIL, NPTI, PFC etc.

The main emphasis made by the Additional Secretary are as follows:

- The Report has to be submitted by PSSC by 10th of July, 2016 clearly indicating the needs of training and sill gaps in power sector.
- All the data captured, analysis made and other facts in the draft skill plan have to be validated by CEA before finalization of the Report.

In this regard officials from PSSC may visit various formations of CEA and / or circulate the Draft Report for obtaining the relevant inputs and validation of the data gathered by them. Chairperson CEA has been appraised of the same.

Further to this, MoP vide their letter No.7/5/2015-T&R dated 01.07.2016 have sought information in the matter. Based on the letter of MoP a proforma has been prepared. It is requested that the relevant information pertaining to the sector/sub-sector as per the attached proforma (Attached at **Annexure-B.17**) may please be sent to CEA (by mail: ceahrd@gmail.com).

124th *OCC advised all the constituents to send the relevant information as per the proforma.*

Constituents may note and comply.

Item No. B.18: Energy Generation data management from Renewable Energy Sources

RES development Division, CEA has been receiving monthly generation details and installed capacity of Renewable Energy Sources from respective SLDCs and other authorized agencies. Some discrepancies has been found in the data as received by CEA and MNRE.

Constituents are requested to reconcile/confirmed the correct information at the earliest.

In 120th OCC, all the SLDCs were advised to submit the data to CEA as per the format given in **Annexure- B.18** with a copy to ERPC Secretariat.

In 121st OCC, SLDC West Bengal and SLDC Odisha informed that they have submitted the relevant data to CEA.

SLDCs may update.

Item No. B.19: Compilation of data for meeting Renewable Energy targets of 175 GW by 2020 -- Reference from MNRE

CEA vide letter dated 29.03.16 has referred Ministry of Power letter no. 23/2/2005-R &R(Vol-XI), dated 22.03.2016 & MNRE letter dated 02.03.2016 regarding compilation of data for meeting Renewable Energy targets of 175 GW by 2020.

In 120th OCC, Concerned State Utilities /Generating companies are requested to submit data of their respective control areas.

Members may update.

Item No. B.20: Reporting of Energy generated from renewable resources on daily basis--- ERLDC

Government of India has set an ambitious target to achieve 175 GW of renewable generation by year 2022. Renewable energy sources(RES) development division of CEA alongwith MNRE is continuously monitoring the progress in installation of renewable resources and also collecting actual generation data on monthly basis. However the energy injected from the renewable generating plants into the grid also needs to be monitored on daily basis and incorporated in the reports by NLDC, to determine the correct percentage of energy mix for whole country on any particular day. Thus the renewable generators/ concerned SLDC may furnish following data on daily basis:

a) Grid connected RES whose scheduling and metering is done as regional entity :

   Maximum/Time and energy injected(MWh) for the previous day (from the SEM meters on a daily basis till the AMR is commissioned/working)

b) Grid connected RES which is under state purview:

   Maximum/Time and energy injected(MWh) for the previous day. Concerned SLDCs to compile station wise / connection point wise energy injected into the state grid and send it RLDC on a daily basis.

The above data may be sent by mail to erldc.cal@gmail.com positively by 01:00hrs of the day i.ro data for the previous day. This is essential as the power supply report has to be sent by early morning hours for the previous day.

NTPC Kaniha and All SLDCs may kindly confirm.

Item No. B.21: 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.

For the month of September, 2016 data has been received from OPTCL, BSPTCL, *WBSETCL, CESC.*

DVC, JUSNL may furnish the data.

Item No. B.22: Recovery Procedures of ER Constituents – ERLDC

As per IEGC clause 5.8 (b) “Detailed plans and procedures for restoration after partial/total blackout of each user’s/STU/CTU system within a Region, will be finalized by the concerned user’s/STU/CTU in coordination with the RLDC. The procedure will be reviewed, confirmed and/or revised once every subsequent year”.

In 117th OCC, ERLDC informed that all STUs have to develop their own restoration plan and procedure of their state in coordination with ERLDC/ERPC.

If such restoration plans are already available, it may be shared with ERLDC.

The restoration procedure received from DVC, JUSNL and WBPDCL.

In 122nd OCC, ERLDC requested DVC & West Bengal to include restoration plan for priority loads mentioning quantum of load and restoration procedure.

In 123rd OCC, *West Bengal, OPTCL and BSPTCL agreed to submit the restoration procedure within 15 days.*

In 124th OCC, ERLDC informed that OPTCL has submitted the restoration procedure.

Bihar informed that they are preparing the restoration procedure.

ERLDC may update.

Item No. B.23: Implementation of Automatic Demand Management Scheme (ADMS)

Regulation 5.4.2 (d) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (Grid Code) provides for implementation of demand management schemes by State Load Despatch Centre through their respective State Electricity Boards/Distribution Licensees. This is a basic measure towards ensuring grid security. Due to non-implementation of this scheme so far, CERC vide order dated 31-12-15 on **Petition No. 5/SM/2014** had directed all constituents as follows:

*"However, considering the request of the respondents to grant time to implement ADMS, we grant time till **30.6.2016** to the respondents to implement ADMS, failing which they will be liable for action under Section 142 of the Act for noncompliance of the Regulation 5.4.2 (d) of the Grid Code and order of the Commission. RLDCs are directed to submit the report in this regard by 31.8.2016."*

In 120th OCC meeting, *Powergrid informed that it is possible to implement in new SCADA system. After detailed deliberation, OCC referred the issue to 7th PRM meeting for further course of action.*

In 7th PRM meeting, m*ember Secretary, ERPC briefed the members about the need for compliance of the CERC directive for implementing Automatic Demand Management scheme (ADMS) in their respective systems.*

While discussing the issue in detail, it emerged that this feature can be implemented in ER constituent systems (WB, DVC, BSPTCL, JUSNL and Sikkim), upto 33 kV side as the telemetry of 33kV side has also been included in the SCADA project just implemented.

Regarding implementation of the ADMS in OPTCL, OPTCL informed that they will discuss the matter with appropriate management and will intimate the same at the earliest.

124th OCC advised all the utilities to give the latest status to ERLDC so that a report could be submitted to CERC.

The latest status submitted to CERC on 26.08.2016.

In 125th OCC, ERLDC informed that letters from JUSNL and BSPTCL has been received on implementation of ADMS. However, the detail scheme along with list of feeders as incorporated in ADMS scheme may be prepared and furnished.

OPTCL informed that they have visited Gujrat and collected the desired information regarding the implementation of ADMS and they are proceeding.

OCC advised all the utilities to update the latest status to ERLDC/ERPC.

Members may update.

Item No. B.24: 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.

In 120th OCC, DVC informed that they are providing the monthly TTC/ATC on their website.

WBSETCL informed that they are calculating the TTC/ATC but their website is under construction.

Bihar and OPTCL agreed to implement.

JUSNL informed that they are unable to compute the TTC/ATC for their state.

OCC advised JUSNL to interact with ERLDC to get acquainted with the ATC/TTC calculation.

In 33rd TCC Meeting, respective members updated the status as follows:

- All the states are computing TTC/ATC except Sikkim and JUSNL.
- DVC is calculating and uploading in DVC website.
- BSPTCL is calculating and uploading through a link in BSPHCL website.
- WBSLDC is calculating but they could not upload due to non-readiness of website.
- OPTCL is calculating and uploading in website.

TCC felt that grid operator should have the information on how much power they can export and import and they should restrict to that figures in order to avoid major grid disturbances.

Accordingly, TCC advised all the constituents to place the details in monthly OCC meetings till they upload the information in their respective websites.

TCC advised JUSNL to send their representatives to ERLDC so that they could get acquainted with the ATC/TTC calculation procedure. Representative from JUSNL informed that they are ready to send three officers to ERLDC, the names of officers would be shared in tomorrow's ERPC meeting.

123rd OCC *advised all the SLDCs to mention the constraints along with ATC/TCC figures.*

124th OCC *advised all the SLDCs to mention the constraints along with ATC/TCC figures.*

Members may note and update.

Item No. B.25: Reasons for demand –supply gap and its variation -- Agenda by NPC

It was deliberated in the 4th NPC meeting that monthly power supply position prepared & published by CEA based on the data furnished by the states reflected shortages in almost all the states. However, a number of those states intimated adequate availability of power. This meant that the deficit / shortage in such states was actually not the deficit in true sense but demand - supply gap due to reasons other than shortage of power. The other reasons for the demand - supply gap could be inadequate availability of power, transmission constraint, distribution constraint, financial constraint etc. The reason for demand –supply gap needed to be clearly mentioned to reflect true picture of power supply position in different states and also to invite attention of various agencies including policy makers to the specific problem areas in the power sector for suitable solution.

It was agreed by all the RPCs to advise the states in their respective regions to intimate broad break-up of demand –supply gap due to various reasons, or at least, the main reason(s) for demand supply in each month.

125th OCC advised all the constituents to comply.

Members may update.

Item No. B.26: Long outage of important transmission elements

a) Non availability of both line Reactor-1 of 400KV Malda-Purnea D/C

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

In 125th OCC, Powergrid informed that it will be commissioned by November, 2016.

Powergrid may update.

b) 400kV Meramundali-Mendhasal S/C

Tower collapsed near Mendhasal at 3 Locs, viz.Locs.180,181 & 182.

In 123rd OCC, *OPTCL informed that tower 181 and 182 were restored. Restoration of tower 180 will take time due to water logging and the tower would be restored by September, 2016.*

In 124th OCC, OPTCL informed that restoration of tower 180 will take time due to water logging and the tower would be restored by December, 2016.

In 125th OCC, OPTCL informed that the line will be restored by December, 2016.

OPTCL may update.

c) 220kV Gaya-Dehri

Tower collapsed at loc. No275 from Gaya end.

In 122nd OCC, BSPTCL informed that the line will be in service after 4 months.

In 124th &125th OCC, BSPTCL informed that the line will be in service by November 2016.

BSPTCL may update.

d) 400kV Patna-Kishengunj D/C

Tower collapsed at Loc.51.

Powergrid informed that due to water logging problem the work is getting delayed however work is expected to be completed by 15th October, 2016.

In 125th OCC, Powergrid informed that line will be restored by 15th October, 2016.

Powergrid may update.

e) 400kV Purnea-Biharshariff D/C(under outage wef 23/08/16)

Three Nos.Tower(mid river) collapsed.

ENICL may furnish the latest status.

f) Main bay of 315MVA ICT at Farakka(Tie element-400kV FSTPP-Malda-I)

The main bay is under s/d for upgradationwef 06/05/16.Powergrid may update stating status of the upgradation.

In 125th OCC, Powergrid informed that Bus-I end is ready and will be charged, Bus-II end is bypassed and will be ready for charge after getting shutdown.

Powergrid/NTPC may update.

g) Main bays at Maithon of 400kV Maithon-Durgapur I & II(Tie elements-Maithon-MPL-I&Maithon-Ranchi respectively)

Powergrid had taken initially shutdown of the bays reportedly due to induction effect in process of commissioning of GIS bay for 3rd 125MVAR Bus Reactor. However, the bays have remained under outage for a significantly long time. Non availability of the bays is leading to tripping/outage of the above mentioned lines in case of shutdown/outage of the lines in the same dia.

In 125th OCC, Powergrid informed that line will be restored by 25/26th September, 2016.

Powergrid may update.

h) 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 125th OCC, Powergrid informed that reactor will be charged by end of October, 2016..

Powergrid may update.

i) Tie bay of 125MVAR Bus reactor and 400kV Indravati-Indravati and Indravati(PG):

Under outage wef 18/03/16 due to R-Ph pole bursting of Tie CB. Due to non-availability of the tie bay, the Buses are coupled only via the tie bay of 400kV Rengali-Indravati and 400kVIndravati-Jeypore at Indravati and any outage of the lines would result in decoupling of the Buses.

In 125th OCC, Powergrid informed that main CB has some problem which will be taken care by OHPC/OPTCL.

Powergrid/OHPC may update.

Item No. B.27: Partial commissioning of switchyard equipments at BRBCL, Nabinagar end-- ERLDC

BRBCL, Nabinagar has been injecting infirm power starting w.e.f March,2016 and subsequently have been granted extension by CERC upto 31/03/17. However, it has been observed that their switchyard equipments have not been completely commissioned. Telephonically it has been intimated that only one 400kV Bus at BRBCL, Nabinagarhas been commissioned. Also, 400kV Sasaram-Nabinagar-I has only been commissioned while the status of Ckt-II is not clear. Also there is some confusion regarding nomenclature of the bays at Sasaram/Nabinagar ends. Accordingly, BRBCL, Nabinagar may kindly present the SLD of switchyard at their end and confirm regarding the present status of Line/equipments(including Line-II). Powergrid may also state regarding the status of bays and the status of the line-II at their end.

Powergrid may update.

Item No. B.28: 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.

In 125th OCC, ERLDC presented the updated telemetry status and informed that every month they were posting the updated status at ERLDC website. The updated status is enclosed at **Annexure-B.28**.

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

Members may update.

Item No. B.29: Interruption of real time data due to all control centres in ER

There was a total failure of real time SCADA data to all control centres from 05:53 Hrs of 08-August-16. As an interim arrangement, real time SCADA data was restored on 10-August-16 at 03:19Hrs. The root cause is yet to be arrived and fixed. We always talking about the route redundancy in the communication links but it is noticed that redundancy to the communication equipment is also not available.

Presently, with the implementation of new SCADA systems at all the control centres, RTUs has to report to both the control centers i.e. Main as well as Backup control centre.

At a time, only one control centre will act as main and other will be on standby (Hot/Standby architecture)

All communication link i.e. RTU links as well as ICCP data link with constituents may be provided at backup control centre also at the earliest so that real time SCADA data could be available to Backup ERLDC in case of any communication / machine failure at Main Control centre.

It is being requested POWERGRID to provide the redundancy for communication equipment system / route diversity of communication link / redundancy at both the control centres.

In 124th OCC, Powergrid informed that there was some problem in Patna SLDC due to which one ICCP link failed which caused the interruption of data.

OCC advised Powergrid to provide redundancy for communication equipment system / route diversity of communication link / redundancy at both the control centres. Powergrid was also advised to submit a report on the incident and action taken.

*In 125th OCC, Powergrid submitted the report which is enclosed at **Annexure-B.29**.*

OCC advised all the constituents to go through the report and give their feedback, if any.

Members may update.

Item No. B.30: 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.

In 124th OCC, it was informed that out of 247 PMUs 46 have been installed.

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

In 125th OCC, Powergrid submitted the latest status which is given at ***Annexure- B.30.***

POWERGRID may update the status.

Item No. B.31: 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.31**.

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

Members may update.

Item No. B.32: Status of Emergency Restoration System (ERS Towers) for Eastern Region constituents

The latest status of Emergency Restoration System (ERS towers) as well as the future plan of procurement was given at **Annexure- B.32**.

Members may update the latest status.

Item No. B.33: Pollution mapping for Eastern Region

The Pollution Mapping work in ER was started with on-site measurement of ESDD and NSDD.

OCC advised all the respective constituents to coordinate with Powergrid for online filling of measurement data.

In 123rd OCC, members updated the latest status as follows:

Utility	Scope	Installed Locations	Number of locations where 1st set of Measurements Completed	Number of locations where 2nd set of Measurements Completed
JUSNL	67	27	**21**	**19**
BSPTCL	59	52	**52**	**40**
WBSETCL	73	70	**43**	
OPTCL	164	102	**102**	**42**
Sikkim	12	9	**6**	**6**
Powergrid ER 1	99	99	**99**	**47**
Powergrid ER 2	40	40	**40**	**40**
Powergrid Odisha	42	42	**42**	**42**

OCC advised all the constituents to complete the measurements as per the schedule.

Members may update.

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

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

The schedule of the proposed black-start exercises for F.Y 2016-17 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, 2016	*Completed on 16th July 2016*	Last Week of January 2017	
2	Maithon (To be tested in islanded mode)	1st week of June 2016	*July 2016*	1st Week of February 2017	
3	Rengali	2nd week of June 2016	*23rd Sept, 2016*	Last week of November 2016	
4	U. Indarvati	3rd week of June 2016	*Completed on 16th July 2016*	2nd week of February 2017	
5	Subarnarekha	1st week of October 2016	***Last week of Sep, 2016***	1st week of January 2017	
6	Balimela	3rd week of October 2016		1st week of March 2017	
7	Teesta-V	2nd week of Nov 2016		Last week of February 2017	
8	Chuzachen	Last Week of May 2016	***Dec, 2016 (after consent from Sikkim)***	January 2017	
9	Burla	Last Week of June 2016	*28th August 2016*	Last week of February 2017	
10	TLDP-III	1st Week of June 2016	Nov, 2016	2nd Week of January 2017	
11	TLDP-IV	Last Week of June 2016	Nov, 2016	1st Week of February 2017	

*WBSETCL vide letter dated 27.09.16 on the issue of exemption from Black Start mode and RGMO operation of Purulia Pump Storage Project (PPSP), communicated the system modification around PPSP and requested for conducting studies regarding the Black start at PPSP with the proposed connectivity with all reactors as per the direction of CERC (Copy of letter attached at **Annexure-B.34**).*

Members may discuss.

ii) Testing of DG sets meant for Black start

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.

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

The latest status of units of ER under RGMO is available at ERPC website (http://www.erpc.gov.in/) under Operation>Important data.

In 108th OCC, ERLDC informed that the RGMO/FGMO response of the generators needs monitoring on continuous basis.

OCC advised ERLDC to intimate the event of sudden drop in frequency to the generators and requested all generators to provide the RGMO/FGMO response data to ERLDC during the said incidents.

In 115th OCC, ERLDC informed that for effective monitoring of unit wise governor response, ERLDC proposes to create a web-group wherein SCADA data recorded by ERLDC following an event of sudden load-generation imbalance would be posted within 2-3 days of occurrence of the event. The login id and password to access the web-group would be duly intimated by ERLDC to all concerned.

Coordinators from all the concerned generating stations would post the unit wise MW response as recorded at their respective ends, for a period +/- half-an-hour of the instant, within two days of posting by ERLDC. For the purpose of analysis, wherever significant variation would be observed w.r.t. to SCADA data, generator`s data would be adopted for detailed analysis.

In this connection, SLDCs of E. Region are requested to extend cooperation by coordinating with nodal officers of generators under their respective jurisdiction, in data collection and posting in webgroup.

OCC requested all the constituents to provide their respective e-mails which can be added to the web group.

E-mails can be provided by all SLDCs, Hydro generators of having capacity 10 MW & above and Thermal generators of having capacity 200 MW & above.

SLDCs will co-ordinate with their IPPs of 10 MW & above Hydro generation and 200 MW & above Thermal generation.

Thereafter, ERLDC informed that one web group was formed for sharing governor response of various generators in ER. The url of the group is

https://in.groups.yahoo.com/neo/groups/er_gov_respons/info

ERLDC requested to send email ids where invitation will be sent. Yahoo mail ids are preferable.

In 118th OCC, it was informed that WBSETCL, JUSNL, Bihar, NTPC and NHPC are yet to join the group.

OCC advised all the other constituents to join the web group at the earliest by providing their e-mail ids (preferably yahoo ids).

In 125th OCC, ERLDC explained that the frequency response of none of the ER generators is giving full response (i.e. 70-100 %) however, some of the generators (FSTPS, KhSTPS, BkTPP) are giving responses below 37 % which is not at par.

OCC requested all the generators to look into the matter and share their governor response with ERLDC.

ERLDC may update.

In 123rd OCC, ERLDC added that this is the best time to put all the generators in RGMO/FGMO mode as the grid frequency is stable and almost close to 50 Hz.

OCC decided that all the generators should put RGMO/FGMO in service from 15th August, 2016.

All generators agreed.

In 124th OCC, DVC informed that all units are in RGMO.

WBPDCL informed that Santaldih U#5 is in RGMO from 16th Aug 2016 and U#6 will be kept in RGMO after overhauling. WBPDCL added that other units are old and not capable to run in RGMO.

In such cases, OCC advised the respective generators to approach CERC for exemption.

In 125th OCC, ERLDC explained that there is not much improvement in the frequency response of ER generators.

WBPDCL clarified that KTPS units cannot be put into FGMO/RGMO as these units are not having Electro Hydraulic Governor (EHG) system.

OCC requested WBPDCL to put Santaldih (U#6) and Sagardighi units on FGMO/RGMO.

Members may update.

Item No. B.36: Reactive Power performance of Generators and GT tap position optimization

In 125th OCC, ERLDC informed that the performance of Teesta-III, DSTPS, Mejia-B and APNRL need improvement..

Generating stations have been monitored for certain sample dates in the month of September,16.

Power Plant	Max and Min Voltage observed for Sep 16 (KV)	Date for monitoring (Sep 16)
Farakka STPS	423,407	7,21
Khalgaon STPS	416,401	6,7
Talcher STPS	407,396	4,24
Teesta	405,392	2,21
Bakreshwar TPS	411,389	5,23
Kolaghat TPS	422,398	5,18
Sagardighi TPS	429,400	7,8
MPL	424,409	6,8
Mejia-B	----	6,8
DSTPS	422,410	6,8
Adhunik TPS	425,406	8,18
Sterlite	413,403	6,8
Barh	----	
JITPL	----	
GMR	412,400	5,24
HEL	----	
Kodarma	424,403	7,8

ERLDC may present the observations.

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. DSTPS (Unit#2 only pending) – done

c. Koderma TPS Unit#1 -- done on 08.08.2016
d. JITPL(both units) – Procedure given. Not yet done
e. Barh TPS – In June 2016
f. Raghunatpur (both units)
g. GMR (Three units)
h. *Haldia TPS (Unit #4)*

Members may update.

Item No. B.37: Consideration of 400kV lines/line segments owned and maintained by DVC as ISTS lines -- Agenda by DVC

DVC vide letter dated 11.08.2016 informed that the following 400kV lines/line segments owned by DVC and carrying inter-state power as ISTS lines:

1. LILO part (10.5 km) upto RTPS of Ranchi (PG)-Maithon (PG)
2. Termination segment (3.5 km) at DSTPS of the Jamshedpur(PG) line
3. RTPS-Ranchi(PG) line
4. DSTPS-RTPS line

The 400 kV lines under sl no. 1 & 2 are already a part of ISTS lines owned /maintained by CTU for transmitting inter-state power and hence liable to declared as ISTS lines.

In case of lines under sl no. 3 & 4 an in house study has been carried out by DVC in consultation with ERLDC to ascertain flow of ISTS Power through these linesunder different loading conditions and the preliminary study suggests that the 400 kV RTPS-Ranchi(PG) line is of vital importance in relieving the quantum of power transfer through the existing 400 kV Maithon (PG)-Ranchi(PG) line (D/C line with single ckt LILOed at RTPS, DVC) under different contingent conditions. Both the said lines also plays a vital role in evacuation of power from RTPS (2x600 MW) and DSTPS (2x500 MW) to the Central Grid relieving the existing ISTS lines from getting overloaded under contingent conditions, thereby bringing stability in the Eastern grid.

The matter was discussed in 4th SSCM held on 06.06.16 and as directed the details of above four lines along with findings on in-house study were submitted and given at **Annexure- B.37**.

Members may discuss.

Item No. B.38: Erroneous recording/Non-receipt of data by Interface Meters

A. Erroneous recording of data by Interface Meters

i. Joda(OPTCL)

SEM data received from Joda(OPTCL)endof 220 KV Joda(OPTCL) – Ramchandarpur (JUVNL) line is showing erroneous(15-20% Less recording as compared to Ramchandarpur end) since 14.01.16. Matter was intimated to official of Joda OPTCL. In 119th OCC, OPTCL informed that SEM at Joda end needs to be checked and corrected. OPTCL informed that there is no line CT, so 2 nos SEM for the bus-coupler at Joda end is required. In 121st OCC, ERLDC suggested to place one meter at B/C and to check healthiness of existing SEM at Joda end of Ramchandarpur Line. In the last Commercial Sub Committee meeting, PGCIL informed that SEMs have been arranged and the metering at B/C ofJoda would be completed subject to S/D allowed by OPTCL. OPTCL may confirm the S/D of 220 KV Joda-Jindal Line so that the meter of the said line may be shifted at B/C.

In 124th OCC, it was informed that the meter is yet to be replaced.

OPTCL informed that the shutdown will be allowed in this week.

In 125th OCC, Powergrid informed that SEM has been provided and voltage and current inputs are to be provided at SEM terminals.

PGCIL and OPTCL may please respond.

ii. Karamnasa(BSPTCL)

Karamnasa end meter NP-6018-B installed for 132 KV Chandauli (UPPCL) line is recording 50 % less as compared to Chandauli end since 14.08.16. It was gathered that there had been some panel replacement work at Karamanasa creating problem to the meter data during shifting work at Karamnasa. The above problem was informed to BSPTCL and PGCIL on 18.08.16 with request to check CT and PT connection at Karamnasa end. However problem is still persisting. At present accounting of ER-NR and BSPHCL is done with Chandauli end meter with no back up meter and validation.

BSPTCL and PGCIL may please update.

B. By passing of SEMs of Tie Lines

i. Kendiposi at JUSNL

SEM is installed at both end of 132 KV Kendiposi(JUSNL)-Joda (OPTCL) Line. As per the SEM data received from 132 KV Kendiposi(JUSNL), readings of meter (Serial No. NP-6117-A) installed at Kendiposi end of 132 KV Kendiposi-Joda Line is not recording any flow compared to Joda end since long. It was gathered from Kedniposi that line is feeding load to Naumundi (JUSNL) regularly through Transfer Bus of Kendiposi by passing the SEM at Kendiposi.

Further Power from Joda is occasionally received at Main Bus of Kendiposi. In that case Meter installed at Kendiposi end of Joda Line records the energy flow through the line. In absence of non-recording of data by SEM installed at Kendiposi end of the aforesaid Tie line, data validation and energy accounting is being affected. Presently energy accounting is being done considering Joda OPTCL end meter.

Bypassing of SEM installed at Tie line is violation of CEA metering regulation 2006 and the same is needed to be restored**.** One meter at Transfer Bus is required to be installed to record energy flow through the line. The above matter was last discussed in 33rd TCC/ERPC. Till now the details of SEM installed at Transfer Bus is not received by ERLDC.

In 123rd OCC, It was informed that one meter is to be installed at transfer bus and PGCIL informed that they will install the meter by 31st July 2016.

In 124th OCC, it was informed that JUSNL has to install CVT.

OCC advised JUSNL to install CVT at the earliest.

In 125th OCC, It was informed that the meter has been replaced. JUSNL to share the modem details.

Powergrid/JUSNL may update the status.

C. Non Receipt of SEM data from Various Locations

i. Forbisganj at BSPTCL

Kishanganj(BSPTCL) end meter of 132 KV Purnea(PG) Line is not recording any flow compared to Purnea PGCIL end since 14:00 hrs of 29th June 2015. It was gathered that line is feeding load

to Farbisganj at BSPTCL regularly through Transfer Bus of Kishanganj bypassing the SEM at Kishanganj. It was decided to place 02 nos of SEM at Forbesganj. In 31st CCM, BSPHCL representative informed that meter has been placed at Farbesgunj on 03.02.2016. In 121st OCC PGCIL informed that DCD for downloading the data has been handed over to BSPHCL. The matter was last discussed in 33rd TCC/ERPC and it was assured that the matter would be resolved at the earliest. However ERLDC has not received the SEM data till now.

In 123rd OCC, BSPHCL informed that software was not updated and they are not able to collect the meter data.

OCC advised PGCIL to look into. PGCIL agreed to look into.

BSPHCL may update.

ii. Kudra at BSPTCL

SEM data of Kudra end of 132 KV Kudra –Pusauli line is not being sent by BSPTCL since last one month. Further the Kudra end meter is not connected in AMR system which is supposed to be covered in AMR 3rd phase. In absence of Kudra end meter, end to end Validation of SEM data at ERLDC end is not done. The matter is already informed to BSPTCL.

In 125th OCC advised BSPTCL to look into the matter at the earliest.

BSPHCL may please respond.

D. Installation of SEMs at KBUNL MTPS Stg-II

For Drawl of startup power & injection of Infirm/firm Power from 2X195 MW KBUNL MTPS Stg-II, SEM is required to be installed. As per CEA Metering regulation, Special Energy meter on GTs, STs, all 220 KV Outgoing Feeder along with 220/132 KV Transformers at KBUNL end are to be installed by PGCIL. Meanwhile KBUNL has already installed same type energy meter (L&T Make ER-300P) in all commissioned bays as well as GT, ST and ICT. List of meters installed at KBUNL is enclosed in **Annexure-B.38.D**. KBUNL had requested PGCIL to use the existing meters till the installation of new meters by PGCIL.

PGCIL may please update.

PART C:: OPERATIONAL PLANNING

Item no. C.1: Shutdown proposal of transmission lines and generating units for the month of October'16

Members may finalize the Shutdown proposals of the generating stations for the month of November'16 as placed at **Annexure-C.1**.

ERLDC may place the list of line shutdown. Members may confirm.

Item no. C.2: Anticipated power supply position during November'16

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of November'16 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.2**.

Members may confirm.

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

(i) Generating units:

Generating Station	UNIT	CAP(MW)	REASONS FOR OUTAGE	OUTAGE DATE
STERLITE	2	600	COAL SHORTAGE	12-Sep-16
BARH	5	660	BOILER TUBE LEAKAGE	4-Oct-16
MEJIA	1	210	LOW DEMAND	7-Aug-16
MEJIA	2	210	BOILER TUBE LEAKAGE	29-Aug-16
BOKARO B	1	210	BOILER TUBE LEAKAGE	10-Sep-16
BOKARO B	3	210	LOW DEMAND	10-Aug-16
RAGHUNATHPUR	1	600	COAL MILL PROBLEM	11-Aug-16
KODERMA	1	500	ECONOMIZER TUBE LEAKAGE	28-Sep-16
STERLITE	4	600	COAL SHORTAGE	30-Sep-16
MUZAFFARPUR	1	110	BOILER TUBE LEAKAGE	25-Jul-16
PATRATU TPS	10	110	FLAME FAILURE	2-Oct-16
TENUGHAT	1	210	LOW VACUUM	9-Jul-16
BUDGE-BUDGE	1	250	HIGH TURBINE VIBRATION	27-Sep-16
DPL	7	300	BOILER TUBE LEAKAGE	20-Sep-16
WARIA	4	210	REHEATER TUBE LEAKAGE	5-Oct-16

(ii) Transmission elements

Name of the Line/Element	Outage	Reason
400 KV MEERAMANDALI- MENDHASAL S/C	23/05/16	TOWER COLLAPSED NEAR TO MENDHASAL,LOC NO 180,181,182.
220 KV GAYA-DEHRI-D/C	27/05/16	TOWER COLLAPSED AT LOC NO 275 FROM GAYA END.
400 KV PATNA-KISHANGANJ D/C	26/07/16	TOWER COLLAPSED AT LOC NO 51
400 KV BIHARSARIFF-PURNEA-I	23.08.16	Three numbers of tower are badly damaged at location 46/9, 47/0 & 47/1 (In the mid of river Ganga).
400 KV BIHARSARIFF-PURNEA-II	23.08.16	
220KV WARIA - BIDHANNAGAR-II	10.09.16	LINE UNDER B/D

Members may update.

Item no. C.4: 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.

PART D:: OTHER ISSUES

Item no. D.1: UFR operation during the month of September'16

System frequency touched a maximum of 50.24Hz at 18:01Hrs of 02/09/16 and again on 05/09/16 at 18:32Hrs and a minimum of 49.67Hz at 18:53Hrs of 19/09/16. Accordingly, no report of operation of UFR has been received from any of the constituents.

Members may note.

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'16.

Members may note.

Item no. D.3: Grid incidences during the month of September, 2016

Sl no	Disturbance Place	Date	Time	Generation loss (MW)	Load loss (MW)	Remark	Category
1	NJP (WBSETCL)	01-09-16	9:41	NIL	170	Due to non-opening of HV side CB of 220/132 kV ICT I & II at NJP (WBSETCL) S/S, LBB operated for Bus I & II at 09:41 hrs. Following elements tripped due to LBBoperation. 220 KV B/C, 220/132 KV ICT I & II at NJP (WBSETCL), 220kV NJP (PG) - NJP (WBSETCL) from NJP (PG) (Breaker is available only at NJP (PG) end	GD1
2	Tenughat, Patratu, Biharshariff	02-09-16	19:32	NIL	690	After tripping of Tenughat #2 (Unit # I was not in service) &Patratu # 10 (Only one unit was in service), 400/220 kV ICT I, II, III at Biharshariff got overloaded (270 MW/ICT) and tripped. So load at Biharshariff, Fatuah, Darbhanga and its surrounded area were being supplied through 220kV Ranchi-Hatia D/c and the line got overloaded. To reduce the loading of this line 220kV Tenughat-Biharshariff S/c was manually opened and power failure occured at Biharshariff, Fatuah, Darbhanga	GD1
3	Begusarai, Biharshariff (BSPTCL)	07-09-16	3:57	NIL	300	At 03:57 hrs, 220 KV Biharshariff – Begusarai – II tripped along with 132 kV Biharshariff – Samastipur, 400/220 kV ICT – II, III and 220/132 kV ATR - I at Biharshariff. On investigation, it was found that R phase jumper of 220 KV Biharshariff – Begusarai – II was snapped at tower location 154 (7km from Biharshariff).	GD1

4	Purnea, Madhepura (PG & BSPTCL) & Nepal	12-09-16	22:40	NIL	380	At 22:40 Hrs, 132 kV Purnea (PG) – Purnea (BSPTCL) – III tripped due to snapping of Y phase jumper near gantry at BSPTCL s/s. At same time, 132 kV Purnea (PG) – Kishangunj – Forbisgunj and 132 kV Purnea (PG) – Purnea (BSPTCL) – I & II tripped from Purnea (PG) end on O/C (as per BSPTCL report). After tripping of above lines, load at adjacent area and Nepal was catered through 220 KV Purnea-Madhepura – I & II which tripped from Purnea end on O/C.	GD1
5	Begusarai, Biharshariff (BSPTCL)	18-09-16	9:28	NIL	130	At 09:28 hrs, 220 KV Biharshariff - Begusarai D/C tripped on Y-B-N fault causing power failure at Begusarai and Darbhanga. Darbhanga was radially supplied from Begusarai with the help of transfer bus of Muzaffarpur (BSPTCL).	GD1
6	Fatuha (BSPTCL)	20-09-16	15:44	NIL	210	At 15:44 hrs, R-Ph CT of 220kV Patna- Fatuah S/c (idle charged from Fatuah end) bursted at Fatuah end. However, the relay at Fatuah end of said line did not operate and 220kV Biharshariff - Fatuha D/c sensed the fault in Z-II and tripped from Biharshariff end resulting total power failure at Fatuha.	GD1
7	Tarkhera (OPTCL)	22-09-16	15:38	NIL	120	At 15:38 hrs, all the feeders connected to Bus – II i.e. 220 kV Tarkera – Rourkela II, 220 kV Tarkera – Budhipadar –II, 220 kV Tarkera - Rengali II, 220 kV Tarkera - RSP – II, 220/132 kV ATR – I, II, III and IV at Tarkera along with B/C tripped due to operation of bus bar protection.	
8	Purnea, Madhepura (PG & BSPTCL) & Nepal	27-09-16	19:00	NIL	260	Charging attempt of 132 kV Purnea - Forbisgunj resulted tripping of 132 kV Purnea - Kishangunj& 220 / 132 kV ICT at Madhepura	
9	Kahalgaon	28-09-16	6:50	-	NIL	Due to B-Phase CT burst of 400 kV KhSTPP - Farakka - II at KhSTPP end, Bus - I along with 400 KV KhSTPP - Farakka - III & IV, 400KV KhSTPP - Barh, 400 KV KhSTPP - Maithon tripped	

Members may note.

Item no. D.4: Any other issues.

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Annexure- B.3

POWER SYSTEM OPERATION CORPORATION LIMITED
National Load Despatch Centre
Office Address: B-9, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi - 110016
Tel: 011-26524521, 26536959 Fax: 011-26524525, 26536901

Ref: NLDC-PSDF/GENERAL/2016-17/ 740 Dated 30th September, 2016

To,

Member Secretary, NRPC, Delhi
Member Secretary, ERPC, Kolkata
Member Secretary, WRPC, Mumbai
Member Secretary, SRPC, Bengaluru

Ref: Letter No. NLDC-PSDF/GENERAL/2016-17/428 dated 22.6.2016

Subject: **PSDF - Funding of the schemes of the state utilities for installation of capacitors in the state network at transmission / distribution network**

Sir,

This is with regard to the schemes of the state utilities for installation of capacitors in the state network at transmission / distribution network for funding from PSDF. An updated list of the schemes for capacitor requirements is enclosed as annexure-I for your kind information.

Vide letter dated 22.6.2016 deliberations of the Appraisal Committee regarding assessment of capacitor requirements in the state network at the regional level to facilitate evaluation of the schemes were communicated. As decided by the Appraisal Committee, it is requested that assessment of capacitor requirement may be carried out at regional level by yourself or by engaging an expert agency.

Outcome may be intimated to the PSDF secretariat on urgent basis, as long time has passed from submission of the schemes by the entities.

Thanking you

Yours faithfully

30/9/16

(K.V.S.Baba)
MS-Appraisal Committee &
ED, NLDC

Copy for kind information to:

1. Chairperson, Central Electricity Authority
2. Joint Secretary, (Trans & OM), Ministry of Power
3. Secretary, CERC
4. CEO, POSOCO
5. Director (OM) Ministry of Power
6. Chief Engineer (NPC) Central Electricity Authority

Annexure-I

POWER SYSTEM DEVELOPMENT FUND (PSDF)

Schemes for requirement of capacitors

Sl. No	Name of State/Entity	Name of Entity & unique ID	Date of Submission of Scheme	Name of Scheme	Estimated cost by entity (Rs. Crore)
I	II	III	IV	V	VI
1	Punjab	PSTCL (60)	24-Jun-15	Installation of 35 nos.,66kV 10.86MVAR HT shunt capacitor at various 220kV substations	8.35
4	Haryana	HVPNL(65)	21-Sep-15	To improve the voltage profile in the Grid by compensating reactive power	37.25
5	Uttar Pradesh	MVVNL (068)	17-Oct-15	Installation of 11kV Auto switched capacitor bank at various 33/11kV substation	294.25
6	PDD J&K	PDD J&K(033)	18-Dec-14	Capacitors at 132/33 kV substations	223.88
2	Gujarat	MGVCL (050)	5-Mar-15	Dynamic reactive power compensation for improvement of voltage profile in the grid	37.15
3	Gujarat	UGVCL(053)	9-Mar-15	Shunt capacitors	54.80
7	Gujarat	DGVCL (071)	10-Dec-15	Installation of reactive power compensation system on 11kV feeders	21.73
4	Maharashtra	MESTCL	20-May-16	Installation of Capacitor Banks at HV & EHV level at various EHV subatations under Nashik & Pune zones in MSETCL	19.49
6	West Bengal	WBSETCL	3-Feb-16	Improvement of State transmission System by proper Reactive power Management with an objective to improve voltage profile by installation of switchable reactor & shunt capacitor in the State as well as National Grid	48.45
10	Telangana	TSTRANSCO	2-Jun-16	Installation & Commissioning of Capacitors Banks at EHT Substations in TSTRANSCO	39.87
11	rajasthan	RRVNL	8-May-16	Installation OF 33 Kv shunt Capacitors in Rajasthan system	29.3
Total					814.52

POWER SYSTEM OPERATION CORPORATION LIMITED
National Load Despatch Centre
Office Address: B-9, 1st Floor, Qutub Institutional Area, Katwaria Sarai, New Delhi - 110016
Tel: 011-26524521, 26536959 Fax: 011-26524525, 26536901

Ref: NLDC-PSDF/GENERAL/2016-17/ 428 Dated 22nd June, 2016

To,

Member Secretary, NRPC, Delhi
Member Secretary, ERPC, Kolkata
Member Secretary, WRPC, Mumbai
Member Secretary, SRPC, Bengaluru
Member Secretary, NERPC, Shillong

Subject: PSDF- Funding of the schemes of the state utilities for installation of capacitors in the state network at transmission / distribution network

Sir,

This is with regard to the schemes of the state utilities for installation of capacitors in the state network at transmission / distribution network for funding from PSDF.

After examination of the schemes submitted by UP, Haryana, Punjab and Gujarat by the Techno-Economic Subgroup in the meeting held on 7th and 8th January, 2016, vide letter dated 10.1.2016 NRPC and WRPC were requested to assess capacitor requirements in the state network at the regional level to facilitate evaluation of the schemes.

In this regard, vide email dated 27.5.2016, NRPC had informed that they were engaging CPRI for the task.

The matter was deliberated by the Appraisal Committee during the meeting held on 31.5.2016. The Committee was of the view that approach followed by NRPC may be followed by other RPCs also. It would assist in fast disposal of the schemes regarding capacitor requirements.

In view of the above, as decided by the Appraisal Committee, it is requested that assessment of capacitor requirement may be carried out at regional level by engaging expert agency like CPRI. A list of the schemes for capacitor requirements is enclosed as annexure-I for your kind information.

Thanking you

Yours faithfully

(K.V.S.Baba)
MS-Appraisal Committee &
ED, NLDC

Copy for kind information to:

Chairperson, CEA / JS (TRANS) MOP / Director (OM) MOP / Chief Engineer (NPC) CEA/ CEO-POSOCO

Annexure- B.5

Unit wise yearly generation target for the year 2017-18

Organisation:

1. Details of two contact persons:

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

2. **Units existing on 31.03.2016**

Station name	Unit No.	Capacity	Date of commissioning	2016-17 generation details (MU)						2017-18 generation details (MU)		Remarks
				Target	Actual till last month	%PLF till last month	% Availability till last month	Total Anticipated during the year	Reason for low generation(if any)	Expected Target Generation (MU)	Reason for variation in target	

3. **Units Commissioned during 2016-17**

Station name	Unit No.	Capacity	Date of commissioning	2016-17 generation details (MU)						2017-18 generation details (MU)		Remarks
				Target	Actual till last month	%PLF till last month	% Availability till last month	Total Anticipated during the year	Reason for low generation	Expected Target Generation (MU)	Reason for variation in target	

4. Units likely to be commisioned during 2017-18

Station name	Unit No.	Capacity	Expected date of commissioning	2017-18 generation details (MU)	Remarks
				Expected Target Generation (MU)	

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

5. Details of Units commissioned/likely to be commissioned*

Unit Wise Details	Unit No.	Capacity	Date of commissioning	Date of commercial Operation/ Stablisation	Boiler make / Country	Turbine Make / Country	Boiler Effeciency (design)	Turbine Heat Rate (Design)	Unit Design Heat Rate	Type of cooling Tower	Type of BFP (motor/ Turbine) Driven	Type of FGD
	1											
	2											

**Formats may be modified as per CCGT/ Nucler Power Plant*

6. Loss of Generation due to Grid Constraints/ Low schedules /high fuel cost during 2016-17

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

S No.	Details of the Constraint	Loss so far (Apr'16-Aug'16)		during 2016-17	
				Anticipated Period of constraint	Anticipated loss of generation (MU)

7. PPA details

Annex-I(2 of 2)

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)	

8(a)Coal Linkage for coal based plants

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

8(b)Gas availibility for gas based stations

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

9. Cost of Generation:

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

Annex-II

Planned maintenance Schedules including R&M activities

A) **R&M of Units likely to be completed during 2016-17 & 2017-18**

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- B.12.2

Weekly Progress report on Construction of Dedicated Transmission Line:

As on dt.10th October, 2016

Name of Applicant: Vedanta Ltd

1.	Dedicated Connectivity Line	Vedanta Switchyard to PGCIL Pooling station Sundargarh. 400KV D/c Line
2.	Length of Dedicated Connectivity Line	20.345 KM
3.	Type of Conductor	AL 59
4.	Conductor configuration	Twin Conductor
5.	Total Nos. of Transmission line towers	64 Nos.
6.	Tower Foundations Completed	58 Nos
7.	Tower Erection Completed	32 Nos
8.	Stringing Completed	0 KM
9.	Completion Schedule of Dedicted transmission line along with the associated bay at Both ends.	30th Nov, 2016

Annexure-B.17

Manpower Engaged in Power Sector (Separately for Central, State and Private sector)

As on 31st March	Regular						Non-Regular				Grand Total (Regular+ Non Regular)
	Managerial and higher executive	Technical/ scientific officers	Technical Supervisory Staff	Technicians & operating Staff	Non-Technical	Total (Regular) {col 2 to 6}	Technical Trainees and apprentices	Work charged staff	Casual/ Temporary/ Out sourced	Total (Non-Regular) {col 8 to 10}	
1	2	3	4	5	6	7	8	9	10	11	
Actual											
2012											
2013											
2014											
2015											
2016											
Projected/ Estimated											
2017											
2018											
2019											
2020											
2021											
2022											
2023											
2024											
2025											
2026											
2027											

Details Regarding No. of Consumers and Connected Load etc.

(A) Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

(B) Non Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

(C) Utilities + Non Utilities

As On 31st March of Financial year end	No. of Consumers	Connected Load (kW)	Consumption (MU)	Energy Available for Supply	T&D losses(%)	Per Capita Electricity Consumption(kWh)
1	2	3	4	5	6	7
2011-12						
2012-13						
2013-14						
2014-15						
2015-16						
2016-17						
2017-18						
2018-19						
2019-20						
2020-21						
2021-22						
2022-23						
2023-24						
2024-25						
2025-26						
2026-27						

Details Regarding Installed Capacity, No. of Consumers and Connected Load etc.

(A) Installed Capacity (MW) - Utilities

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

(B) Installed Capacity (MW) - Non Utilities

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

(C) Installed Capacity (MW) - (Utilities + Non Utilities)

As On 31st March	Hydro	Thermal				Nuclear	Renewable					Grand Total
		Steam	Gas	Diesel	Total (Thermal)		Wind	Solar	Biomass etc	Mini/Micro Hydel	Total (Renewable)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
2012												
2013												
2014												
2015												
2016												
2017												
2018												
2019												
2020												
2021												
2022												
2023												
2024												
2025												
2026												
2027												

Annexure-B.18

Installed Capacity (MW) and Generation (MU) from renewable Resources (Injected into the Grid)

1. State/Centre :
2. Month :
3. Year :

Renewable Resources/Organizations	Installed Capacity (MW) as on last date of the month			Generation (MU) during the month : ~~January~~			Cumulative Generation (MU) during the 1st April ~~2015~~ to end of month		
Renewable Energy Resources	Central Sector	State Sector	Private Sector	Central Sector	State Sector	Private Sector	Central Sector	State Sector	Private Sector
1. Wind									
2 a. Solar (1 MW & above)									
2 b. Solar (Less than 1 MW)									
3. Biomass									
4. Bagasse									
5. Small Hydro (1 MW to 25 MW)									
6. Any Other (Please Specify the resources)									
Total									

Generating Station

- Nabinagar NTPC : No telemetry and voice communication.
- Sterlite IPP : No data from New switch yard since 3rd Feb 2016. No VOIP/Express voice. Alternate Data channel yet to be provided.
- MPL : Data is highly intermittent.
- TLDP (III) & (IV) : No telemetry data
- Haldia (2 x 300MW) : Bus Voltage, Isolator Status, SOE, LV side data.
- GMR (3 x 350 MW) :Express voice and VOIP integration with ERLDC.
- JITPL (2 x 600MW) – Express voice and VOIP yet to be provided. Alternate Data channel yet to be provided.

Contd…

Generating Station:

- IBEUL (2 x 350 MW) – VOIP/Express Voice. Alternate Channel. Unit Side data not available. Alternate Data channel yet to be provided.
- Farakka NTPC: Unit #4 and Unit # 6 LV side not available.
- Sagardighi : Unit 3 HV side (GT) data not available.
- Patratu and Tenughat : data is highly unstable due to communication link instability.
- TISCO: Highly intermittent.
- JSPL(Meeramundali) : CB and Isolator status not available since last 2 years.

Sub Station (data not avaiable at ERLDC):

- POWERGRID : Arrah 220 (not reporting since May 2016).
- NTPC: Lalmatia (No data since Jan 2016).
- BSPTCL : Sonenagar , Darbhanga, Valmikinagar and koshi (Connected with Nepal)
- JUSNL : Hatia New 220, Dumka 220.
- OPTCL : Paradeep and Bolangir (GR), Vedanta.

Sub Station (highly intermittent data):

- POWERGRID : RANCHI, Purnea 400, Baripada, Gaya, Biharshariff, Angul, Muzaffarpur.
- WBSETCL:Bantala ,Laxmikantapur ,New Town , Subhasgram.
- BSPHCL : Dumraon, Khagaul ,Darbhanga ,Dehri , sultangaunj , Lakhisarai, Karmanasa, Kahalgaon ,Jamaui ,Banka ,Gopalganj, Kisanganj, Arrah ,Rajgir ,Sipara ,Hajipur (New), Pusauli
- JUSNL : Entire data is highly intermittent due to communication link instability.
- DVC : Parulia , Barhi.

VOIP/Express Voice not available

- GMR
- JITPL
- Sterlite
- IBEUL
- Nabinagar
- Bolangir
- Indravati
- Jeypore
- Kalabadia
- Keonjhar
- Gazuwaka HVDC
- Unit Control of ISGS and IPP/MPP.

Details of Eastern Region

A. Telemetry not provided

A.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Date of first sysnchonisation	Total Generation Capacity (in MW)	Remarks by constituentes / ERLDC 26.07.16
1	WBSETCL	Haldia (2 x 300)	Jan-15	600	ERLDC is not getting any real time ISOLATOR status ,SOE from HEL except Line, Unit site MW /MVAR. No response.
2		Sagardighi			Unit 3 HV side not available
1	IPP	400 KV GMR (3X 350 MW)	Apr-13	1050	As per ERLDC guidelines no express voice /VOIP phones.
2		400 JITPL (600 x 2)		1200	Data Are highly instable . No alternate data channel and express voice commuincation integrated with ERLDC New Exchange
3		IBEUL (2 x 350 MW)		700	No alternate data channel and as per ERLDC guidelines no express voice /VOIP phones provided . LV side data not available
		Total (Non-telemetered stations)	**4**	**3550**	

A.2 Sub - Stations (765 & 400 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Date of first sysnchonisation	Remarks by constituentes / ERLDC 26.07.16
1	OPTCL	JSPL (Meramundali -400)	400 kV	Sep'10	Status are not reporting.

A.3 Sub - Stations (220 kV & 132 kV)

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Remarks by constituentes / ERLDC 26.07.16
1	OPTCL	OPTCL CPP : 220 KV BPSL,CONCAST,BSL,JSL,TSIL,VISSA	220 / 132 kV	Dec-13	CONCAST NO DATA , JSL NO KV/HZ. BSL NO HZ .BPSL NO Bus Kv .
1	WBSETCL	Foundary Park	220		data not integrated
2		Hura	220		data not integrated
1	BSEB	Darbhanga	220 kV		RTU under commissioning under upgradation project.
2		Jagdishpur	132 KV		RTU under commissioning under upgradation project.
1	JSEB	Hatia New	220 kV	No Time Schedule	No Data available .No response .
2		Japla	132 KV		No Data available .No response .
3		Dumka	220 KV		No Data available .No response .

B. Telemetry provided but not working / working intermittently

B.1 Generating Stations

Sl. No.	User Name	Name of Generation Stations	Total Generation Capacity (in MW)	Target date as per User	Remarks by constituentes / ERLDC 26.07.16
1	OPTCL	220 KV Vedanta (9X 135 MW)	1215	Dec-13	Some CB / Isolators and KV / HZ point yet to be provided.No response .
	WBSETCL	TLDP (III)			Data not available
		TLDP (IV)			Data not available
1	JSEB	220 KV Tenughat (2X 210 MW)	420	Time Schedule not submitted	Data highly intermittent
2		220 KV Patratu (4x 50 + 2x100 + 4x110)	840	Time Schedule not submitted	Data highly intermittent
1	NTPC	400 kV Farakka : (3x 200 + 2 x 500 MW + 600) Unit-6 and Unit -4 LV side MW/MVAR not available	2100	Time Schedule not submitted	No response .
2		BRBCL/Nabinagar TPP (4x250 MW)	1000	Time Schedule not submitted	No data available. As per ERLDC guidelines no express voice /VOIP phones provided .
1	Vedanta	SEL (4 x550 MW)	2200		All data stopped reporting since March 2016
			5575		

B.2 Sub - Stations

Remarks by constituentes / ERLDC 26.07.16

Sl. No.	User Name	Name of sub-Stations	Voltage level	Target date as per User	Data not reporting
1	BSPTCL	Barauni	132 kV		Under rennovation and modernization . Target July 2016
2		Dumraon	132 kV		Data stopped reporting
3		Khagaul	132 kV		Data intermittent
4		Darbhanga	220 kv &132 kV		RTU under commissioning under upgradation project.
5		Dehri	220 KV		presently not reporting due to RTU problem. M/s chemtrols RTU vendor directed to rectify problem. Target- May-16
6		Sonenagar	220 kV		Under rennovation and modernization . Target July 2016
7		sultangaunj	132 kV		Under rennovation and modernization . Target July 2016
8		Lakhisarai	132 KV		Data Intermittent
9		Karmanasa	132 KV		Under rennovation and modernization . Target July 2016
10		Kahalgaon	132 kV		Data Intermittent
11		Jamaui	132 KV		Data Intermittent
12		Banka	220 kv		Data Intermittent
13		Valmikinagar	132 kV		Under rennovation and modernization . Target July 2016
14		Koshi	132 kV		Under rennovation and modernization . Target July 2016
15		Gopalganj	220 kV		Data highly intermittent
16		Kisanganj	132 KV		Data highly intermittent
17		Arrah	132 KV		Data highly intermittent
18		Rajgir	132 KV		Data highly intermittent
19		Sipara	220 KV		Data highly intermittent
20		Hajipur (New)	220 KV		Data highly intermittent
21		Pusauli	220 KV		Data highly intermittent
1	GRIDCO	Paradeep	220		Data not Available
2		bolangir new	220		Data not Available
1	JSEB (COMMUNICATION link is highly instable)	Jamtara	132 kV	Time Schedule not submitted	Data not available
2		Deoghar	132 kV	Time Schedule not submitted	Data not available
3		Garwah	132 kV	Time Schedule not submitted	Data not available
4		Goelkera	132 kV	Time Schedule not submitted	Data not available
5		Jaduguda	132 kV	Time Schedule not submitted	Data not available
6		Kendposi	132 kV	Time Schedule not submitted	Highly Intermittent
7		Ramchandrapur	220 KV		Highly Intermittent
	WBSETCL	Asansol	220		Highly Intermittent
		Haldia NEW	220		Highly Intermittent
		bantala	220		Highly Intermittent
		Laxmikantapur	220		Highly Intermittent
		New Town	220		Highly Intermittent
		Subhasgram	220		Highly Intermittent
		EM Bypass(CESC)	220		Bus Voltage and Frequency Not Available
1	POWERGRID	RANCHI	400		Highly Intermittent
2		Purnea 400	400 kV		Highly Intermittent
3		Baripada	400 kV		Highly Intermittent
4		Gaya	765 kV		Highly Intermittent
5		Biharshariff	400 KV		Highly Intermittent
6		Angul	765 KV		Highly Intermittent
7		Muzaffarpur	400 KV		RTU is getting Hanged frequently
1	DVC	TISCO	400 KV		DATA HIGHLY INTERMITTENT
		Parulia	220 kV		Data Not available
1	IPP	MTHRB	400 KV		Data highly intermittent
1	NTPC	Lalmatia	220 kV		Data stoppped reporting since Jan 2016

A. Station

S. N	S/s Name	Orange Analog Phone	OrangeVOIP	Main ERLDC Kolkata data Link	Back Up ERLDC Delhi Data Link
1	Angul	Not Available	20330057	Available	Not Available
2	Ara	20330539	20330039	Available	Not Available
3	Baharampur	Not Available	20330031	Available	Not Available
4	Banka CS	Not Available	20330044	Available	Not Available
5	BARH NTPC	Not Available	20330051	Available	Not Available
6	Biharsarif 400kv	Not Available	20330034	Available	Not Available
7	Birpara	Not Available	20330053	Available	Not Available
8	Bolangir	Not Available	Not Available	Available	Not Available
9	Chaibasa CS	Not Available	20330041	Available	Not Available
10	Chandwa	20330559	20330059	Available	Not Available
11	Dalkhola	20330549	20330049	Available	Not Available
12	Daltonganj	Not Available	20330056	Available	Not Available
13	Durgapur	20330528	20330028	Available	Not Available
14	FSTPP	Not Available	20330054	Available	Not Available
15	Gangtok	Not Available	20330022	Available	Not Available
16	Gaya	Not Available	20330037	Available	Not Available
17	Indravati	Not Available	Not Available	Available	Not Available
18	Jamshedpur CS	20330533	20330033	Available	Not Available
19	Jeypore	Not Available	Not Available	Available	Not Available
20	Jharsugura	Not Available	20330040	Available	Not Available
21	Jorthang Power House	20330141		Available	Not Available
22	Kalabadia	Not Available	Not Available	Available	Not Available
23	Kahalgaon NTPC	Not Available	20330043	Available	Not Available
24	Keonjhar	Not Available	Not Available	Available	Not Available
25	Kishanganj	Not Available	20330061	Available	Not Available
26	Lakshisarai	Not Available	20330042	Available	Not Available
27	Maithon	Not Available	20330026	Available	Not Available
28	Malda	20330529	20330029	Available	Not Available
29	MTHRB	Not Available	20330027	Available	Not Available
30	Mujaferpur	Not Available	20330050	Available	Not Available
31	New Malli	Not Available	20330021	Available	Not Available
32	New Malli	20330140		Available	Not Available
33	Pandiavali	Not Available	20330067	Available	Not Available
34	Patna	Not Available	20330038	Available	Not Available
35	Purnia 220 KV	20330530	20330030	Available	Not Available
36	Purnia 400 KV	Not Available	20330025	Available	Not Available
37	Ranchi 400 KV	Not Available	20330032	Available	Not Available
38	Ranchi 765 KV	Not Available	20330035	Available	Not Available
39	Rangit	Not Available	20330058	Available	Not Available
40	Rangpo	20330139	20330020	Available	Not Available
41	Rengali	Not Available	20330045	Available	Not Available
42	Rourkela	20330536	20330036	Available	Not Available
43	Sasaram	Not Available	20330046	Available	Not Available
44	Siliguri 220	20330523	20330023	Available	Not Available
45	Siliguri 400/220 (Binaguri)	20330524	20330024	Available	Not Available
46	Subashgram	Not Available	20330015	Available	Not Available
47	Teesta NHPC	Not Available	20330062	Available	Not Available
48	TSTPP, Talcher NTPC	Not Available	20330052	Available	Not Available

Note :* Phone at Unit Control room is yet to provided.

B. SLDC /NLDC to ERLDC protection path not provided.

S.N.	Link	Main ERLDC Delhi		Backup ERLDC Delhi	
		Main Channel	Std By Channel (Route Diversity)	Main Channel	Std By Channel (Route Diversity)
1	OPTCL -ERLDC	Yes	Not Available	Not Available	Not Available
2	BSPTCL -ERLDC	Yes	Not Available	Not Available	Not Available
3	JUSNL -ERLDC	Yes	Not Available	Not Available	Not Available
4	WBSETCL -ERLDC	Yes	Not Available	Not Available	Not Available
5	DVC -ERLDC	Yes	Not Available	Not Available	Not Available
6	Sikkim -ERLDC	Yes	Not Available	Not Available	Not Available
7	NLDC -ERLDC	Yes	Not Available	Yes	Not Available

Annexure- B.29

पावरग्रिड

Power Grid Corporation of India Limited

Communication Equipment Package IV- Eastern Region

Troubleshooting & Analysis of Ethernet Services

commtel NETWORKS

1 Introduction

PGCIL ER SDH transmission network is spread across 5 states of India (i.e. West Bengal, Orissa, Sikkim, Jharkhand and Bihar. The transmission network consists of STM-16 SDH equipment *i.e.* Coriant hiT 7080 (Qty: 43 Nos.) & STM-4 equipment *i.e.* Coriant hiT 7025 (Qty: 99 Nos.).

The SDH transmission network facilitates E1 2Mbit/s to interface with PDH equipment (*i.e.* Loop AM3440) installed at all the station. The PDH equipment provides the voice *(i.e.* 2/4 Wire E&M and FXO/FXS Subscriber dialling) and data services (*i.e.* V.24/V.28 & V.35). The SCADA RTU's communicates with SCADA Master System over the V.24/V.28 data links.

The SDH network also facilitates Layer-2 Ethernet services for point-to-point and point-to-multipoint Ethernet traffic. The ICCP data links, Video Conference, EPABX, VoIP, RTU and Phase Metering Unit data links from SLDC's reports to ERLDC Kolkata over Ethernet services of SDH.

The above E1 2Mbit/s and Ethernet services were running for more than a year.

2 Network Events

8th August 2016 05:30 AM.

Failure of ICCP data, VoIP, RTU and Phase Metering Unit data from SLDC's reporting to ERLDC Kolkata.

On 8th August 2016 5:30 AM, majority of Ethernet services like ICCP, VoIP, and RTU were not operational.

The team reached ERLDC and found that Ethernet services are not operational, however E1 2Mbit/s traffic is operational without any disruption. All other voice & data services configured on PDH system are functioning seamlessly. The RTU data is working acceptably over V.24/V.28 data links of PDH system.

There were no alarms in NMS on any of the Ethernet interface units of SDH system. The team tried to isolate the fault by switching paths of SLDC's.

Considering the urgency of the restoration of ICCP links, we decided to reconfigure the ICCP links from all SLDC to ERLDC. In the meantime we requested PGCIL to provide the standby telecom links for early restoration of ICCP links. PGCIL provided us the standby telecom links and ICCP data shifted on the standby telecom links. Concurrently the ICCP links from all SLDC's to ERLDC were reconfigured on SDH system and restored by 9th August 2016 midnight.

As the network is widely spread across 5 states and not linear in nature it was again adding to the difficulty in finding the exact fault location. While restoring the Ethernet services, our observations and analysis are as below:

3 Problem Analysis & Corrective Actions

- We performed Ethernet ping test on 10 Mbps link between ERLDC to Bhubaneshwar SLDC. The ping response was inconsistent and with high latency. We also observed request timed out frequently.
- Subsequently we performed RFC2544 Ethernet test on 10 Mbps link between ERLDC to Patna SLDC. We observed 60% throughput, high latency (i.e. ≥ 100 milliseconds) and high frame loss.
- The point-to-multipoint Ethernet services were not functioning consistently in Core ring (*i.e.* STM-16 equipment at Farakka, Durgapur, Jamshedpur, Chaibasa, Rourkela, Ranchi 400, Maithon CS and Kahalgaon).
- We observed that point-to-multipoint WAN aggregation performance is not consistent in STM-16 core-ring.
- We rebooted the Ethernet cards of all the STM-16 core-ring, but Ethernet services were inconsistent.
- At all hiT 7080 node of the STM-16 core-ring as well as STM-4 sub-rings, all the VLAN's (*i.e.* ICCP, EPABX, VoIP, RTU and PMU) were mapped on a single WAN of 100 Mbps bandwidth.
- At Farakka hiT 7080 junction node (with four STM-16 directions), the end-to-end WAN status of all four STM-16 directions was OK. In the Ethernet performance data, we observed the frame losses on WAN interfaces, WAN interface wasn't forwarding the Ethernet frames consistently.
- We observed it was creating the problem as all the VLAN services ICCP, VoIP, and PMU were mapped on the same WAN of 100 Mbps bandwidth.
- hiT 7080 at Farakka is very critical as it is a junction node with four STM-16 directions going towards ERLDC, Bhubaneshwar, Patna & Sikkim. Ethernet services across the STM-16 core-ring as well as STM-4 sub-ring were affected whenever they were added/dropped at this node. On the contrary, the services functioned properly when they were optically passed through Farakka.
- Hence, we reconfigured the Ethernet services across the network such that all the services (ICCP, VoIP, RTU, PMU, etc.) which were in a single WAN group earlier, were segregated into separate WAN groups.
- Considering the criticality of ICCP data, the main links for this service were configured as Point to Point channels so that in future, failure in any one of the link will not affect other working links.
- Subsequent to these network configuration changes, we monitored the Ethernet performance of WAN interfaces at other locations as well (*i.e.* and Durgapur, Jamshedpur, Chaibasa, Ranchi 400, Maithon CS, and Kahalgaon).

- Following these corrective actions, all point-to-point and point-to-multipoint Ethernet services started functioning steadily over the entire network even when the Ethernet traffic was added/dropped at Farakka. It is mentioned that no hardware fault was observed at any location and the system is working on the same equipment/cards/hardware on date.
- We observed the improvement in the latency which dropped from ≥ 100's of milliseconds to 20...25 milliseconds and zero frame loss.

4 Additional Observations and Suggestions

- It is observed that the additional ports configured in the networks on ad hoc request of Constituents are used for IT and ERP like services, which modifies the channel plan from the original design in an unplanned manner. It is recommended that such requests should go through proper approval of LD&C (Power Grid) for assessment of impact on the critical GRID operations traffic prior to configuration.
- Additional Standby links for very important services like ICCP etc. have to be configured from Telecom or using E1 to Ethernet converters at ERLDC and SLDC locations.
- Most of optical links were not available initially and the services have been configured through best available path. Availability of maximum optical link is very much essential to implement the Ethernet channel routing scheme in totality.

5 Preventive Actions for Future

- Periodic audit and streamlining of all Ethernet services reconfiguration in all the nodes of STM-16 core Ring and STM-4 based on future service requests.
- After adding/deleting any E1/ Ethernet traffic in the network, the node configuration backup will be taken for early restoration in the event of fault condition.
- While provisioning of new services/applications by an end-user, Ethernet patch Cables has to be inserted in designated ports of the SDH equipment only after end-to-end link testing has been performed by Commtel.
- All the services in the network are as per approved design document. No services addition or deletion or shifting has to be done without proper re-designing and approval by LD&C.

6 Conclusion

Prima facie it is observed that the network interruption incident of August 8th, 2016 occurred because Ethernet services were affected due to configuration of multiple services in one WAN. Whereas the exact network service/element affected the network could not be found, also no physical defect has been found in the hardware

as mention above. it is clearly seen that problems was found in Ethernet WAN services as one service has affect the other services shared by the same WAN, since no alarms were generated the exact reason for the malfunction in any one of the services in the Ethernet domain is very difficult to pin point. However We have addressed this issue of inter dependence of performance of various Ethernet applications by segregating the services on separate WANs, so that problems in any one service do not affect the remaining services which run over the Ethernet. Further preventive and suggested actions as delineated above have been identified so that such incidences do not occur in future.

for COMMTEL N/WS
PVT. LTD
19/07/2016.

Annexure- B.30

Gmail

ULDC ER2 <uldcer2@gmail.com>

RE: Progress report of URTDSM project at ER-II and Odisha.

SINHA Debojyoti <debojyoti.sinha@alstom.com> Mon, Sep 19, 2016 at 4:27 PM
To: "snghosh_11@yahoo.co.in" <snghosh_11@yahoo.co.in>, "uldcer2@gmail.com" <uldcer2@gmail.com>, "sknaikindia@gmail.com" <sknaikindia@gmail.com>, "onmodisha@gmail.com" <onmodisha@gmail.com>
Cc: RAJE Nilesh <nilesh.raje@alstom.com>, BHARDWAJ Dayakishan <dayakishan.bhardwaj@alstom.com>, NARULA Rajiv <rajiv.narula@alstom.com>, SRIVASTAVA Anurag1 <anurag1.srivastava@alstom.com>, KUMAR Jitendra1 <jitendra1.kumar@alstom.com>

Dear Sir,

The following is the summary of as on date progress under URTDSM project at ER region.

Sl. No.	Region	Utility	As per approved BOQ		Dispatched		Installed		Commissioned		Integrated to ERLDC/ SLDC		Integrated to NTAMC	
			S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU
1	ER-I	Powergrid	15	71	0	0	0	0	0	0	0	0	0	0
2	ER-I	NTPC	2	10	0	0	0	0	0	0	0	0	N/A	N/A
3	ER-I	Jharkhand	2	0	0	0	0	0	0	0	0	0	N/A	N/A
4	ER-I	Bihar	2	0	0	0	0	0	0	0	0	0	N/A	N/A
	ER-I	**Total**	**21**	**81**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
1	ER-II	Powergrid	14	41	8	33	8	33	8	33	7	29	0	0
2	ER-II	NTPC	1	0	0	0	0	0	0	0	0	0	N/A	N/A
3	ER-II	DVC	13	31	8	21	5	12	5	12	1	2	N/A	N/A
4	ER-II	WBSETCL	8	19	0	0	0	0	0	0	0	0	N/A	N/A
	ER-II	**Total**	**36**	**91**	**16**	**54**	**13**	**45**	**13**	**45**	**8**	**31**	**0**	**0**
1	Odisha	Powergrid	10	38	7	23	7	23	7	23	3	15	0	0
2	Odisha	OPTCL	8	16	0	0	0	0	0	0	0	0	N/A	N/A
3	Odisha	NTPC	1	0	0	0	0	0	0	0	0	0	N/A	N/A
4	Odisha	IPP	7	3	0	0	0	0	0	0	0	0	N/A	N/A
	Odisha	**Total**	**26**	**57**	**7**	**23**	**7**	**23**	**7**	**23**	**3**	**15**	**0**	**0**
	ER	**Total**	**83**	**229**	**23**	**77**	**20**	**68**	**20**	**68**	**11**	**46**	**0**	**0**

At ER, PMU has been commissioned to total 20 substations and among those 11 substations are integrated to ERLDC/ DVC Maithon. Fibre optical communication cable are not available for Keonjhar, Bolangir, Indrawati, Jeypore and DSTPS. SDH is not available at Kodarma TPS. Communication link not configured for Raghunathpur TPS.

Among the 11 integrated substations, now communication links available for Behrampur, Maihton, Durgapur, Malda, Subhashgram, Birpara, Jharsuguda, Rengali, Rourkela and Bokaro-B. Communication links for Binaguri is not available/ not configured.

In addition to the above mentioned progress, we wish to mention that FAT has been completed for 124 PMU of ER. Among those,

1. 31 PMU of ER-II (Arambag, Bakreswar TPS, Bidhannagar, Jeerat, Kasba, Kolaghat TPS, Bokaro TPS (A), Kalyaneswari, DVC Parulia and Rajarhat). 6 PMU for Alipurduar S/S are remaining to be delivered among the approved BOQ of PMU.

2. 24 PMU of Odisha (Mendhasal, Meeramandali, Rengali, U. Kolab, Balimela (H), Indrawati HPS, GMR and Uttara). 10 PMU of Angul S/S are remaining to be delivered among the approved BOQ of PMU.

3. 69 more PMU of ER-I (Jamshedpur, Kahalgaon TPS, Purnea, Patna, Barh, Lakhisarai, Banka, Daltonguni, Chaibasa, Kishanganj, Chandwa, 765 Gaya and 765 Ranchi). 12 PMU of 400KV Ranchi S/S are remaining to be delivered among the approved BOQ of PMU.

A summary of the PMU supply status is as below.

Sl. No.	Region	Utility	As per approved BOQ		Dispatched		To be dispatched in Sept. 2016		Remaining PMU count	
			S/S	PMU	S/S	PMU	S/S	PMU	S/S	PMU
1	ER-I	Powergrid	15	71	0	0	11	59	4	12
2	ER-I	NTPC	2	10	0	0	2	10	0	0
3	ER-I	Jharkhand	2	0	0	0	0	0	2	0
4	ER-I	Bihar	2	0	0	0	0	0	2	0
	ER-I	**Total**	**21**	**81**	**0**	**0**	**13**	**69**	**4**	**12**
BOQ not finalized for Sasaram, Biharsariff, Muzaffarpur PG, Patratu, Tenughat, Barauni PP and Muzaffarpur (BSEB) of ER-I.										
1	ER-II	Powergrid	14	41	8	33	1	2	1	6
2	ER-II	NTPC	1	0	0	0	0	0	1	0
3	ER-II	DVC	13	31	8	21	3	10	2	0
4	ER-II	WBSETCL	8	19	0	0	6	19	2	0
	ER-II	**Total**	**36**	**91**	**16**	**54**	**10**	**31**	**6**	**6**
BOQ not finalized for Teesta, New Melli, Mangan, TT Pool, Farakka TPS, CTPS-B, Durgapur TPS, Bidhannagar 220 and PPSP of ER-II.										
1	Odisha	Powergrid	10	38	7	23	2	5	1	10
2	Odisha	OPTCL	8	16	0	0	6	16	2	0
3	Odisha	NTPC	1	0	0	0	0	0	1	0
4	Odisha	IPP	7	3	0	0	1	3	6	0
	Odisha	**Total**	**26**	**57**	**7**	**23**	**9**	**24**	**10**	**10**
BOQ not finalized for Budhipadar, TTPS, Talcher TPS (NTPC), JITPL, Monnet, LANCO, Navbharat, Sterlite and Ind Bharat of Odisha.										
	ER	**Total**	**83**	**229**	**23**	**77**	**32**	**124**	**20**	**28**

Road permit for only 2 substations of Odisha region and 6 substations of ER-II has been provided by PGCIL. Delivery address required for these 6 substations of ER-II for PMU panel dispatch. Cable for these substations will be dispatched by end of September 2016.

We have attached herewith a list of substations, where survey is still pending. We have completed survey of Talcher STPS (NTPC), Talcher TPS, JITPL and Muzaffarpur. LANCO authority is not allowing our team to conduct survey. Moreover, LANCO site is under construction. We still do not have address and contact person details of Monnet and Nav Bharat.

In this regard, we wish to mention some bottlenecks at ER-II and Odisha region:

PMU:

a. Farakka TPS: PMU panel location not finalised yet.

b. Mangan and TT Pool: Site not ready.

c. Arambag, Bakreswar TPS, Bidhannagar, Jeerat, Kasba, Kolaghat TPS: Address to be provided to Alstom for PMU delivery.

d. Communication links: PMU to ERLDC/ NTAMC/ SLDC communication links are not available. PGCIL PMU to NTAMC control centre communication links are not configured yet.

Control Centre:

a. ERLDC: Space not available for mounting server panels.

b. Backup NLDC: Space not available for installation of PDS system. Civil work and A/C installation required at D.G. room for UPS system.

Annexure – B.31

AVAILABILITY STATUS OF EVENT LOGGER, DISTURBANCE RECORDER & GPS

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

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

Eastern Regional Power Committee

The status of ERS towers in Eastern Region as submitted during ERS meeting held on 10.11.14 taken by Member (Power System), CEA is given below:

1) As per 100th OCC meeting held on 22.08.2014, the status of ERS towers as available in Powergrid 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) As informed by OPTCL, 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 approved by Board of Director for procurement in the current financial year. Purchase order has been placed.
- Another, 16 nos of 400 kV towers accompanied with 6 sets of T&P are required.

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) Bihar informed that they have 10 sets of 220 kV ERS towers and 2 sets are under process of procurements.

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

Annexure- B.34

West Bengal State Electricity Transmission Company Ltd.

(A West Bengal Government Enterprise)
CIN : U40101WB2007SGC113474
Office of the Chief Engineer
Central Planning Department

FAX : 033 2359-1955
Telephones : 033 2359-2652, 033 2319-7359
E-Mail : cpd@wbsetcl.in ; cpd.wbsetcl@gmail.com

Vidyut Bhavan (9th Floor)
Block - DJ, Sector - II
Bidhannagar, Kolkata - 700 091

Ref. No. : CE/CPD/ERPC/ 1122

Date : 27/09/2016

To,
The Member Secretary,
Eastern Regional Power Committee,
14, Golf Club Road,
Tollygunge, Kolkata -700 033

Sub. : Black start operation of Purulia Pump Storage Project (PPSP) of WBSEDCL.

Dear Sir,

In response to the petition of WBSEDCL for exempting PPSP of WBSEDCL from Black Start mode and Restricted Governor mode of operation vide petition no. 149/MP/2012, Central Electricity Regulatory Commission (CERC) directed to provide black start facility after finalizing a suitable scheme in consultation with ERLDC through WBSEDCL.

Central Electricity Authority (CEA) in its report submitted to APTEL on the subject matter pointing out that black start mode of operation can be implemented; however, it would require changes in protection philosophy. This should be done in consultation with OEM, System Operator, STU and ERPC.

The above observation was made considering the existing system configuration of PPSP. Now, one 400 kV GIS is being constructed by WBSETCL at PPSP (1.5 Km away from PPSP 400 kV switchyard) with D/C LILO of PPSP – Arambag 400 kV D/C line and one 80 MVAR 400 kV Bus Reactor. The Ranchi – Purulia 400 kV D/C line with 2x63 MVAR Line Reactor at Ranchi end will be terminated at the new 400 kV GIS. The project is likely to be completed in 2017-18.

After completion of this project, length of 400 kV lines from PPSP will be as follows:
(a) PPSP – New PPSP 400 kV D/C – 2 Km; (b) New PPSP – Arambag 400 kV D/C – 205 Km; (c) PPSP – Durgapur 400 kV D/C – 183 Km and (d) Ranchi – New PPSP 400 kV D/C – 111 Km

In view of above, you are requested to put your valued opinion conducting studies on ER network as a whole regarding implementation of Black start at PPSP with the proposed connectivity with all Reactors in circuit.

Further, Turga PSP (4x250 MW) will be connected at New PPSP 400 kV GIS by QUAD Moose D/C line (RL ≃ 5 Km). Whether black start of Turga PSP shall be implemented with this connectivity may also be looked into.

Any further information, if required, will be provided as and when necessary.

Regards,

Yours Faithfully,

27/9/16

(Arundhati Ghosh)
Chief Engineer : CPD

Annexure- B.37

दामोदर घाटी निगम : Damodar Valley Corporation
विद्युत विभाग : ELECTRICITY DEPARTMENT
डीवीसी टावर्स, वीआईपी रोड : DVC TOWERS, VIP ROAD,
कोलकाता - 700 054 : KOLKATA – 700 054
दूरभाष/Tel : +91 33 23557939/0946 ; फैक्स/Fax : +91 33 23554841

Ref. No. ED(SYS)/PS/SPE - 10 Dated, August 11, 2016.

To

The Member Secretary,
Eastern Region Power Committee,
14 Golf Club Road,
Tollygunge, Kolkata - 700033.

Sub : Declaration of 400kV lines/line segment constructed, owned and maintained by DVC as ISTS line.
Ref : This office letter No. Dir(Sys)/PS/PSR- 05 dtd. 26.05.2016.

Dear Sir,

Kindly refer to our earlier communication wherein it was requested for arranging declaration of the following 400kV lines/line segments owned by DVC and carrying inter-state power as ISTS lines;

1. LILO part (10.5 KM) up to RTPS of the Ranchi PG – Maithon PG line.
2. Termination segment (3.5 KM) at DSTPS of the Jamshedpur PG line.
3. RTPS – Ranchi PG line.
4. DSTPS – RTPS line.

The 400kV line segments under Sl. 1 & 2 are already a part of ISTS lines owned/maintained by the CTU for transmission of inter-state power and hence, liable to be declared as ISTS lines outright.

In case of lines under Sl. 3 & 4, an in-house study has been conducted by DVC in collaboration with ERLDC to ascertain flow of ISTS power through these lines under different Loading conditions and the preliminary study suggests that the 400kV RTPS – Ranchi line is of vital importance in relieving the quantum of power transfer through the existing 400kV Maithon PG – Ranchi PG line (D/C Line with single ckt. LILO at RTPS, DVC) under different contingent conditions. Both the said lines also plays a vital role in evacuation of power from RTPS (2x600MW) and DSTPS (2x500MW) to the Central Grid relieving the existing ISTS Lines from getting overloaded, under contingent conditions, thereby bringing stability to the Eastern Grid.

The matter was discussed in the 4th. SSCM dated 06.06.2016 (Item 32.0) and as directed, details of the above 4 lines along with findings of in-house study are being submitted with a request to kindly arrange for declaration of the said lines as ISTS lines.

Yours faithfully,

Executive Director (System)

Enclo : 1. DVC 400kV System.
2. 400kV Line data.
3. Finding of In-house study.

CC : The Executive Director (Commercial), DVC, Kolkata.
CC : The Chief Engineer-I, SPE, DVC, Kolkata.

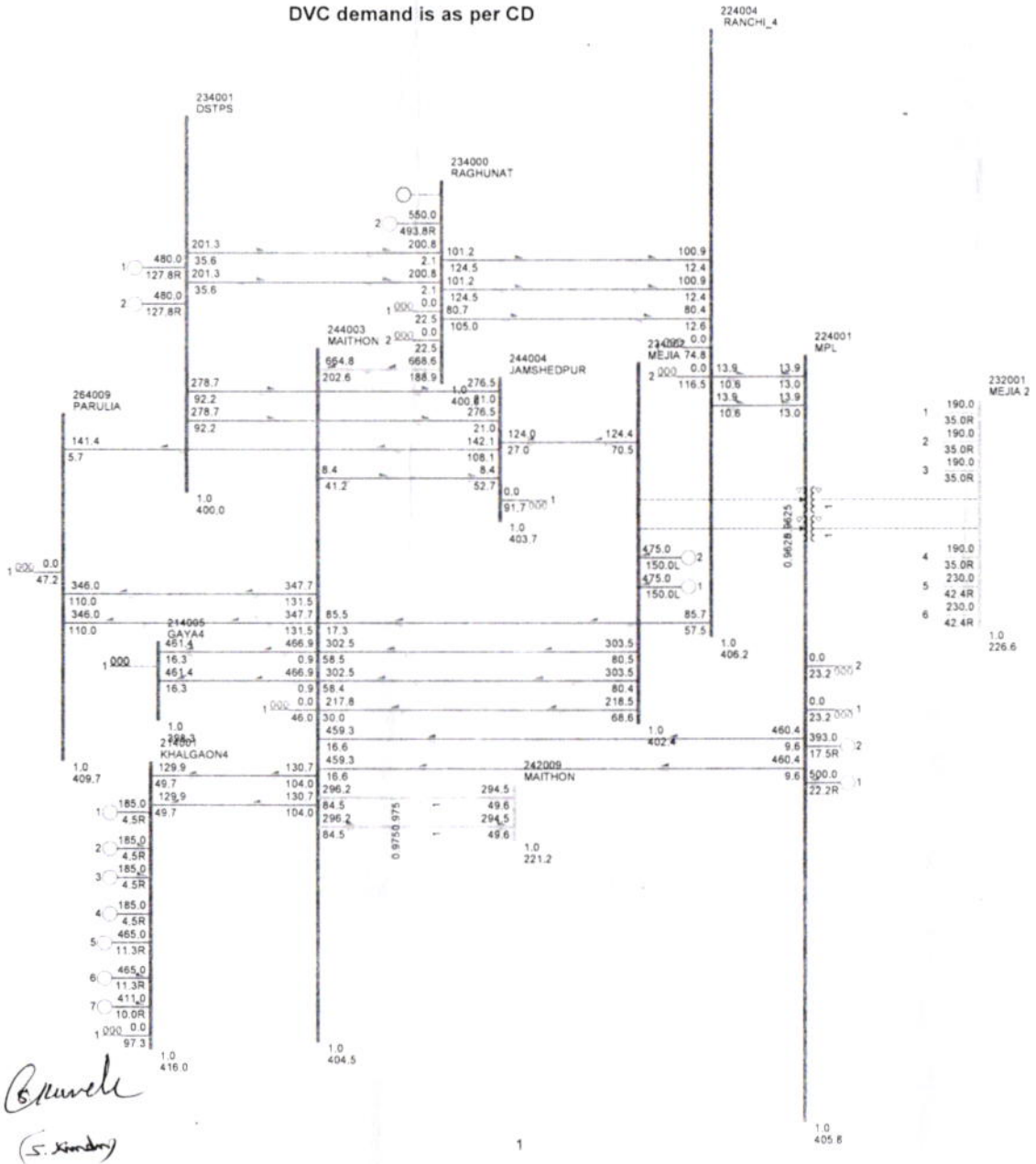
LINE DETAILS OF 400KV LINES					
Sl.No	NAME	LINE LENGTH	TYPE OF CONDUCTOR	NUMBER OF TOWERS	NUMBER OF CIRCUITS
1	LILO Part (10.5KM) upto RTPS of RANCHI {G - Maithon PG Line	10.5KM	Twin ACSR Moose	33	2
2	Termination Segment (3.5KM) at DSTPS of the DSTPS Jamshedpur Line	3.5KM	Twin ACSR Moose	14	2
3	RTPS - RANCHI PG Line	155KM	Quad ACSR Moose	437	2
4	DSTPS - RTPS Line	68.5 KM	Twin ACSR Moose	208	2

Line constants in %/km **(Base: 100 MVA & own voltage)**

tower config	conductor	r1	x1	b1	r0	x0	b0
PG 400KV	Twin ACSR Moose	0.001811	0.019946	0.603525	0.019183	0.068031	0.375422
PG 400KV	Quad ACSR Moose	0.000909	0.015551	0.759027	0.016694	0.062391	0.429811

1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

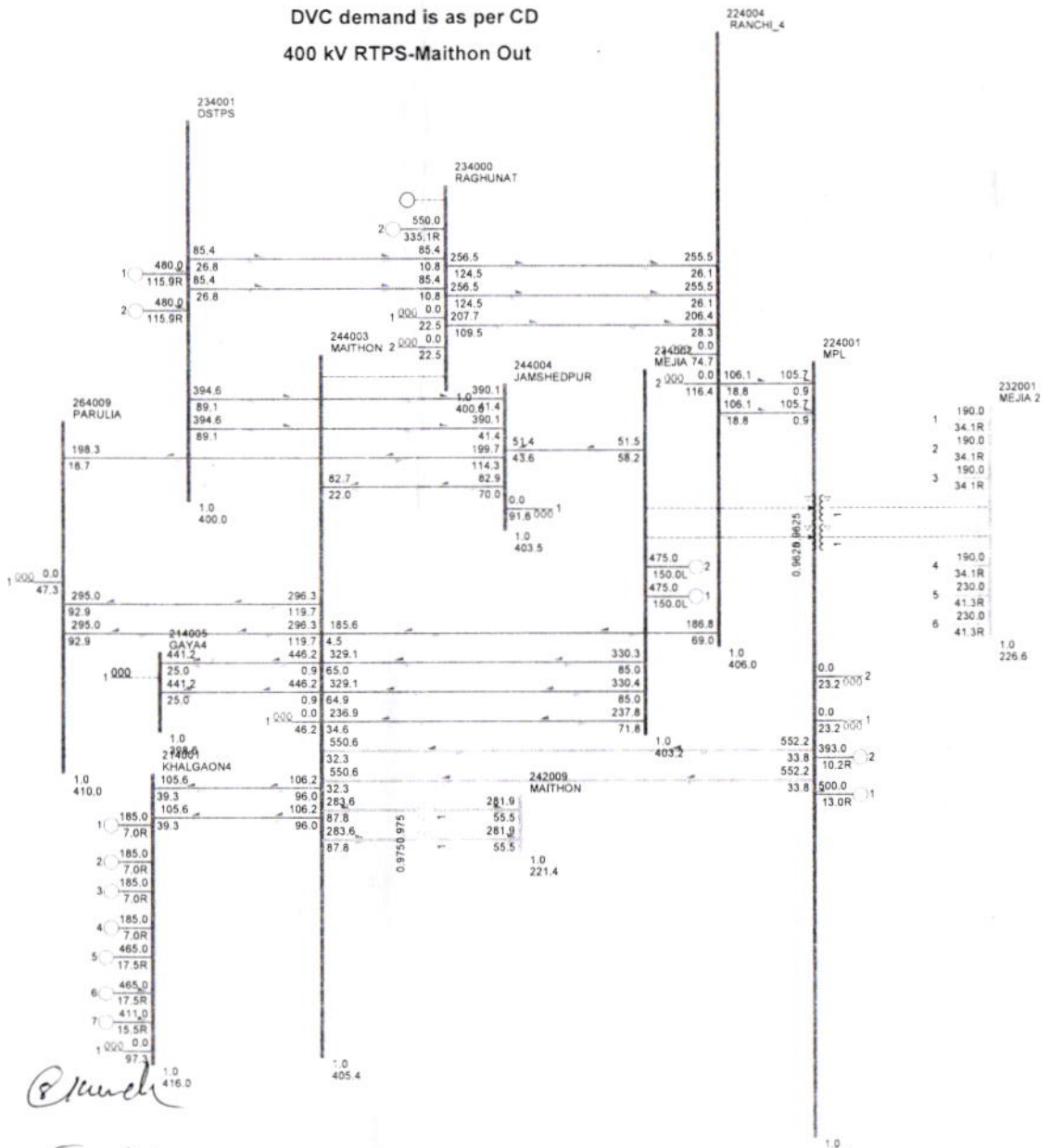
DVC demand is as per CD



1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

DVC demand is as per CD

400 kV RTPS-Maithon Out

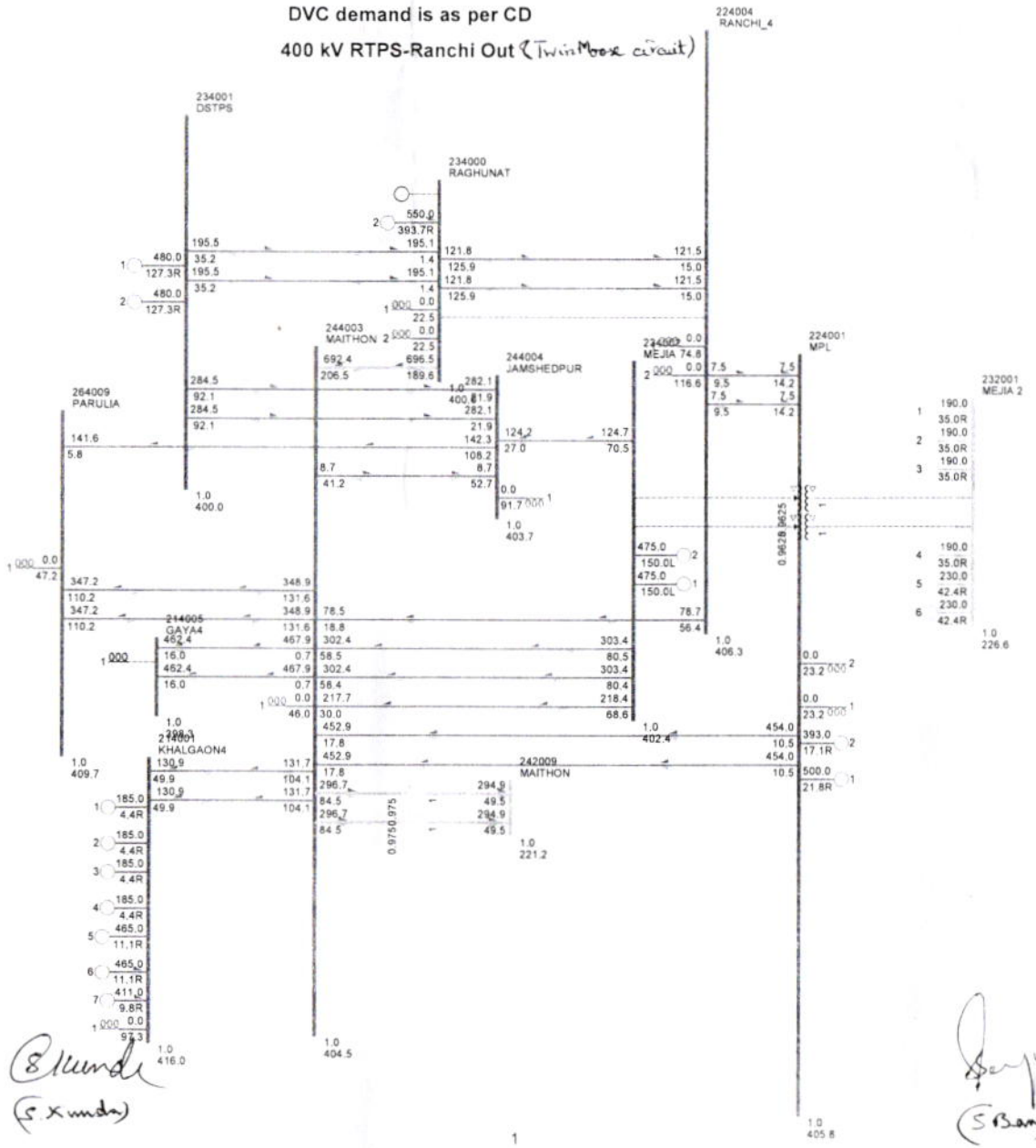


(S. Ghosh) (A. Maity) (S. Sundaram) 1 (S. Banerjee)

1 unit at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

DVC demand is as per CD

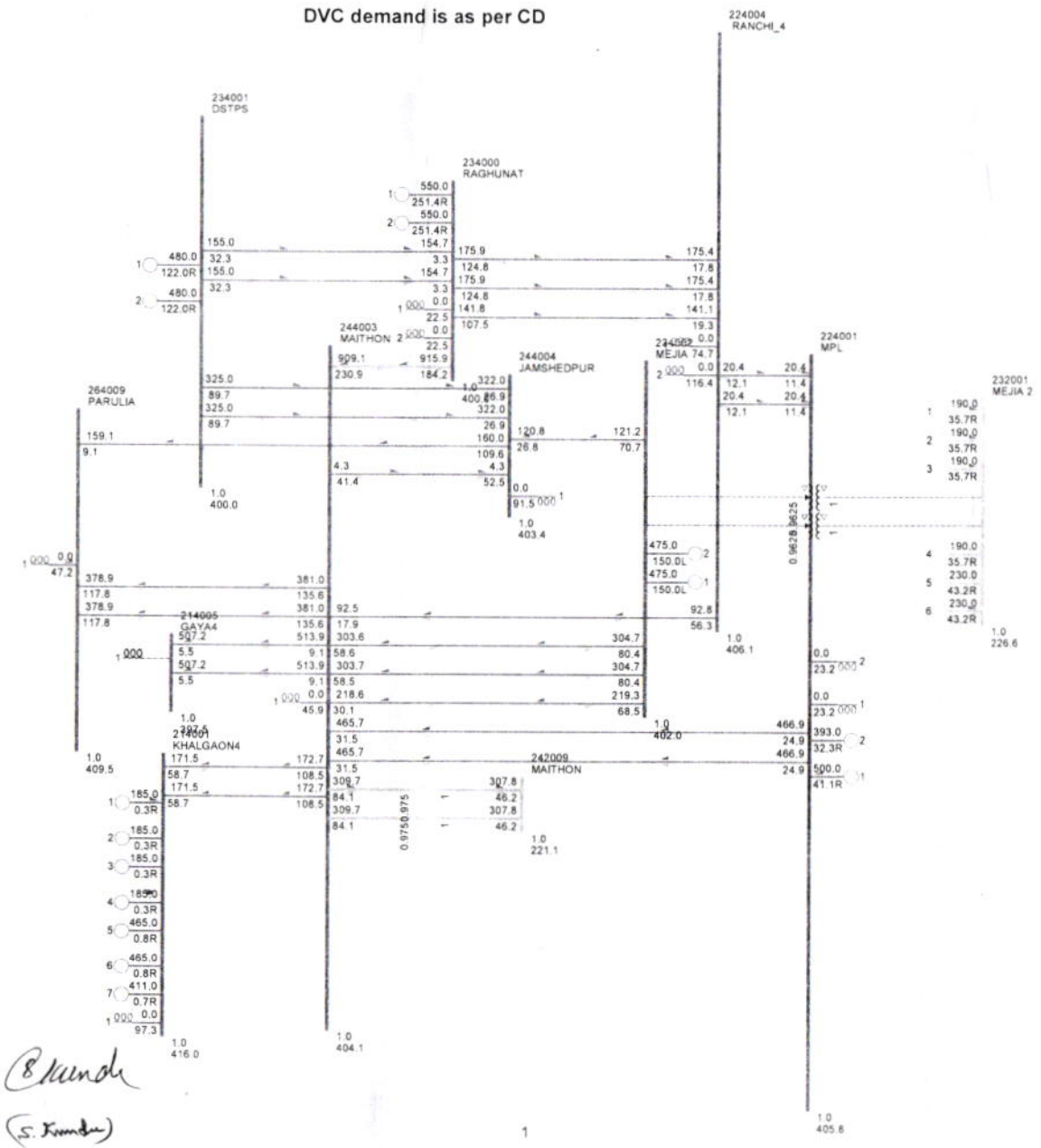
400 kV RTPS-Ranchi Out (Twin Moose circuit)



(S Ghosal) (A. Maity) (S Mundal) (S Banerjee)

2 units at RTPS, 2 units at DSTPS and 400 kV RTPS-Ranchi D/C(Qd) in service

DVC demand is as per CD



(S. Ghosal) (A. Maity) (S. Kundu)

1

(S. Bhowmick)

Annexure- B.38.D

KBUNL-LIST OF L&T ENERGY METERS									
SL.NO.	FEEDER	METER SL.NO.	MODEL	MAKE	MFG.DATE	OWNER	CTR	PTR	Remark
1	Gen-1	LT-0161A	ER-300P	L&T	Jan-13	KBUNL	8000/5A	11KV/110V	
2	Gen-2	LT-0170A	ER-300P	L&T	Jan-13	KBUNL	8000/5A	11KV/110V	
3	GT-1	LT-0135A	ER-300P	L&T	Sep-12	KBUNL	400/1A	220KV/110V	
4	GT-2	LT-0192A	ER-300P	L&T	Mar-14	KBUNL	400/1A	220KV/110V	
5	ST-1	LT-0129A	ER-300P	L&T	Sep-12	KBUNL	100/1A	220KV/110V	
6	ST-2	LT-0133A	ER-300P	L&T	Sep-12	KBUNL	100/1A	220KV/110V	Stage-1
7	IBT-1 MAIN	LT-0093A	ER-300P	L&T	Dec-10	KBUNL	300/1A	220KV/110V	Side
8	IBT-1 CHECK	LT-0127A	ER-300P	L&T	Sep-12	KBUNL	300/1A	220KV/110V	
9	IBT-2 MAIN	LT-0126A	ER-300P	L&T	Aug-12	KBUNL	300/1A	220KV/110V	
10	IBT-2 CHECK	TP-0006A	ER-300P	L&T	Nov-07	KBUNL	300/1A	220KV/110V	
11	IBT-3 MAIN	LT-0132A	ER-300P	L&T	Sep-12	KBUNL	600/1A	220KV/110V	
12	IBT-3 CHECK	LT-0130A	ER-300P	L&T	Sep-12	KBUNL	600/1A	220KV/110V	
13	BEGUSARAI-1 MAIN	To be installed	ER-300P	L&T		PGCIL	600/1A	220KV/110V	
14	BEGUSARAI-1 CHECK	To be installed	ER-300P	L&T		PGCIL	600/1A	220KV/110V	
15	BEGUSARAI-2 MAIN	LT-0092A	ER-300P	L&T	Dec-10	KBUNL	600/1A	220KV/110V	
16	BEGUSARAI-2 CHECK	LT-0128A	ER-300P	L&T	Sep-12	KBUNL	600/1A	220KV/110V	
17	DARBHANGA-1 MAIN	LT-0125A	ER-300P	L&T	Aug-12	KBUNL	600/1A	220KV/110V	
18	DARBHANGA-1 CHECK	LT-0140A	ER-300P	L&T	Sep-12	KBUNL	600/1A	220KV/110V	
19	DARBHANGA-2 MAIN	To be installed	ER-300P	L&T		PGCIL	600/1A	220KV/110V	
20	DARBHANGA-2 CHECK	To be installed	ER-300P	L&T		PGCIL	600/1A	220KV/110V	
21	GOPALGANJ-1 MAIN	LT-0131A	ER-300P	L&T	Sep-12	KBUNL	600/1A	220KV/110V	
22	GOPALGANJ-1 CHECK	TP-0008A	ER-300P	L&T	Nov-07	KBUNL	600/1A	220KV/110V	
23	GOPALGANJ-2 MAIN	LT-0246A	ER-300P	L&T	Apr-15	KBUNL	800/1A	220KV/110V	
24	GOPALGANJ-2 CHECK	LT-0219A	ER-300P	L&T	Apr-15	KBUNL	800/1A	220KV/110V	
25	Kaffen-1 Main	NP-7878A	ER-300P	L&T	Aug-12	PGCIL	600/1A	220KV/110V	
26	Kaffen-1 Check	NP-5064A	ER-300P	L&T	Jun-06	PGCIL	600/1A	220KV/110V	
27	Kaffen-2 Main	NP-7879A	ER-300P	L&T	Aug-12	PGCIL	600/1A	220KV/110V	Stage-2
28	Kaffen-2 Check	NP-5065A	ER-300P	L&T	Jun-06	PGCIL	600/1A	220KV/110V	side
29	Gen-3	LT-0252B	ER-300P	L&T	Apr-15	KBUNL	10000/5A	15.75KV/110V	
30	Gen-4	LT-0260B	ER-300P	L&T	Apr-15	KBUNL	10000/5A	15.75KV/110V	
31	GT-3	LT-0214A	ER-300P	L&T	Apr-15	KBUNL	800/1A	220KV/110V	
32	GT-4	LT-0242A	ER-300P	L&T	Apr-15	KBUNL	800/1A	220KV/110V	
33	ST-3	LT-0187A	ER-300P	L&T	Mar-14	KBUNL	200/1A	220KV/110V	
34	ST-4	To be installed	ER-300P	L&T		KBUNL	200/1A	220KV/110V	
35	Bus Sec-1 Main	To be installed	ER-300P	L&T		PGCIL			
36	Bus sec-1 Check	To be installed	ER-300P	L&T		PGCIL			
37	Bus Sec-2 Main	To be installed	ER-300P	L&T		PGCIL			
38	Bus sec-2 Check	To be installed	ER-300P	L&T		PGCIL			
39	ST-3 LV	To be installed	ER-300P	L&T		KBUNL			
40	ST-4 LV	To be installed	ER-300P	L&T		KBUNL			
41	UAT-3 LV	To be installed	ER-300P	L&T		KBUNL			
42	UAT-4 LV	To be installed	ER-300P	L&T		KBUNL			
43	COLONY TR-1	LT-0139A	ER-300P	L&T	Sep-12	KBUNL	300/1A	6.6KV/110V	
44	COLONY TR-2	LT-0143A	ER-300P	L&T	Nov-12	KBUNL	300/1A	6.6KV/110V	
45	UAT-1 (1BA)	LT-0134A	ER-300P	L&T	Sep-12	KBUNL	1A	6.6KV/110V	
46	UAT-1 (1BB)	LT-0137A	ER-300P	L&T	Sep-12	KBUNL	1A	6.6KV/110V	Stage-1
50	UAT-2 (2BA)	LT-0190A	ER-300P	L&T	Mar-14	KBUNL	1A	6.6KV/110V	Side
51	UAT-2 (2BB)	LT-0193A	ER-300P	L&T	Mar-14	KBUNL	1A	6.6KV/110V	
52	STAGE-2 TR-1	TP-0007A	ER-300P	L&T	Nov-07	KBUNL	300/1A	6.6KV/110V	
53	STAGE-2 TR-2	LT-0138A	ER-300P	L&T	Sep-12	KBUNL	300/1A	6.6KV/110V	

Annexure- C.1

Maintenance Schedule of Thermal Generating Units of ER for November-2016

System	Station	Unit	Size (MW)	period		No. of Days	Reason
				From	To		
DVC	MTPS	4	210	01.11.16	21.11.16	21	AOH
ODISHA	TTPS	1	60	09.11.16	23.11.16	15	Boiler Overhaul
WBPDCL	Bakreswar TPS	3	210	06.11.16	11.12.16	36	B-T-G + RLA + TPR (EHG) Upgrade
	Sagarighi TPS	1	300	01.11.16	30.11.16	30	Boiler Overhauling
CESC	Titagarh	1	60	18.11.16	02.12.16	15	Annual Overhauling
		4	60	03.11.16	17.11.16	15	Annual Overhauling
NTPC	FSTPS	5	500	15.11.16	19.12.16	35	Boiler OH+LPT OH+Gen OH+DDCMIS R&M
	KhSTPS	4	210	08.11.16	12.12.16	35	Capital+Gen+DDCIMS
APRNL	APRNL	2	270	03.11.16	08.12.16	25	Gen. Overhauling

Annexure-C.2

Anticipated Power Supply Position for the month of
Nov-16

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	3800	2141
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	436	321
		- Central Sector	2193	1426
	iii)	SURPLUS(+)/DEFICIT(-)	-1172	-394
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1200	780
	ii)	NET POWER AVAILABILITY- Own Source (including bilateral)	460	365
		- Central Sector	503	284
	iii)	SURPLUS(+)/DEFICIT(-)	-237	-131
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2825	1695
	ii)	NET POWER AVAILABILITY- Own Source	4757	2524
		- Central Sector	474	302
		Long term Bi-lateral (Export)	1300	936
	iii)	SURPLUS(+)/DEFICIT(-)	1106	194
4		**ORISSA**		
	i)	NET MAX DEMAND	4200	2492
	ii)	NET POWER AVAILABILITY- Own Source	3215	1839
		- Central Sector	970	586
	iii)	SURPLUS(+)/DEFICIT(-)	-15	-67
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	5008	2617
	ii)	CESC's DRAWAL	0	0
	iii)	TOTAL WBSEDCL's DEMAND	5008	2617
	iv)	NET POWER AVAILABILITY- Own Source	3619	2175
		- Import from DPL	216	118
		- Central Sector	1571	899
	v)	SURPLUS(+)/DEFICIT(-)	398	575
	vi)	EXPORT (TO B'DESH & SIKKIM)	10	7
5.2		**DPL**		
	i)	NET MAX DEMAND	295	205
	ii)	NET POWER AVAILABILITY	511	323
	iii)	SURPLUS(+)/DEFICIT(-)	216	118
5.3		**CESC**		
	i)	NET MAX DEMAND	1770	715
	ii)	NET POWER AVAILABILITY - OWN SOURCE	780	414
		FROM HEL	546	263
		FROM CPL/PCBL	0	0
		Import Requirement	444	38
	iii)	TOTAL AVAILABILITY	1770	715
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)** **(excluding DVC's supply to WBSEDCL's command area)**		
	i)	NET MAX DEMAND	7073	3537
	ii)	NET POWER AVAILABILITY- Own Source	4910	2912
		- Central Sector+Others	2561	1162
	iii)	SURPLUS(+)/DEFICIT(-)	398	537
7		**SIKKIM**		
	i)	NET MAX DEMAND	85	37
	ii)	NET POWER AVAILABILITY- Own Source	3	2
		- Central Sector+Others	118	63
	iii)	SURPLUS(+)/DEFICIT(-)	37	28
8		**EASTERN REGION** **At 1.03 AS DIVERSITY FACTOR**		
	i)	**NET MAX DEMAND**	18624	10682
		Long term Bi-lateral by DVC	1300	936
		EXPORT BY WBSEDCL	10	7
	ii)	**NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)**	20599	11785
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)**	665	160