

Eastern Regional Power Committee

Minutes of 97th OCC Meeting held on 15th May, 2014 at ERPC, Kolkata

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

Item no. A.1: Confirmation of minutes of 96th OCC meeting of ERPC held on 25.04.2014

The minutes were uploaded in ERPC website and circulated vide letter dated 07.05.14 to all the constituents. No comments were received till date.

Members may confirm the minutes.

Deliberation in the meeting

*ERLDC requested for the amendment of **para 2** under “**Item no. D3**”. On deliberation OCC agreed to record the views of ERLDC on the issue as follows:*

“ERLDC expressed that in the given case since even after repeated persuasions in different forums of ERPC, effective improvement in system reliability was not felt, so it had no option but to file a petition before CERC”.

Members confirmed the minutes of 96th OCC meeting with this amendment.

PART B

Item no. B.1: Collection of data regarding power supply in RGGVY villages

The issue is being discussed in last couple of OCC meetings. But unfortunately till date Secretariat is either receiving requisite information not in time and /or or not in proper format.

Recently in a meeting held in MoP on 9th April 2014 with Chairperson, CEA it was decided that an appropriate officer of the level of Chief Engineer / General Manager in each DISCOM may be nominated / deputed by the head of the DISCOM, who should be responsible to furnish rural supply related data to RPC, REC or any other agency.

ERPC vide letter dated 11.04.2014 had requested to constituents to forward the nomination. 96th OCC also requested the same.

Appropriate Nominations have been received only from WBSEDCL and NESCO, Orissa.

DVC informed that, they are supplying power to JSEB at 33 kV level and downwards distribution is looked after by JSEB and they do not have any information about distribution. So, the desired data of rural supply may be collected from JSEB only. OCC requested DVC to give as much relevant information.

Till date information was not received from JSEB.

OCC requested all the constituents to submit the complete data of Jan, 2014 to April, 2014 in prescribed format available at ERPC website.

Members may update.

Deliberation in the meeting

The house was informed by secretariat that, even with repeated persuasions no data is received from constituents except WESCO, OPTCL & DVC (some data). Henceforth, OCC referred the issue to 27th TCC/ERPC for further advice.

Item no. B.2: Review of load relief under various stages of UFR

NPC in its 2nd meeting held on 16.07.2013 decided that total load relief based on UFR load shedding of ER is 3320 MW. Accordingly, OCC divided the total load quantum as per present proportionate for ER constituents as given below:

Control Area	Stage –I (49.2 Hz) (MW)	Stage –II (49.0 Hz) (MW)	Stage–III (48.8Hz) (MW)	Stage–IV (48.6Hz) (MW)	Total Relief by Control Area
BSEB	98	99	99	101	397
JSEB	61	62	61	62	246
DVC	134	135.5	136	137	542.5
Odisha	181.5	183.5	184	186	735
WB & CESC	345.5	350	350	354	1399.5
Total	820	830	830	840	3320

It was decided to implement the revised scheme within a month. The latest status updated in last OCC is follows:

- **DVC, WBSETCL, Bihar & CESC:** Implemented
- **Odisha:** Implemented except 2 Sub-stations namely Kesinga & Junagarh. UFRs have been ordered and the same will be installed by Mar, 2014.
- **JSEB:** JSEB informed that, load shedding through UFR scheme has been implemented including new 33 kV feeders in place of feeders of Lalmatia, Dumka, Sahebganj under islanding scheme.

In 96th OCC, OPTCL informed that UFRs have been installed at both Kesinga & Junagarh. With this the implementation of UFR based load relief scheme in the Eastern Region is complete.

Members may update.

Deliberation in the meeting

Members noted.

Item no. B.3: Consent for changing of all 160 KN insulators in 400 KV D/C (Quad) Siliguri-Purnea Line & Purnea-Saharsha section of 400 KV Purnea-Muzaffarpur Line -- Powerlinks

There were frequent failure of 160 KN insulators in our 400 KV D/C (Quad) Siliguri-Purnea Line and Purnea-Saharsha section of 400 KV Purnea-Muzaffarpur Line. This in turn had made the line unreliable and the entire grid vulnerable. These insulators were supplied by M/S Birla –NGK (Jayashree) during construction of the line in 2005-06. Since then trouble free operation continued upto 2010. Then 2011 onwards, failure had started and it reached alarming stage in December'12 when there were 12 failures in one single month. These insulators were tested at CPRI, Bangalore after removing the same from line. At CPRI, 20% of sample tested had failed. PID testing of these insulators were also carried out and result of PID test was alarming as it shows deviation in most of the strings. From the pattern of failure, it had been observed that only those 160 KN insulators are failing which were installed in between tower no.100 to 300 from

Siliguri end. Subsequently, all 160 KN insulators were changed in all tension towers in between loc.100 to 300 fo Siliguri-Purnea Line in March'13 and April'13. As a result of this preventive action, the failure rate had gone down to great extent and there were only five failures during the period May'13 to October'13.

To analyse the root cause of the failure, the supplier M/S Birla-NGK was consulted and samples were tested extensively at the manufacturer's laboratory. During testing, it had been observed that those samples having hair line cracks on them had failed to pass the electrical requirements. In other words, it can be said that hairline cracks are the root cause of the failure of 160 KN insulators. The insulation resistance of these insulators is going down as moisture and other impurities are entering the cracks leading to flash over and failure of the string. This finding is supported by the fact that in all the cases of failure, hairline cracks were observed on the discs.

From above facts, it can be concluded that the present decrease in rate of failure is temporary and it is bound to increase with the passage of time as hairline cracks may develop at any point of time. This will seriously affect the reliability of the line and stability of the entire grid as a whole. As a preventive measure, it is planned to change all remaining 160 KN insulators in 400 KV D/C (Quad) Siliguri-Purnea Line and Purnea-Saharsha section of 400 KV Purnea-Muzaffarpur Line. This is necessary for the stability of the system and these two lines are very important part of the grid particularly of East-North Corridor. Total financial implication will be around Rs. 13 crores considering polymer insulators will be used. We are planning to submit a petition to CERC for capitalization of the expenditure.

In 92nd OCC, members opined that hair line cracks on insulators may be either due to design defects or due to normal adverse effects of operation. So OCC felt that some authority like CPRI must certify whether the present case is within the purview of design defects or because of other reasons. Powerlink was requested to place these details in next OCC so that decision on cost sharing by eastern region constituents, if required in the existing case, could be decided.

However as replacement of insulators is extremely necessary for reliability of the line OCC advised Powerlinks to replace the damaged/defective insulators at the earliest.

In 96th OCC, Powerlinks vide letter dated 23.04.2014 informed that the order for polymer insulators had been placed to BHEL and the work will be taken up during next lean season. Regarding the analysis of causes of failure, CPRI have been entrusted and the detail report will be placed in next OCC.

Subsequently, Powerlinks vide letter dated 08.05.2014 submitted the CPRI report (Enclosed at **Annexure-B.3**) and stated that as per the report, basic reason for failure of 160 KN insulators is development of hairline cracks on porcelain. Dust and other impurities are going inside this cracks and getting moist during foggy season reducing the effective creepage path which in turn leads to failure of insulators. The reason for development of this hair line cracks may be attributed to ageing during use over period of time. CPRI has recommended for replacing of these insulators with polymer insulators as these insulators pose a threat to the system reliability and overall stability of the grid. The cost implication of this replacement is quite huge and beyond the capability of the company. Hence, Powerlinks proposed that OCC may give its consent to replace these insulators by polymer insulators and cost may be shared by constituents.

Members may deliberate.

Deliberation in the meeting

Powerlinks informed that order for 2600 insulators has been placed and the work is scheduled to commence from October, 2014. Further, he stated that the total cost involvement in this work will be approx. 13-14 Crores which is quite huge and beyond the capability of company like Powerlinks. Therefore it is requested to the house to consider the cost sharing between the constituents.

Constituent members felt that these are porcelain insulators and are being used only for 5-6 years whereas normal life of such insulator is quite high. So the CPRI report pin pointing the cause of failure was not received enough consideration as convincing among constituents.

After through deliberation OCC advised Powerlinks to replace the insulators as per schedule. The cost sharing will be decided by Commercial sub-Committee after getting the root cause of failure for which OCC decided to call CPRI specialists and O&M experts from constituents /educational institutes in next OCC for detail discussion.

Item no. B.4: Enhancement of injection Quantum of GMR KEL to 700 MW on RTC Basis

All 3 units of 350 MW each (1050 MW installed Capacity) of GMR are commissioned and under commercial operation since 25th March, 14.

Now GMR vide letter dated 15th April, 2014 submitted the following:

- a) In the MoM of the Meeting held on 14th Mar 14 it is recorded under point no. C that the Quantum of power injection allowable from GMR has been estimated to be 350 MW in the peak & 450 MW in the off-peak Hrs. However this would be reviewed from time to time depending on the margin available in the ISTS.
- b) In view of the above, GMR requested to permit them to apply for short term open access and IEX sale up to the extent of 700 MW on RTC basis, however actual injection shall be as per the accepted schedule, which will be based on the margin available in the ISTS.

In 96th OCC, ERLDC informed that GMR is allowed to the maximum margin available based on load flow study considering (n-1) criteria. ERLDC presented the load flow results and informed that, GMR injection of more than the 350 MW in the peak & 450 MW during off-peak Hrs would cause violation of (n-1) criteria which will endanger the reliability and security of the grid.

GMR requested for allowing more evacuation and proposed for designing a SPS in order to tackle the contingencies. However, ERLDC is not in favor of SPS and advised GMR to complete the ATS as early as possible.

After detailed deliberation in order to explore utilization of untapped generation capability of GMR with three units in operation, OCC decided to form a committee comprising team members from ERPC, ERLDC, CTU, OPTCL, NTPC, GMR & JITPL to review:

Effectiveness of SPS for allowing more evacuation from GMR station.

Further, OCC advised the committee to do the above study along with reviewing of other SPSs already existing in the Eastern grid in view of changing grid scenario due to addition of more transmission/generation elements. The committee will be named as "SPS committee" and it would place the study report in the next OCC.

Accordingly, first meeting of SPS Committee was held on 8th May, 2014 at ERPC Secretariat (The minutes is available at ERPC website). In the meeting following were decided:

- 1) Review of SPS existing SPS scheme for sharing of additional relief of 600 MW between Sterlite, GMR and JITPL in view of JITPL COD- After detail deliberation it was agreed that the sharing of 600 MW generation relief will be distributed as: Sterlite- 350 MW, GMR- 150 MW and JITPL- 100 MW. These will be effective after the stabilization of JITPL first unit.
- 2) Need of SPS for evacuating generation of GMR in view of its all 3 units synchronization to the grid- After detailed deliberations the committee felt that further detailed study is

required with consideration of various other factors and Orissa loads. It was decided that the committee will do the detail study by considering the actual scenario based on validated load data from Orissa and place the results in next OCC meeting.

SPS Committee may place the study results.

Deliberation in the meeting

The SPS committee informed that the study was carried out with existing data available with ERLDC. The study results revealed that increased generation of GMR (even 50 MW in excess of above schedule) associated with provision of SPS (considering 2x350 MW units running) is not desirable/ feasible.

GMR informed they have also carried out the system study with the help of PRDC and as per their results the GMR schedule can be enhanced without endangering the grid.

After deliberation OCC advised SPS committee to convene a meeting for detail study along with GMR and PRDC experts (if possible) at ERPC, Kolkata on 26th May, 2014 from 11:00 hrs.

Item no. B.5: New Islanding Schemes in Eastern Region

B.5.1. FSTPS Islanding Scheme, NTPC

In 93rd OCC, members informed the islanding scheme would be implemented by March, 2014. The latest status on procurement & installation of equipments is as follows:

Requirement	Where Required	Action	Latest status
PLCC - 4 Panels	<ul style="list-style-type: none"> 220 kV Lalmatia – 1 220 kV Farakka – 1 132 kV Dumka – 1 132 kV Lalmatia – 1 	<ul style="list-style-type: none"> JSEB will shift 3 panels from Sahebgunj/Pakur to 132 kV Lalmatia S/s NTPC will take care of shifting 2 panels from 132 kV Lalmatia S/s to 220 kV Lalmatia and Farakka S/s. JSEB will shift one panel from Sahebgunj/Pakur to 132 kV Dumka S/s Installation of PLCC panels at 220 kV Lalmatia and Farakka S/s will be done by NTPC Installation of PLCC panels at 132 kV Lalmatia and Dumka S/s will be done by JSEB Commissioning of all the four panels will be done by Powergrid. 	<ul style="list-style-type: none"> JSEB had already shifted 3 nos BPL make PLCC panels to 132KV Lalmatia S/S NTPC to take care of two nos PLCC panels stocked at Lalmatia 132 KV S/S of JSEB for onward shifting of the same to 220 KV Lalmatia & Farakka S/S
2 trip relays (220 V) having at least 03 nos NO contacts	<ul style="list-style-type: none"> 132 kV Lalmatia – 1 relay 132 kV Dumka – 1 relay 	<ul style="list-style-type: none"> JSEB will provide 2 trip relays. Commissioning will be done by Powergrid. 	<ul style="list-style-type: none"> Trip Relay available at 132 KV Lalmatia S/S is with 3nos “NO” contacts.
4 wave traps	<ul style="list-style-type: none"> 132 kV Lalmatia – 2 132 kV Dumka – 2 	<ul style="list-style-type: none"> JSEB will provide four wave traps. JSEB will do the installation and erection Commissioning will be done by Powergrid. 	<ul style="list-style-type: none"> JSEB confirmed that wave traps are available with them
2 LMUs	<ul style="list-style-type: none"> 132 kV Lalmatia – 1 132 kV Dumka – 1 	<ul style="list-style-type: none"> JSEB will provide two LMUs. JSEB will do the installation and erection Commissioning will be done by Powergrid. 	<ul style="list-style-type: none"> JSEB confirmed that LMUs are available with them
4 UFR relays	<ul style="list-style-type: none"> 132 kV Lalmatia – 2 	<ul style="list-style-type: none"> JSEB will provide and erect. 	<ul style="list-style-type: none"> JSEB confirmed that UFRs

	<ul style="list-style-type: none"> • 132 kV Dumka – 2 	<ul style="list-style-type: none"> • Commissioning will be done by Powergrid. 	are available with them
2 nos 48 V Battery bank with charger	<ul style="list-style-type: none"> • 132 kV Lalmatia – 1 • 132 kV Dumka – 1 	<ul style="list-style-type: none"> • Powergrid will arrange 300 Ah battery bank along with battery chargers at both stations. 	
Coaxial Cable - As required at site	<ul style="list-style-type: none"> • 132 kV Lalmatia • 132 kV Dumka 	<ul style="list-style-type: none"> • JSEB will provide and laying/cabling. 	

In 94th OCC, Powergrid was advised to procure two sets of 300 AH battery banks along with battery charger for Dumka and Lalmatia S/s.

OCC advised Powergrid to visit the Lalmatia and Dumka S/s for checking the PLCC panels and give a status report to secretariat. OCC also requested PGCIL to complete the UFR scheme by 31st March, 2014.

In 95th OCC Powergrid informed that, estimate has been prepared for purchase of two sets of 300 AH battery banks along with battery charger and same will be put up to JSEB by 25th Mar, 2014. Further, Powergrid informed that their engineers would visit Farakka, Lalmatia and Dumka S/s by 1st week of April, 2014 for checking healthiness of PLCC panels and the installation of UFR scheme will also be completed during the visit.

Powergrid vide letter dated 24.03.2014 had submitted the cost estimate for the above work. ERPC vide letter dated 08.04.2014 has requested JSEB to do the needful at their end and confirm the same to Powergrid.

In 96th OCC, Powergrid informed that JSEB vide letter asked for some queries and details of healthiness of PLCC panels; the reply to all queries will be made soon.

OCC also felt that, as per OCC decision Powergrid should first check the healthiness of the PLCC panels and submit the cost estimation.

Accordingly, OCC advised Powergrid to check the healthiness of PLCC panels and re-submit the cost estimation to JSEB with all queries at the earliest with a copy to ERPC Secretariat.

JSEB representative was not available in the meeting for discussion.

Subsequently, Powergrid vide letter dated 01.05.2014 replied to JSEB about their queries. It was informed that the matter of checking healthiness of the PLCC panels at Farakka, Lalmatia and Dumka Substations was discussed with the manufacturer, i.e. BPL. As per BPL, healthiness can only be checked after energisation of the panels through 48V DC supply. The cost estimate for commissioning of the BPL make PLCC panels is prepared based on the per day service charges of BPL engineers. In case there is requirement of repairing of cards, same will be done at an additional cost to JSEB. Further, the physical availability of the cards can be checked by POWERGRID during commissioning of UFR relays, which is jointly planned in the third week of May 2014.

Powergrid, JSEB and NTPC may update the status on islanding scheme of FSTPP, NTPC.

Deliberation in the meeting

Powergrid informed that they will visit Farakka, Lalmatia and Dumka S/s on 20th May, 2014 for checking healthiness of PLCC panels and the installation of UFRs.

Powergrid also informed that, 48V DC supply is required for testing PLCC panels and requested NTPC and JSEB to arrange.

B.5.2. Chandrapura TPS Islanding Scheme, DVC

In 26th TCC/ERPC meeting, DVC expressed that because of some logistics problems the implementation got delayed but assured house that utmost care is now being taken at its highest authority level so that the scheme could be put in operation by April, 2014.

In 96th OCC DVC informed that, the islanding scheme will be ready by July, 2014.

DVC may update the status.

Deliberation in the meeting

DVC informed that tender was opened in April 14 but the response is not satisfactory and was not accepted.

OCC took serious note on progress of the scheme and advised DVC to put serious efforts for early completion of the Chandrapura TPS Islanding scheme as it has already surpassed the target date fixed by TCC/ERPC.

B.5.3. BkTPS Islanding Scheme, WBPDCCL

In 96th OCC, WBPDCCL informed that all the work order will be placed by May, 2014 the scheme will be completed by October, 2014.

WBPDCCL may update the status.

Deliberation in the meeting

WBPDCCL informed that all the work order will be awarded on 20th May, 2014, the scheme will be completed by October, 2014.

B.5.4. Tata Power Islanding Scheme, Haldia

In 96th OCC, WBSETCL informed that tendering has been completed and the material will be available in Mar, 2014. The installation will be completed by May, 2014.

WBSETCL may update the status.

Deliberation in the meeting

WBSETCL informed that tendering has been completed and placing purchase order by May, 2014. The scheme will be completed by July, 2014.

Item no. B.6: Automatic Meter Reading (AMR)

In 96th OCC Powergrid informed that, TCS representatives were not being allowed inside the OPTCL/GRIDCO substations. OPTCL/GRIDCO asked for the details and assured to resolve the issue.

Powergrid may update.

Deliberation in the meeting

Powergrid informed that, work is in progress and 39 out of 97 have been installed.

Item no. B.7: Concerned members may update the latest status.

B.7.1. Power Supply to Railway TSS from 132 kV Deogarh (JSEB) S/S

In last OCC, ERLDC presented the study result during the meeting. From the study result it was found that if bus coupler at Deogarh is closed some of the lines are getting overloaded during some contingencies and it is not fulfilling the n-1 criteria.

After detailed deliberations OCC advised to review the relay settings of the lines which were being affected/ loaded and some load disconnection of non-essential loads may also be explored. After the review of protection schemes the bus coupler at Deogarh may be closed on trail basis to figure out the real-time situation.

Further, OCC advised ERLDC/ERPC Secretariat to interact with system study group of CTU to explore the possibility of connecting these Sub-stations with nearby up-coming switching Station by constructing new lines in the nearby areas to relieve the loading in critical lines which are being overloaded.

Secretariat has already placed the issue before standing committee, the next meeting of which will be held on 2nd May, 2014.

ERLDC presented the results of load flow under different contingencies and suggested for an additional feed through a 132 kV Deogarh-Banka D/C line to relieve the overloading of the lines during contingencies.

ERPC Secretariat informed that, the issue is already communicated to standing committee which will be held on 2nd May, 2014 and advised ERLDC to place the results. ERLDC agreed.

Accordingly the issue was discussed in the Standing Committee meeting of ER held on 2nd May, 2014 and the 132 kV D/C Deogarh – Banka line was agreed and It would be an interstate line.

Members may note.

Deliberation in the meeting

Members noted.

B.7.2. Replacing/repairing of defective PLCC equipment at SgTPP end of 400 kV SgTPP-Farakka line

In 95th OCC, Powergrid informed that the work will be completed by May, 2014.

In 96th OCC Powergrid informed that, work is in progress and will be completed as per schedule.

Powergrid and WBPDCCL may update the status.

Deliberation in the meeting

Powergrid informed that work is in progress and it will be completed as per schedule.

B.7.3. The following line/Bus reactors are under presently under outage:

In last OCC, Members updated the status as follows:

- a) 80MVAR Line reactor of 400kV Meramundali-Anugul at Meramundali: Powergrid informed that work is in progress and it will be rectified by May, 2014.

- b) 50MVAR Line reactor of 400kV Rourkella-TSTPP-I at TSTPP: NTPC informed that it was charged but tripped on backup impedance protection. The issue has been taken up with BHEL.

Members may update.

Deliberation in the meeting

Members updated the status as follows:

- a) 80MVAR Line reactor of 400kV Meramundali-Anugul at Meramundali: Powergrid informed that work is in progress and it will be rectified by May, 2014.
- b) 50MVAR Line reactor of 400kV Rourkella-TSTPP-I at TSTPP: NTPC informed that it has been charged.
- c) 63 MVAR line reactor of 400 kV Baripada-Mendhasal at Memdhasal: Powergrid informed that, it will be restored by May, 2014.

B.7.4. Depletion in OPTCL network due to impact of cyclone “Phailin”

In 96th OCC OPTCL informed that, the 220 kV Narendrapur-Mendasal line will be brought into service tentatively by July, 14.

OPTCL may update the latest status.

Deliberation in the meeting

OPTCL informed that, the 220 kV Narendrapur-Mendasal line will be brought into service tentatively by May, 14.

B.7.5. Construction of dedicated lines by JITPL & GMR to Anugul pooling station as part of Associated Transmission System (ATS)

In 96th OCC, GMR/JITPL were asked to indicate the current status of construction of the dedicated lines to Anugul pooling stations, viz. 400kV GMR-Anugul D/C and 400kV JITPL-Anugul D/C.

In 96th OCC GMR informed that they are still waiting for forest clearance which is being rigorously pursued in MoEF.

Subsequently, in SPS Committee meeting, GMR informed the work of 400kV GMR-Anugul D/C line is in progress and it will be completed by June, 2014.

JITPL informed that 400 kV JITPL-Angul D/C line will be completed by May, 2014.

GMR/JITPL, ERLDC may update.

Deliberation in the meeting

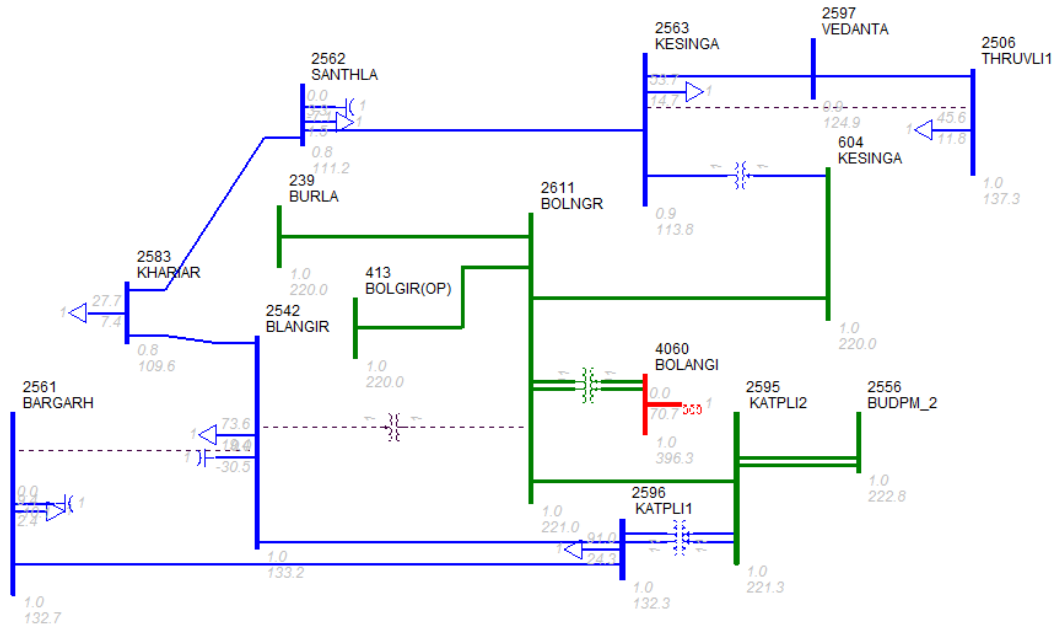
GMR informed the 400kV GMR-Anugul D/C line will be completed as per schedule. JITPL informed that 400 kV JITPL-Angul D/C line will be completed by May, 2014 subjected to approval of the shutdown.

B.7.6. 220 kV inter-connecting lines of OPTCL with 400/220 kV Bolangir (PG) S/s

400/220 kV, 2X 315 MVA S/S at Bolangir has been established by Powergrid as part of ISTS system & the following 220 kV interconnecting lines was envisaged to be established by OPTCL:

- (i) LILO of OPTCL's Burla-Bolangir line at Bolangir (PG).

- (ii) Bolangir(PG) –Bolangir (OPTCL) S/C line.
- (iii) Bolangir(PG) –Kesinga S/C line.



In 96th OCC OPTCL informed the status as follows:

- (i) LILO of OPTCL's Burla-Bolangir line at Bolangir(PG) —Work is in progress and it would be completed by Nov, 2014
- (ii) Bolangir(PG) –Kesinga S/C line —Tendering work is in progress and it would take one year.

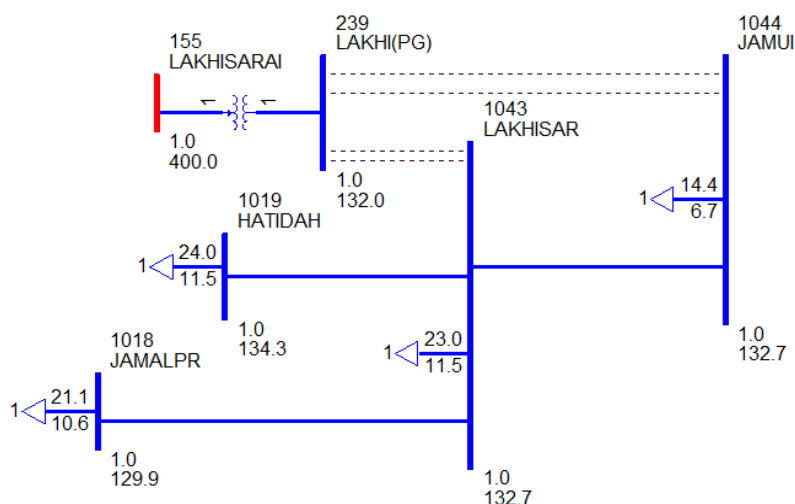
OPTCL may update the status.

Deliberation in the meeting

OPTCL informed work will be completed as per the above schedule.

B.7.7. Power Evacuation from 400/ 132KV Lakhisarai Substation

In 95th OCC, Powergrid informed that 400/132KV Lakisharai Substation will be ready by March, 2014.



BSPTCL informed the status as follows:

1. Lakhisarai (PG) – Lakhisarai(BSPTCL) 132 kV D/c line – will be completed by June, 2014.
2. Lakhisarai (PG) – Jamui (BSPTCL) 132 kV D/c line – will be completed by Oct, 2014.

Subsequently, Powergrid vide letter dated 01.04.2014 informed that 400/132KV Lakisharai Substation along with 200 MVA ICT, 80 MVAR Bus Reactor and line bay of Lakhisarai (PG) – Lakhisarai(BSPTCL) 132 kV D/c line has been charged at rated voltage and declared under commercial operation w.e.f. 01.04.2014.

In 96th OCC, BSPTCL informed that work is in progress and will be completed as per schedule.

Powergrid and BSPTCL may update the latest status.

Deliberation in the meeting

BSPTCL informed the status as follows:

1. Lakhisarai (PG) – Lakhisarai(BSPTCL) 132 kV D/c line – will be completed by June, 2014.
2. Lakhisarai (PG) – Jamui (BSPTCL) 132 kV D/c line – will be completed by Oct, 2014.

B.7.8. Power Evacuation from 400/ 220KV Daltanganj and Chaibasa Substations

In last OCC, Powergrid informed that 400/220KV Chaibasa Substations will be ready by June, 2014 and Daltanganj S/S may take some more time to come.

Further, it was informed that construction of intermediate 220/132 kV ICTs is being executed by Powergrid under the consultancy work of JSEB.

Powergrid informed the status as follows:

1. 400/220 kV Daltanganj which will be connected to existing Daltanganj and Garwa S/s – ready by June, 15.
2. 400/220 kV Chaibasa which will be connected to Chaibasa S/s- ready by Sep, 2014.

Powergrid and JSEB may update the status.

Deliberation in the meeting

Powergrid informed that the work will be completed as per the above schedule.

B.7.9. Status of works related to Implementation of SPS for 500MW round the clock power through HVDC Bheramara

In 96th OCC, Powergrid informed the status as follows:

- Line reactor of Behrampur-Jeerat will be converted into switchable bus reactor: tendering completed and expected by March, 2015.
- 400 kV Sagardighi-Behrampur D/C (Quad): Work has been awarded and will be commissioned by Dec, 2014.

Powergrid may update the status.

Deliberation in the meeting

Powergrid informed that the work will be completed as per the above schedule.

Item no. B.8: Status of “Third Party Protection Audit”

List of the observations along with updated compliances received from the constituents made available in reports of ERPC website (www.erpc.gov.in).

Subsequently, CERC vide order dated 21.02.2014 in Petition No. 220/MP/2012 has directed all the utilities to ensure rectification of defects in the protection system as pointed in the protection audit within the time frame as specified in the order and submit the latest status to Member Secretary within one month of the issue of the said order.

In 95th OCC MS I/C informed that CERC vide order dated 21.02.2014 in Petition No. 220/MP/2012 decided that in order to implement the recommendations of the Protection Audit, a compliance mechanism with definite time line needs to be put in place as under:

- a) Each STU and CTU shall submit its action plan against each deficiency within one month from issue of this order clearly stating the deficiencies which can be corrected without any procurement (Category-A) and deficiencies involving procurement of equipment (Category-B). However, action plan for deficiencies dealt in Petition No. 146/MP/2013 shall be submitted therein;
- b) The remaining deficiencies, if any, in Category-A shall be rectified by the concerned STU and CTU within 2 months of issue of the order and compliance report in this regard shall be submitted to respective RPC.
- c) As protection is a matter of critical importance, a time period of one year, as informed by various agencies in RPC for rectifying the deficiencies, which involve procurement, cannot be allowed. All deficiencies of Category-B shall be rectified within 6 months of issue of the order. In this regard, reasons of non-availability of fund or delay in procurement process shall not be accepted. The procurement and implementation is to be completed by each STU using their own fund which can be reimbursed through a common request of funding through PSDF forwarded through RPCs as per procedure recently approved by Government of India.
- d) Each SLDC shall be responsible to monitor the action taken by STU. If any deficiency in the STU system in regard to the Category-A deficiencies is not corrected after 3 months of issue of this order, the concerned SLDC may approach the respective State Commission for appropriate action against defaulting State entity in accordance with State Grid Code. The Office-in-Charge of the concerned SLDC shall be responsible for monitoring and ensuring compliance of the action plan and filing of the petition as directed herein.
- e) RPCs at the end of each quarter shall prepare a report on the protection deficiencies and their rectification which shall be sent to this Commission with a copy to CTU not later than 45 days of expiry of the quarter. The report shall inter-alia identify deviations from time lines as well as the State sub-stations which have interface with ISTS system. CTU shall take necessary action and issue a show cause notice for disconnection to sub-station of STU for not complying with the Standards for Protection and Control as per Central Electricity Authority (Technical Standards for Construction of Electric Plants and Electric Lines) Regulations, 2010 and Central Electricity Authority (Grid Standards) Regulations, 2010.

Accordingly, CERC has directed CTU, STUs and Generating Companies /Stations of all the regions to ensure rectification of defects in the protection system as pointed out in the protection audit within the time frame specified in paragraph 27 of the said order and submit the latest status of corrective actions to Member Secretary of the respective Regional Power Committee within one month of issue of this order. All RPCs are directed to furnish consolidated report with their observations/ recommendations to the Commission within 2 months of issue of this order. Thereafter, CTU and SLDCs shall submit quarterly report to the respective RPC latest by 15th day of the first month of next quarter and RPCs shall submit the report to the Commission latest by 15th day of the second month of next quarter.

Subsequently, Powergrid, NTPC, DVC, WBPDC and Sterlite updated the status; updated status is available at ERPC website.

OPTCL, JSEB and BSEB were requested to update the latest status.

Members may note and ensure compliance.

Deliberation in the meeting

OHPC, JSEB and BSEB updated the latest status. OPTCL is requested to update the latest status.

Item no. B.9: Restricted Governor Mode of Operation

The latest status of units of ER under RGMO is circulated in the meeting.

Members may update.

Deliberation in the meeting

Members updated the latest status (enclosed at Annexure B.9).

Item no. B.10: Generator “VAR” problem faced by BTPS, WBPDC in the evening peak hours and sometimes in Day times also-- WBPDC

WBPDC vide letter dated 05.05.2014 expressed that the matter has already been discussed in the SLCF forum and the said problem is still prevailing in BTPS. WBPDC requested OCC to look into the matter and need immediate intervention to resolve the issue without delay.

Members may discuss.

Deliberation in the meeting

WBPDC informed that BTPS units #1, 2, 3 & 4 (4x60 MW) are 50 years old machines and they are not capable to absorbing such huge VAR, hence they are facing low voltage problem during peak hours when unit#5 (210 MW) is out of service.

OCC advised to install capacitor banks at load side or shifting load to other adjoining sub-stations.

On reply WBSETCL planning wing informed that 750 MVAR capacitor bank has already been installed at various load centers and another 500 MVAR is under planning stage and it will take some time.

WBSETCL informed that the load shifting from BTPS to adjoining sub-stations were also explored and the same is not possible at this stage.

OCC advised WBPDC to run all the four old units all the time (when unit #5 is out of service) to share the VAR and requested SLDC to explore the shifting of some load to relief these machines.

Item no. B.11: Mock drill for startup power to Farakka & Kahalgaon stations of NTPC.

During Grid failure on 31.07.2012 FSTPS & KhSTPS could not get the startup power on time and due to this both the stations had faced a number of technical problems and took a long time to bring back the units on bar. Black start exercise for Teesta HEP was carried out successfully on 31/03/2014 with isolating radial load of North Bengal. In view of reliable and quick restoration of

units during the grid failure, it is requested that exercise for startup power of Farakka & Kahalgaon stations of NTPC from Teesta may please be studied and carried out by ERLDC.

Members may deliberate.

Deliberation in the meeting

After through discussion, OCC requested ERLDC to do the study and make a draft procedure to explore conducting mock drill for startup power to Farakka & Kahalgaon stations from Teesta. ERLDC agreed.

Item no. B.12: Minimum technical limit of FSTPS Stage-I&II --NTPC

This is with reference to the decision taken in 94th OCC meeting of ERPC on minimum technical limit of FSTPS stage-I&II where 65 MW (gross) power of FSTPS stage-I&II was to be absorbed by its beneficiaries due to high vibration problem of Unit-5 turbine till April' 2014. The major job in turbine is to replace HPT module & IPT casing. But due to non-availability of HPT rotor NTPC could not start the overhauling in the month of Apr'2014. Now it is planned to take the overhauling as per LGBR approved schedule i.e. from 17/07/2014 to 11/09/2014.

Keeping in view of the technical problem of FSTPS unit-5 and inability to maintain the grid discipline by over generating, especially during high frequency and technical minimum schedule (70% of Installed Capacity), NTPC has further requested that relief of 65 MW (gross) from FSTPS stage-I&II beneficiaries as decided in 94th OCC meeting of ERPC may please be extended till July' 2014.

Members may discuss.

Deliberation in the meeting

The OCC reiterated the 94th OCC deliberation, as per that the minimum technical limit of Unit#5 is 70% of Installed Capacity (i.e.350 MW) but due to vibration problem, the unit is to run at 470 MW. That means (470-350) MW or 120 MW needed to be adjusted. On the remaining 4 units of FSTPP with installed capacity of 1100 MW, NTPC should back down further by 5%, therefore, giving a relief of 55 MW. The remaining 65 MW (GROSS) needed to be absorbed by the beneficiaries of FSTPS Stage-I and FSTPS Stage-II, when stations (I &II) are required to run under technical minimum.

Constituents agreed to extend the relief of 65 MW (gross) from FSTPS stage-I&II till July'2014.

Item no. B.13: COD of JITPL & injection of Power on RTC basis --JITPL

JITPL vide letter dated 07.05.2014 informed that the first 600MW unit of JITPL was already synchronized and expected to achieve COD shortly and second unit will be progressively commissioned in few months.

JITPL requested for permit to apply for Short Term Open Access (STOA) and Power Exchange sale up to the extent of 600 MW on RTC basis, however the actual injection shall be as per the accepted schedule, which will be based on the margin available in the ISTS.

Members may deliberate.

Deliberation in the meeting

OCC informed that it will be done as per the CERC regulations.

Item no. B.14: 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 88th OCC, constituents requested for another workshop on this issue. OCC agreed and requested NTPC and CESC to share their scheme in the workshop.

Members may note and comply.

Deliberation in the meeting

Members noted.

Item no. B.15: Energy Generation data management from Renewable Energy Sources

As per Electricity Act, 2003, CEA has been entrusted with the task of collecting electricity generation data. CEA is monitoring all the existing generating stations with capacity more than 25 MW (Conventional sources only). In recent years there has been appreciable growth in generation from Renewable Energy Sources (RES).

In view of above it was decided to monitor all the generating stations under RES connected to the grid and also to bring out month wise, state wise and sector wise report on RES generation in MU including peak generation from RES.

CEA already requested to nominate Nodal officers at the level of SLDC for the above purpose. However, only few states have responded.

Those SLDCs who have not yet nominated the nodal officers for Energy Generation Data management from RES are requested to furnish the details at following email/Fax:

Email: ceaopmwind@gmail.com
with a copy to rishika.engineer@gmail.com and s.sewak@cea.nic.in

Nodal officers from CEA:
Mrs. Rishika Sharan, Director, CEA, 011-26732663 and 26102263(Fax), Mobile: 9868021299
Mrs. Sarita Sewak, Dy. Director, 011-26732656

SLDCs may note and nominate their Nodal officers as advised.

Members may note and comply.

Deliberation in the meeting

Members noted.

Item no. B.16: Certification through BIS as per IS 18001:2007 to all generating/transmission units. (Item No. B9 of 84th OCC meeting)

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.

Members may note and update the status.

Deliberation in the meeting

Members noted.

Item no. B.17: Pollution mapping for Eastern Region -- Powergrid

On the issue a special meeting was conveyed on 20th March, 2014 and minutes were circulated in OCC meeting and OCC requested all the constituents to cooperate for successful implementation.

In 96th OCC, the house was informed that, first training on Pollution Mapping was held on 23rd and 24th April, 2014 at ERPC Secretariat. Tentative schedule of the training program at other locations in Eastern Region is circulated in the meeting.

All constituents are requested to attend the training program at appropriate training location along with the concerned team who will be doing actual measurements.

Members were also informed that relevant documents of Pollution Mapping are already available at ERPC website (www.erpc.gov.in). They were requested to watch the Videos on Pollution Mapping procedure also available at ERPC website in video section.

OPTCL and JSEB are advised to fill up the excel format available at ERPC website for identification of the location and send to sksinghpg@yahoo.co.in with a copy to mserpc-power@nic.in by 30th April, 2014.

Subsequently, ERPC vide letter dated 06.05.2014 requested constituents to identify the transmission lines as per the location given in excel format available at ERPC website. Once the transmission lines get identified, one tower location should be identified suitably near to Sub-stations within that location. For each location utilities were requested to fill a word format available at ERPC website.

Respective utilities have to hang a dummy string of ten (10) insulators on all the identified tower locations and constituents are to give the coordinates of the identified towers where the dummy insulators are to be erected for taking the measurements. However, the relevant information is yet to be received from your end. Please expedite the same.

The list of equipments which are to be provided by the CPRI and to be arranged by the constituents at site for carrying out Pollution Mapping measurements are given at **Annexure-A**. You are requested to do the needful at your end.

The training schedule is also enclosed at **Annexure-B**. You are requested to attend the training with your team responsible for carrying out the actual measurements.

Powergrid may update the status.

Deliberation in the meeting

OPTCL/GRIDCO and JSEB were requested to give the duly filled excel formats. All the constituents were once again requested to attend the training with their team responsible for carrying out the actual measurements. Constituents agreed.

Item no. B.18: Modification of 132kV Bus arrangement at 220/132kV Purnea Sub-station of POWERGRID

In 95th OCC Powergrid informed that tendering is in progress and bid opening was extended for 10 days.

In 96th OCC, Powergrid informed that work will be awarded by June, 2014.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid reported the same status.

Item no. B.19: Procurement of Emergency Restoration System (ERS Towers) for Eastern Region constituents- Powergrid

In 25th TCC/ERPC, Powergrid was advised to procure four sets of ERS. It was also decided that these four sets will be kept at Sikkim, Siliguri, Ranchi and Gaya and will be used by all constituents of ER during emergencies.

In 95th OCC, Powergrid informed that feasibility report is under finalization stage and it will be approved by POWERGRID management by April, 2014.

In 96th OCC, Powergrid informed that for ERS tower there are only two worldwide vendors. So finalization of tendering will take some more time with either of the vendors.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid reported the same status.

Item no. B.20: Failure of Optical fibre link between Hatia- SLDC(Ranchi) -JESB

JSEB vide letter dated 08.01.14 informed that Hatia- SLDC (Ranchi) optical fibre link (UGFO) is under breakdown since September, 2013 which results non-reporting of four (4) nos. RTU viz. Patratu, Sikidiri, Tenughat and Hatia.

To rectify the above defect, several reminders in written as well as verbal request have been made to Powergrid and same has been raised in different forum of ERPC meetings.

In 93rd OCC JSEB requested Powergrid to restore the link temporarily till its final restoration. Powergrid agreed to look into the matter.

Powergrid informed that the offer for temporary restoration will be forwarded to JSEB soon and after the concurrence of JSEB, it will be restored within 15 days.

In 94th OCC, Powergrid informed that JSEB consent is still awaiting.

JSEB and Powergrid may update.

Deliberation in the meeting

Powergrid informed that JSEB consent is still awaiting.

Item no. B.21: Black start and Restoration procedure of Eastern region- ERLDC

Black start and restoration procedure of Eastern Region was updated by ERLDC on 30.11.13. Prior to updation a draft copy of same was circulated to all the constituents of eastern regional via email dated 15th November 2013 seeking comments as well as updates on following issues:

- a) Details of 220kV and above substation(s) not having synchronizing facility for synchronization of islands and time schedule for providing the same.
- b) Details of Minimum auxiliary power requirement and survival power requirement by unit/plant wherever left blank in the document

In 92nd OCC, House was informed that, the formats will be made available at ERPC website (www.erpc.gov.in). OCC advised all constituents to send their views as soon as possible.

Till date requisite data has been received only from DVC, CESC, Adhunik, Chuzachen and GMR

In 94th OCC, WBPDL/WBSEDCL, OPGC/OHPC, BSPHCL, JSEB agreed to submit the data at the earliest.

Subsequently, WBPDL/WBSEDCL and DPL had submitted the data.

In last OCC, it was informed that relevant data from OPGC/OHPC, BSPHCL, JSEB is still pending. OCC once again requested to submit the missing data.

Members are once again requested to supplement the missing data.

Deliberation in the meeting

It was informed that relevant data from OPGC/OHPC, BSPHCL, JSEB is still pending. OCC once again requested to submit the missing data.

Item no. B.22: Mock Black start exercises in Eastern Region – ERLDC

i) The status of black start exercises

In 96th OCC, tentative schedule of Black Start for 2014-15 exercise was circulated in the meeting.

Members may confirm the dates.

Deliberation in the meeting

*Members confirmed the dates. The updated schedule is given at **Annexure-B.22**.*

Chuzachen informed that their machines were not designed to be operated in isolated mode, so they are approaching the manufacturer for rectification of the same.

ii) Testing of DG sets meant for Black start

Report regarding test run of DG sets for the month of April, 2014 has not been received from any

of the constituents. All test reports may be forwarded to erldc.cal@gmail.com & psdas_psd@yahoo.com.

Constituents may kindly ensure compliance.

Deliberation in the meeting

Members noted.

Item no. B.23: Low voltage being faced at Jeerat/Subhasgram substations

With the onset of the summer season, the 400kV Bus voltages at Jeerat and Subhasgram substations of West Bengal are at times dipping to as low as 370kV and below. In view of above the tap positions at Jeerat/Subhasgram have already been changed to position '11' and '9' respectively. Also, units at KTHP/Bakreshwar/Sagardighi are required generate MVAR (lagging mode operation) to the maximum extent possible. Also, conversion of line reactor of 400kV Jeerat-Behrapore(at Jeerat end) to switchable Bus reactor needs to be expedited to take care of the low voltage problem in the peak hours. Presently, line reactor of 400kV Bakreshwar-Jeerat(at Jeerat end) and 400kV Jeerat-Behrapore(at Jeerat end) are open.

Feasibility of opening of line reactor of 400kV Sagardighi-Subhasgram (at Subhasgram end) may also be deliberated upon considering that the line is a long one 256Km(with 1x63 MVAR line reactor at Sagardighi end and 1x50MVAR at Subhasgram end).

OCC requested CTU/Powergrid to check the feasibility of opening of line reactor of 400kV Sagardighi-Subhasgram (at Subhasgram end). Powergrid informed that they will check the schematic diagram and revert back.

ERLDC/Powergrid may update.

Deliberation in the meeting

ERLDC informed that they are awaiting Powergrid's response on feasibility of the above.

Item no. B.24: Hearing at CERC on petition regarding non-compliance of Regulation 5.4.2 (d) of IEGC, 2010 regarding automatic demand management

As per IEGC 5.4.2(d) of IEGC, 2010 the clause related to implementation of automatic demand management is quoted below:

"The SLDC through respective State Electricity Boards/Distribution Licensees shall also formulate and implement state-of-the-art demand management schemes for automatic demand management like rotational load shedding, demand response (which may include lower tariff for interruptible loads) etc. before 01.01.2011, to reduce overdrawl in order to comply para 5.4.2 (a) and (b) . A Report detailing the scheme and periodic reports on progress of implementation of the schemes shall be sent to the Central Commission by the concerned SLDC"

The Commission vide earlier order dated 18.12.2013 in Petition No. 208/SM/2011 had directed as quoted below:

"We had directed in our order dated 1.12.2011 to all SLDCs to file the current status of the Automatic Load Management Scheme, reasons for not implementing the scheme and status of contingency procedures. None of the respondents, except DTL, has complied with our directions. We are of the view that these respondents have not only failed to comply with our directions but have also failed to discharge their responsibility under the Act and the Grid Code. We direct the staff of the Commission to process the case for initiation of action under Section 142 of the Act against the officers in-charge of STUs/SLDCs of the respondents States issuing show cause notice as to why penalty should not be imposed on them for non-compliance with our directions and the provisions of the Act and the Grid Code."

It may be noted that in this regard CERC took up Suo-Motto petition No. 005/SM/2014 and directed vide order Dtd.25/04/14 directed as follows:

“In view of the above, the Officers-in-Charge of the respondents State Transmission Utilities/State Load Despatch Centres are directed to show cause, latest by 15.5.2014, as to why action under Section 142 of the Electricity Act, 2003 should not be taken against them for non-compliance with our directions and the provisions of the Act and the Grid Code with regard to implementation of the Automatic Load Management Scheme”

The above matter is listed for hearing on 22/05/14. Constituents may kindly take note of above for further necessary action.

Members may note/discuss.

Deliberation in the meeting

Members noted.

Item no. B.25: Tripping of CGPL Mundhra on 12/03/14 and furnishing of data for analysis of FGMO participation and depicting FRC calculations

On 12.03.14 at 19:21Hrs, total loss of generation at CGPL Mundhra(UMPP)(loss of around 3800MW for the All india Grid) occurred and system frequency dipped from 49.96 to 49.28Hz.(i.e fall of 0.68Hz). Considering the above as a major and relevant event for analysis of FGMO and FRC estimation it is requested that the following be furnished by the constituents:

- a) Plots of active power generated (MW) along with frequency should be furnished in confirmation of participation of the various generating stations in FGMO/RGMO. Data in this regard may be furnished for the time period from 19:00Hrs to 20:00Hrs of 12/03/14. SLDCs may kindly take necessary action to collate the data of all the generating stations under their purview and send the same to ERLDC. Generating stations under direct purview of RLDC should also submit the above data at the earliest to ERLDC. The above data may preferably be furnished in soft form vide mail to erldc.cal@gmail.com. A letter in this regard has already been forwarded to constituents. However, data from constituents have not yet been received.

SLDCs/ISGS may kindly note and comply with above at the earliest.

- b) In view of the recent formation of a pan-India synchronous grid primary response is absolutely essential to contain the system frequency within a very narrow band around 50 Hz, for controlling line flows within allowable limits.

ERLDC may present the FRC of each control area/generator.

Deliberation in the meeting

ERLDC presented the FRC response of each control area.

NTPC informed that the response of FSTPS & KhSTPP as depicted in ERLDC presentation is not matching with the actual response. They submitted the data to ERLDC and requested to revise the FRC of FSTPS & KhSTPP accordingly. ERLDC agreed.

Members noted.

Item no. B.26: Reactive Power performance of Generators and GT tap position optimization

a) Review of reactive power generation/drawal of generators vis-à-vis 400kV station bus voltage of units

Maximum and minimum voltage was observed (data taken from SCADA)
Generating stations have been monitored for sample dates in the month of Apr 14:

Power Plant	Max and Min Voltage observed for Apr 14 (KV)	Date for monitoring (Apr 2014)
Farakka STPS	418,407	7,8
Khalgaon STPS	412,401	7,9
Talcher STPS	402,394	4,9
Teesta	419,401	4,8
Bakreshwar TPS	402,382	5,6
Kolaghat TPS	412,390	5,7
MPL	422,411	1,7,9
Mejia-B	425,415	7,9
DSTPS	426,415	6,7
Adhunik TPS	422,406	1,7
Sterlite	424,415	2,8

ERLDC may update.

Deliberation in the meeting

ERLDC presented the performance of the generators and informed performance of all the generators is satisfactory except SgTPP. SgTPP data is not available to ERLDC. Members noted.

b) Schedule for reactive capability tests

As discussed in the last OCC meeting, the status of reactive capability testing of identified generators is as follows:

- a) Adhunik TPS: In Nov, 13
- b) DSTPS: One unit is out due to coal shortage, test to be done on opportunity basis.
- c) Mejia & Koderma TPS: Test to be done when both units are in service.

Maithon RB had mentioned in the last OCC meeting that they had already carried out reactive capability tests of their machines in January/March, 2013 and report has been submitted.

Concerned members may update the status.

Deliberation in the meeting

Members updated the status.

c) Optimization of GT tap position at Adhunik, Mejia-B and DSTPS

In the 88th OCC it was decided to change the relevant taps of identified units as follows:

DSTPS GT-1 and 2		MEJIA'B' GT - 1 & 2	
Present tap position & voltage ratio	Suggested tap position & voltage ratio	Present tap position	Suggested tap position
5 (21kV/420 kV)	7 (21kV /399 kV)	4 (21kV /430.5 kV)	7 (21kV /399 kV)

Adhunik GT-1 & 2	
Present tap position & voltage ratio	Suggested tap position & voltage ratio
8 (16.5kV /420kV)	12 (16.5kV /400.68 kV)

In 95th OCC ERLDC informed that, they have issued messages for changing of taps at DSTPS and Adhunik for changing GT tap position of both the units from present position of 5 to 6 and from present position of 8 to 10 respectively. The messages were issued using the opportunity when both the units of the plants were not on bar. However, no confirmation has been received from DVC and Adhunik in this regard.

Representative from Adhunik informed that, it is not possible to change the GT tap at their end. DVC informed that, they will change the tap during opportunity shutdown.

In last OCC, representative from Adhunik informed that, it is not possible to change the GT tap at their end due to technical reasons. DVC informed that, they will change the tap during opportunity shutdown.

Concerned members may update the status.

Deliberation in the meeting

Members updated the status. OCC advised ERPC Secretariat to convene a special meeting for detail deliberation on tap changing proposal before next OCC.

PART C:: OPERATIONAL PLANNING

Item no. C.1: Shutdown proposal of transmission lines and generating units for the month of June' 14

Members may finalize the Shutdown proposals of the generating stations and transmission lines for the month of June' 14 is circulated in the meeting.

ERPC/ERLDC facing difficulty in planning the shutdown of CTU lines with Orissa and these are affecting transmission line S/D programme of ER as a whole.

In 26th TCC/ERPC meeting Odisha assured to resolve the issue.

Members may finalize the shutdown proposal and OPTCL may update the status.

Deliberation in the meeting

*Approved maintenance programme of generating stations and transmission elements for the month of June, 2014 is at **Annexure-C.1**.*

Item no. C.2: Anticipated power supply position during June'14

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of June'14 were prepared by ERPC Secretariat on the basis of Provisional LGBR for 2014-15, keeping in view that the units are available for generation and expected load growth etc. and circulated in the meeting.

Members may confirm.

Deliberation in the meeting

*Modified anticipated power supply position for the month of June, 2014 after incorporating constituents' observations is given at **Annexure-C.2**.*

Item no. C.3: Prolonged outage of power system elements in Eastern Region**(i) Generating units:**

Generating Station	UNIT NO	CAP(MW)	DATE	REASONS FOR OUTAGE	Date of restoration
BOKARO B	3	210	12.10.13	Overhauling	
MEJIA	3	210	06.04.14	LOW SYSTEM DEMAND	
MEJIA	4	210	09.02.14	HIGH FURNACE	
KODARMA	1	500	01.03.14	TUBE LEAKAGE	May, 14
KODARMA	2	500	07.04.14	ASH POND PROBLEM	May, 14
KAHALGAON	3	210	6.05.14	ANNUAL OVERHAULING	
DSTPS	2	500	08.04.14	TUBE LEAKAGE	Low Demand
STERLITE	3	600	16.04.14	TO FACILITATE PG TEST	
FSTPP	3	200	27.04.14	O/H	
BANDEL	5	210	16.11.13	R&M Project	
KOLAGHAT	5	210	08.05.14	CONTROL PROTECTION	9 May, 14

(ii) Transmission elements

Name of the Line/Element	Outage Date	Reason	Date of restoration
220 KV JEERAT - SATGACHIA D/C	15.06.10	DUE TO LAND SLIDE OF GANGES RIVER BANK	
220 KV MENDHASAL - NARENDRAPUR - II	12.10.13	TOWER COLLAPSE	May, 14
400/220 KV,315 MVA ICT - I AT BIDHANNAGAR	18.01.14	FAILURE OF R PHASE BUSHING,HV SIDE.	
400 KV ARAMBAG-BAKRESWAR	01.05.14	2 no. TOWER (TL 63&64) COLLAPSE	Restored
132 KV KISHANGUNJ-FORBISGUNJ	01.05.14	1 no. TOWER (TL 143)	8 th May, 14

Members may update.

Deliberation in the meeting

Members updated the latest status.

Item no. C.4: Information regarding commissioning of new transmission element

1. 765kV Ranchi-Dharamjaygarh was charged for the first time at 22:14 hrs of 31/03/14 but the same tripped immediately from Ranchi end. Subsequently, the line was charged at 17:38Hrs of 01/04/14 with commencement of power flow.

2. Tie bay of 765/400kV ICT-I and 400kV Ranchi-Ranchi(New)-IV at Ranchi(New) was charged for the first time at 23:05Hrs of 03/04/14.
3. 400/220kV, 3 x 105MVA ICT at Rangpo was charged from 220kV side for the first time at 18:00Hrs of 15/04/14.
4. LILO of 400kV Teesta-Binaguri-I at Rangpo was commissioned and 400kV Rangpo-Teesta and 400kV Rangpo-Binaguri section were synchronized at 16:27Hrs and 16:55Hrs respectively of 22/04/14.

All constituents are requested to intimate details of commissioning of new elements/generating units (if any) positively by the first working day of the current month for the previous month.

All members are also requested to verify above and also intimate regarding details of any other new elements commissioned but not included in the above list.

Members may note/update.

Deliberation in the meeting

Members noted.

Status of commissioning of generating station and transmission elements are as follows:

New generating units:

S.No.	Power Plant	Plant Size	Expected date
1	GMR Unit#3	4x350MW	15 th Nov, 2013
2	Koderma Unit#2	2x500MW	Oct, 2013
3	Corporate Power Unit#1	2x270MW	
4	Teesta-III Unit#1	1x200MW	
5	Raghunathpur Unit#1	2x600MW	Nov, 2013
6	TLDP-IV	1x40MW	

New transmission elements:

SI No.	Name of Element	Expected date
1	400 kV Maithon-Gaya D/C	
2	400 kV Gaya-Koderma D/C	
3	400kV Sasaram-Daltonganj D/C & Daltonganj S/Stn	
4	400 kV Ranchi-Raghunathpur D/C	
5	400 kV Meramandali-Dubri D/C	
6	400 kV Corporate- Ranchi D/C	
7	400 kV IB-Meramandali D/C	
8	220 kV TLDP-IV – NJP ckt-2	2014
9	220 kV Jeerat-Rishra D/C	
10	220 kV Latehar-Daltonganj D/C	
11	220 kV Lohardaga-Lathehar D/C	
12	220 kV Bidhansai-Cuttack D/C	June,2014
13	220 kV Girdih-Koderma D/C	Sep, 2014

Members may update.

Deliberation in the meeting

Members updated the latest status.

PART D:: OTHER ISSUES

Item no. D.1: UFR operation during the month of April'14

System frequency touched a minimum of 49.49 Hz in April'14. Accordingly, no report of operation of UFR has been received from any of the constituents.

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.2: Grid incidences during the month of April, 2014.

Sl no	Disturbance Place	Date & Time	Generation loss (MW)	Load loss (MW)	Remark	Category
1	WBSETCL (STPS)	04/04/14 at 19:45Hrs	0	203	Total power failure occurred at STPS & adjacent s/s, due to tripping of 220kV STPS-Bidhannagar-D/C & 220kV STPS-Asansol-D/C on E/F	GD-1
2	OPTCL (Old Duburi & New Duburi)	07/04/14 at 01:08,02:12, 02:16 & 02:44hrs	0	480	Total power failure occurred at 220/132kV Old Duburi s/s & New Duburi s/s due to snapping of B-Ø jumper of 220kV Meeramundali-Old Duburi-I at loc no-298.	GD-1
3	DVC(Bokaro, Jamshedpur)	13/04/14 at 13:06hrs	170	342	Due to non-isolation of the line fault of 220kV Jamshedpur-Bokaro-I, all lines emanating from Jamshedpur & Bokaro s/s tripped from remote end. Only running unit (U#1) at Bokaro-B tripped on unit auxiliary failure.	GD-1
4	Sikkim (Gangtok, Chuzachen)	14/04/14 at 16:34hrs	40	18	Various 132kV line emanating from Rangit, Gangtok, Chuzachen tripped on E/F due to inclement weather condition leading to total power failure occurred at Gangtok. Chuzachen U#2 also tripped.	
5	JSEB (Chandil)	22/04/14 at 11:09hrs	0	290	220kV Chandil-Ranchi tripped due to B-N fault leads to LBB operation at Chandil and all elements at 220kV bus of Chandil (JSEB) S/s tripped.	
6	WBSETCL (Bidhannagar)	23/04/14 at 17:57hrs	515	174	Due to bursting of line post insulator between circuit breaker and connecting insulator (29E) of 220kV Bidhannagar-Asansol Bay at Bidhannagar, bus fault occurred at 220kV bus & all the 220kv lines & ICTs tripped.	
7	OPTCL (Theruvalli)	25/04/14 at 11:44hrs	0	276	All the 220kV lines & ICTs tripped from Theruvalli tripped due to R-φ conductor of 220kV Theruvalli-Narendrapur snapped at Loc-553.	
8	BSPHCL (Purnea)	27/04/14 at 06:03hrs	0	80	Total power failure occurred at 132/33kV Purnea (BSPHCL) system due to B-Ø to ground fault in 132kV Purnea (BSPHCL)-Forbisgunj line.	
9	JSEB (Tenughat) & BSPHCL (Biharsariff)	27/04/14 at 09:18,09:32, 10:22 & 12:02hrs	225	350	Various 220kV lines tripped from Tenughat & Biharsariff leading to loss of generation at Tenughat & power failure at Biharsharif, Fatuah, Begusarai.	

Members may note.

Deliberation in the meeting

Members noted.

Item no. D.3: Any other items

D.3.1. Time bound plan for removal of existing SPS Schemes- NTPC

Capacity of Talcher Stage-II is allocated (excluding 10% home state share to GRIDCO) to the Southern Region States Generation is evacuated to Southern Region through the HVDC bi-pole. Presently, there are 2 nos. SPS schemes which are implemented to take care of the eventuality of outage of HVDC bi-pole as power will flow into NEW grid and to safeguard the elements in NEW grid, the SPS schemes were implemented. The SPS schemes- namely SPS-450 and SPS-1000, the number indicates the quantum of power injected into the NEW grid after tripping of Talcher-Kolar HVDC pole or bi-pole. In SPS-450, three units are tripped at Talcher Stage-II, while in SPS-1000, only one unit is tripped and the balance reduction in generation achieved through reduction in generation. In many occasions, when Talcher generation is quite less, even then the trip command is extended to Talcher units. This causes undue thermal stress on our machines and equipment failures at times. This has resulted in higher O & M costs for our machines.

With the synchronisation of NEW grid with SR grid in December, 2013, new schemes has now been added to the existing SPS schemes.

SPS is a contingency arrangement for safeguarding the elements in transmission system which is to be removed once the associated transmission system is strengthened. Instead of strengthening the transmission system, if we go on implementing SPS schemes one after another, then probably this will weaken the grid more instead of strengthening the grid.

This calls for a relook into the existing SPS schemes in toto besides a time bound action plan for withdrawal of existing SPS schemes.

Members may decide.

Deliberation in the meeting

OCC felt that reviewing can only be started after the commissioning of second/alternative transmission links to SR. However, OCC referred the issue to 27th TCC for further guidance.

D.3.2. Unreliable Auxiliary Power Supply at Powergrid S/S

The issue was discussed on many occasions in previous ERPC forum wherein it was assured by concerned members that reliability would be maintained. But in 93rd OCC meeting on 10.1.14 PGCIL informed that, it is still facing unreliable auxiliary supplies in most of their grid substations under JSEB and BSEB control area. In OCC concerned members again assured for improvement in quality of service.

OCC however in view of sensitivity of the issue placed the same before TCC/ERPC for further guidance.

In 26th TCC/ERPC, Powergrid informed that, Ranchi, Jamshedpur and Arra substations are facing serious problem due to unreliable auxiliary supply.

Powergrid also informed that auxiliary supply at Muzaffarpur and Patna substations fed from BSEB are also not available because of disconnection of the same on some payment issues and presently they are getting supply from tertiary winding of ICTs.

JSEB informed that the matter has already been taken up with concerned GM for supplying reliable auxiliary supply to Powergrid S/S.

BSEB informed that the Distribution Companies are not under direct control of BSPHCL. However, they assured to provide reliable auxiliary power supply.

TCC took serious note on unreliable supply at such important substations and advised JSEB and Bihar to arrange reliable and un-interrupted auxiliary power supply to Powergrid S/s for better grid operation at the earliest. TCC further advised Powergrid to explore making arrangements for reliable auxiliary supplies from two sources in all the affected substations on its own.

BSEB informed that, auxiliary supply was disconnected at Muzaffarpur and Patna substations due to some nonpayment issues.

ERPC took serious note on disconnection of auxiliary supplies at such important 400 kV substations. ERPC advised BSEB to settle the nonpayment issues separately in ERPC forums and directed BSEB to restore the auxiliary supply immediately. BSEB agreed.

ERPC also advised JSEB to provide uninterrupted auxiliary supply for secure operation of the grid. JSEB agreed.

Mean while JSEB informed that, the backbone of the transmission system i.e. 400 / 220kV G/S/S of PGCIL at Ranchi and Jamshedpur are getting auxiliary power through LT line of your jurisdiction because the ICTs at these G/S/S's are not having tertiary binding. The issue of uninterrupted power supply was raised vehemently in the TCC & ERPC meeting held at Kolkata on 17th & 18th January, 2014. Please ensure uninterrupted power supply to these sub-stations otherwise the sub-stations would be at the risk of disturbances for the power system. These G/S/S's are of vital importance whose tripping on account of failure of auxiliary power supply may affect the power system to a greater extent. Therefore, it is cautioned and desirable that uninterrupted power supply be maintained through LT line feeding to these G/S/S's. Further, the details of tripping be provided to this Office and suggest the way to maintain uninterrupted auxiliary power supply to these G/S/S's. The ERPC forum has fixed 15th February, 2014 for necessary arrangement for reliable auxiliary power supply to power G/S/S's at Ranchi and Jamshedpur.

In 94th OCC, representative from BSEB & JSEB also assured that efforts are continuously being made for maintaining the auxiliary power supply to PG S/Ss on priority basis. OCC advised PGCIL, BSEB, JSEB to resolve the problems, if any, through dialogues across the table.

Deliberation in the meeting

Powergrid informed that the reliability of feeders supplying auxiliary supply to PG Sub-stations in BSEB and JSEB control areas has improved.

D.3.3. Strengthening of Kolaghat – Kharagpur – Musaboni 132 KV D/C line of DVC-WBSETCL

It has been observed that the existing Jamshedpur – Musaboni – Hizlee (DVC) – Kolaghat (DVC) 132 kV D/C line passes very close proximity of WBSETCL's Kharagpur 400/220/132 kV sub-station (around 1 Km) and Jhargram 132/33 kV sub-station (around 2.5 Km).

It is understood that the line segment of DVC is not utilised to its full capacity as there is source constraint and facing low voltage problem due to very long 132 kV line segment (around 240 Km) between Kolaghat to Jamshedpur.

Considering above, WBSETCL propose LILO of this line at Kharagpur 400/220/132 kV sub-station of WBSETCL for injection of power which will lead injection of power in between and reduce the effective length of continuous 132 kV line from from 240 Km to 160 Km. This in turn will help in flow of more power at better regulated voltage, thereby improves the power quality/reliability at DVC's system.

Further it is proposed LILO of this line at Jhargarm 132 kV sub-station of WBSETCL, which is around 2.5 Km away from the line, for the same purpose as above. This will set aside construction of around 45 Km 132 kV D/C line.

The above arrangement will be benefit to the Nation in general and will benefit the consumers of both the State of Jharkhand & West Bengal in particular.

In view of above, WBSETCL proposed utilisation of Kharagpur to Jhargarm portion of the DVC's above line to achieve the following benefits:

1. Existing assets can be utilised effectively and gainfully
2. DVC, Jharkhand & West Bengal will be benefited
3. Construction of new transmission line (Kharagpur to Jhargram 132 kV D/C; RL \approx 45 Km) can be avoided resulting less burden to consumers
4. Impacts to agricultural operations & forests can be avoided by keeping away construction of a new transmission line parallel with an existing line on separate structures
5. National interest will be served

Deliberation in the meeting

After deliberation OCC advised DVC and WBSETCL to explore the possibilities of the scheme bilaterally and in case the issue remains pending post bilateral deliberation it would be considered in ERPC forum.

D.3.4. Declaring 400 kV transmission lines and bays of LILO portion at Sagardighi TPP as integral part of National grid -- WBSETCL

WBPDCCL vide letter dated 28.04.14 informed that, following transmission elements may be declared as integral part of National grid,

- a) 400 kV LOLOed part (12.6 km) at Sagardighi TPP of Farakka-Subhashgram
- b) Sagardighi-Parulia D/C line
- c) Two bays at Parulia S/s of PGCIL

It was informed that, series of communications are already made to WBSETCL and PGCIL but no response received for taking over above transmission elements.

Deliberation in the meeting

OCC advised WBPDCCL to take up the issue with CTU/PGCIL. Once CTU/PGCIL agreed to take over the above listed elements the other modalities will be resolved in ERPC forums.

D.3.5. Calculation of POC charges for 400 kV GMR line —OPTCL/GRIDCO

OPTCL/GRIDCO informed that, POC charges calculated taking less line flow in 400 kV GMR line in March, 14 (190 MW) & April, 14 (80 MW) although allowed Power flow is 450 MW.

Deliberation in the meeting

OCC advised OPTCL/GRIDCO to pursue the case with NLDC.

D.3.6. Issuing charging code without concurrence from OPTCL-- OPTCL

OPTCL informed that, ERLDC is issuing off code/charging code for inter-state tie lines without getting any concurrence from OPTCL.

Deliberation in the meeting

OCC advised ERLDC to follow the operating procedure and advised to pass proper/requisite information to constituents/utilities. ERLDC agreed.

D.3.7. Central sector scheduling for GRIDCO -- GRIDCO

GRIDCO informed that, as per the revision-18 of central sector share of the bilateral of GRIDCO to BSEB on 09.04.2014 from 16:00 hrs to 18:00 hrs, is not reflected in total bilateral of GRIDCO which creates deviation in two blocks.

Deliberation in the meeting

ERLDC informed that there may be few cases due to inadvertent entry but the same will be corrected once informed. OCC advised GRIDCO & ERLDC to resolve these sort of issues bilaterally.

D.3.8. Enhancing Chuzachen generation

Chuzachen vide mail dated 13-05-2014 informed that, at present Chuzachen is allowed to generate 85MW during peak and 99 MW during off peak. Chuzachen requested to enhance the generation limit to 99 MW during the Peak Hours and also requested to withdraw the SPS at Rangit/Chuzachen after commissioning of Rangpo pooling Station during April 2014.

Deliberation in the meeting

After detail discussion, OCC decided to allow Chuzachen to enhance their generation upto 99 MW with SPS operation of one unit tripping (whichever is generating more). The other signaling part of Chuzachen SPS will be reviewed in next OCC.

D.3.9. Request for shutdown of 400 kV Raigarh-Sundargarh line---PGCIL

Powergrid vide mail dated 14-05-2014 requested for shutdown of the above mentioned line on 22-05-2014 from 10:00hrs to 12:00 hrs for making LILO connection of IBUL generating station. Powergrid also requested to place the shutdown of the said line in WRPC OCC meeting for approval at their end.

Deliberation in the meeting

OCC agreed. OCC categorically advised that this LILO connectivity should be utilised only for commissioning activity of the IBUL generating station. For evacuation of post –COD generation from units ATS of the station should be kept ready.

D.3.10.Planned shutdown of unit-1 from 01-07-2014 for 7 days--NTPC

NTPC vide letter dated 14-05-2014 informed that, unit-1 of Kaniha has completed 20 years of operation and the licensing authorities are not renewing the boiler license under Appendix-1A. Boiler is necessarily to be stopped for inspection of renewal of license. Accordingly, NTPC requested for short shutdown of unit-1 for 7 days from 01-07-2014 to 07-07-2014. NTPC also informed that, Appendix-1A is prepared after the LGBR hence the same could not be included in the LGBR.

Deliberation in the meeting

OCC agreed in principle and decided to review in next OCC along with other units S/D.

Meeting ended with vote of thanks to the chair.

तीव्र डाक द्वारा
BY SPEED POST

केन्द्रीय विद्युत अनुसंधान संस्थान

(भारत सरकार की सोसाइटी, विद्युत मंत्रालय)

प्रो सर सी. वी. रामन रोड, सदाशिवनगर डाक घर, पो. बा. सं. 8066, बेंगलूर - 560 080

CENTRAL POWER RESEARCH INSTITUTE

(A Govt of India Society under Min. of Power)

Prof. Sir C.V. Raman Road, Sadashivanagar P.O., P.B. No. 8066, Bangalore - 560 080, India

वेबसाइट/website : <http://www.cpri.in>

सं./No. 43/1/2014-HV/1996/Powerlinks

दिनांक/Date: 02/04/2014

सेवा में /To

म/स. पवरलिंक्स ट्रांसमिशन लिमिटेड,
(जोइन्ट वेन्चर ऑफ टाटा पवर्स & पावर ग्रिड)
१० वीं फ्लोर, डी एल एफ टॉवर-ए,
डिस्ट्रिक्ट सेंटर जसोला, न्यू दिल्ली - ११० ०२५.

M/s. Powerlinks Transmission Ltd.,
(Joint Venture of TATA Powers & Power Grid)
10th Floor, DLF Tower-A,
District Centre Jasola, New Delhi-110 025.

विषय/ Sub:-परीक्षण रिपोर्ट/ Test Report

Kind Attention: A. S. GUSAIN - Asst. General Manager (Engineering).

महोदय /Dear Sir(s),

अनुरोध पर रिपोर्ट सं 43/1/2014-HV/1996/Powerlinks दिनांक 02/04/2014 इसके साथ संलग्न है।

We are enclosing herewith report No./s 43/1/2014-HV/1996/Powerlinks dated 02/04/2014 कृपया पावती भेजे /
Kindly acknowledge the receipt of the same.

कृपया ध्यान दें कि संलग्न परीक्षण रिपोर्ट में विषमताएँ /विसंगतियाँ, यदि कोई पाई गई तो इस पत्र की प्राप्ति के 45 दिनों के अंदर सीपीआरआई के ध्यान में लाएँ।

Please note that anomalies/discrepancies in the test report enclosed, if any, shall be brought to the notice of CPRI within 45 days of receipt of this letter.

साथ ही, कृपया ध्यान दें कि इस पत्र के जारी दिनांक से 15 दिनों के भीतर परीक्षण के लिए लाए गए नमूने तथा उनके साथ लाई गई अतिरिक्त सामग्री उच्च वोल्टता प्रयोगशाला के परिसर से हटा दी जाएँगी। उपरोक्त अवधि के बाद किसी भी दावे पर विचार नहीं किया जाएगा तथा कुछ और दिनों के लिए नमूनों को रखने के लिए इस अवधि के अंदर कोई लिखित अनुरोध की अनुपलब्धि पर सीपीआरआई के मानकों के अनुसार नमूनों का निपटारा किया जाएगा।

Also, please note that the samples and any additional material brought along with them for the testing shall be removed from the High Voltage Laboratory premises within 15 days from the date of issue of this letter. No claims will be entertained after the above period and samples will be disposed of as per CPRI norms, unless written request is received within this period for retaining the samples for a few more days.

भविष्य में भी हमारी सर्वोत्तम सेवाओं का आश्वासन तथा धन्यवाद के साथ।

Thanking you and assuring you of the best of our services in the future also.

भवदीय / Yours faithfully,

२। श्री डी आराध्या ३/४/१४

(डॉ. आर.एस शिवकुमार आराध्या)

Dr. R. S. SHIVAKUMARA ARADHYA

अपर निदेशक / ADDITIONAL DIRECTOR

उच्च वोल्टता प्रभाग / HIGH VOLTAGE DIVISION

**REPORT ON FAILURE OF INSULATORS OF 400 kV
SILIGURI- PURNEA & PURNEA- MUZAFFARPUR
TRANSMISSION LINE OF M/s POWERLINKS**



**HIGH VOLTAGE DIVISION
CENTRAL POWER RESEARCH INSTITUTE
P.B. No 8066, Prof. Sir CV RAMAN AVENUE
BANGALORE - 560080**

**REPORT ON FAILURE OF INSULATORS OF 400 kV
SILIGURI- PURNEA & PURNEA- MUZAFFARPUR
TRANSMISSION LINE OF M/s POWERLINKS**

CLIENT:

M/s. POWERLINKS, NEW DELHI

STUDY CONDUCTED BY:

Dr. N.VASUDEV

REPORT No

43/1/2014-HV /1996/POWERLINKS DATED 1-04-2014


(Dr. N.Vasudev) 2/4/2014

Joint Director

HIGH VOLTAGE DIVISION


(Dr. R.S. shivakumara Aradhya) 2/4/14

Additional director

HIGH VOLTAGE DIVISION



CPRI

BACKGROUND

M/s Power links had constructed 400 kV D/C Siliguri - Purnea (Quad moose) line during 2004-2006 for evacuation of power from TALA hydroelectric project, Bhutan and also to create a transmission corridor from Eastern Region to Northern Region. This line was commissioned in the year 2006. Since the operation of the line, there were no failures observed on the insulators till 2010. Many failures were reported during the year 2012, in particular tension insulators of 160 kN mechanical strength. In order to investigate the failures of tension insulators, M/s Power links subjected old and new insulators to various electrical and mechanical tests at CPRI, Bangalore. From the test results it was observed that all the new insulators withstood the electro-mechanical test and 20% of the old insulators failed during the test. The failures of the old insulators maybe attributed to gradual ageing and possible micro cracks developed over a period of time.

To find the reason of repeated failure of 160 KN insulator in above two lines , M/S Power links has asked CPRI to depute their expert for root cause analysis of the failure. In this regard, an official from CPRI visited the sites and the insulator healthiness was checked by scanning the insulators by PID (Puncture Insulator Detector).

Scope of the work

To carry out detection of puncture insulator by PID measurements at 400kV Purnea-Muzaffarpur line & 400kV Siliguri- Purnea Line, analysis of the results and recommendation.





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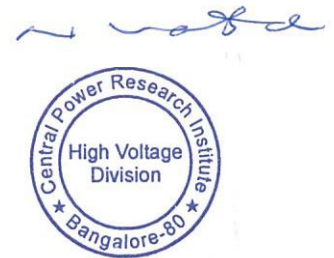
METHODOLOGY ADOPTED

Electric field measurements by PID detector

The Puncture insulator detector measures the AC electric fields surrounding porcelain insulators. It has two parallel, dielectrically separated plates that, when placed in electric field, senses a voltage between them. The probe measures that voltage when infrared beams are interrupted. The beams, situated near the internal ends of the horseshoe shaped probe are interrupted when the unit passes over a porcelain disk. The software supplied with the tester, which facilitates the transfer of data from the probe to the PC. The software also provides graphics to interpret the condition of the scanned insulator. The insulator identification can be associated to the currently tested insulator string

The PID measurements were carried out at:-

- 1) 400kV Siliguri- Purnea line, tower location No. 10 circuit III on all the strings
- 2) 400kV Siliguri-Purnea line, tower location No. 10 circuit IV on all the strings.
- 3) 400kV Purnea-Muzaffarpur line, tower location No. 3 circuit I on all the strings.
- 4) 400kV Siliguri-Purnea line, tower location No. 24 circuit IV on all the strings
- 5) 400kV Purnea-Muzaffarpur line, tower location No. 7 circuit I on all the strings.





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RESULTS OF MEASUREMENT

Results of the above PID tests are given in the following graphs:-

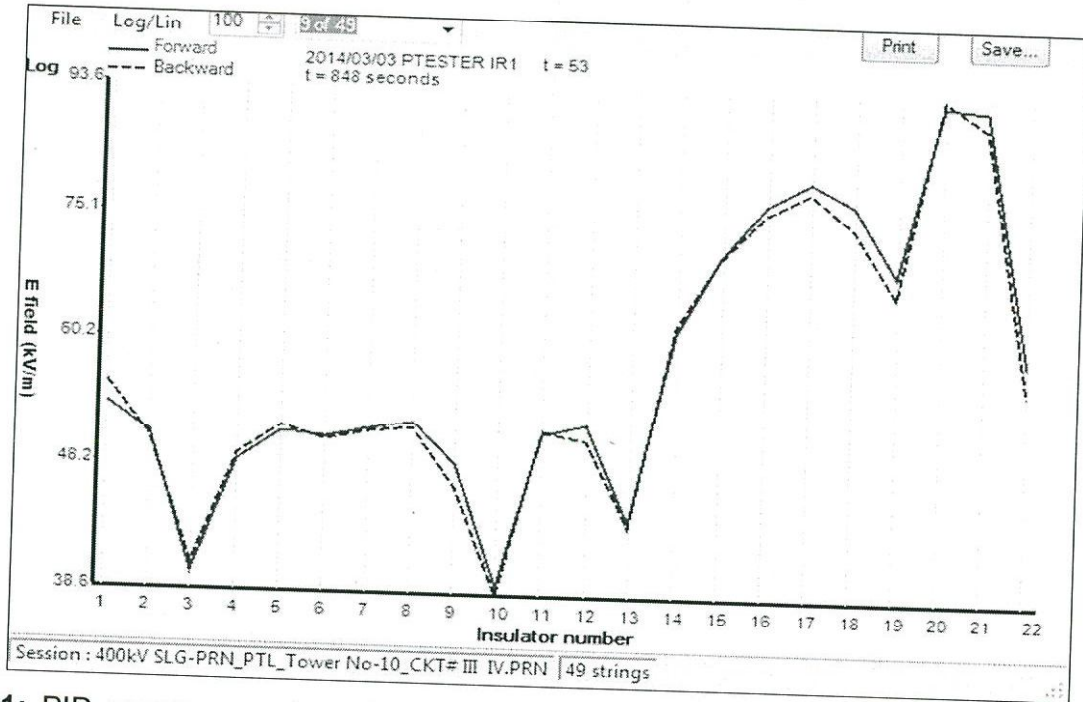


Fig – 1: PID measurement carried out on location No. 10 of 400kV Siliguri- Purnea Circuit-III.

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CPRI

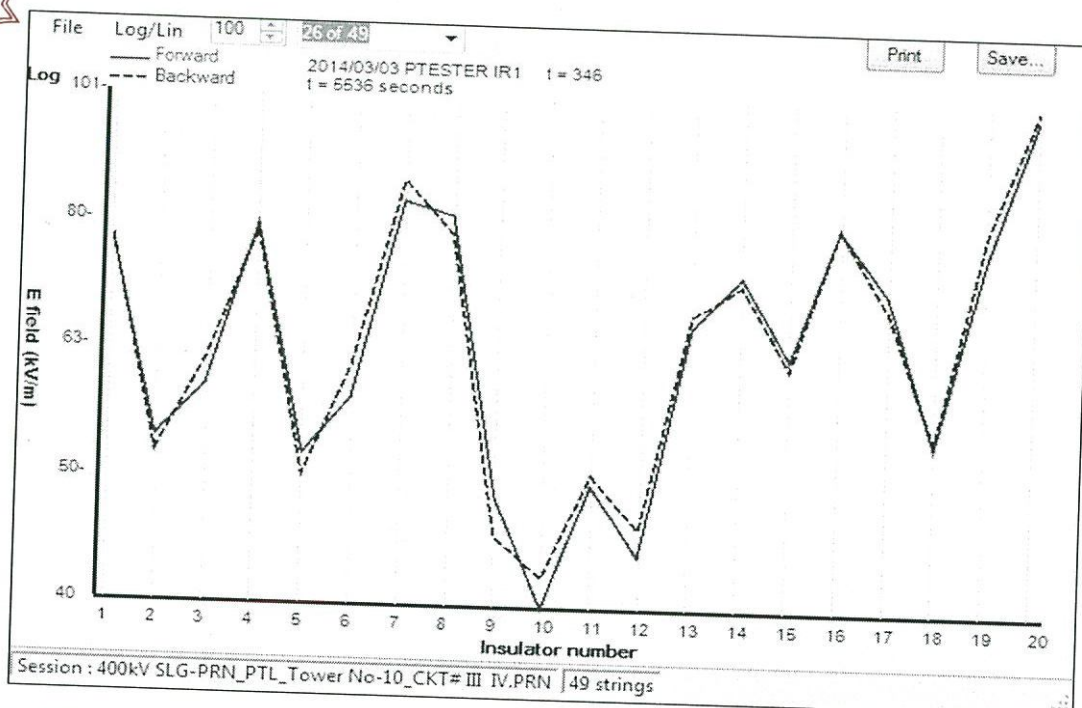


Fig – 2: PID measurement carried out on location No. 10 of 400kV Siliguri - Purnea Circuit-IV.

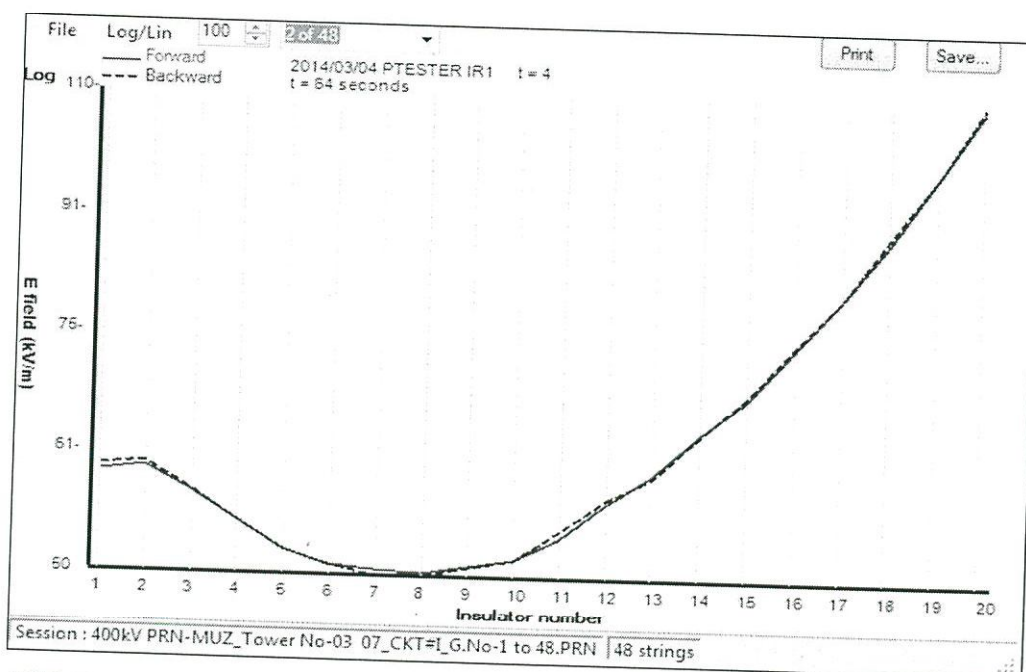


Fig – 3: PID measurement carried out on location No. 3 of 400kV Purnea - Muzaffarpur Circuit-I.





CPRI

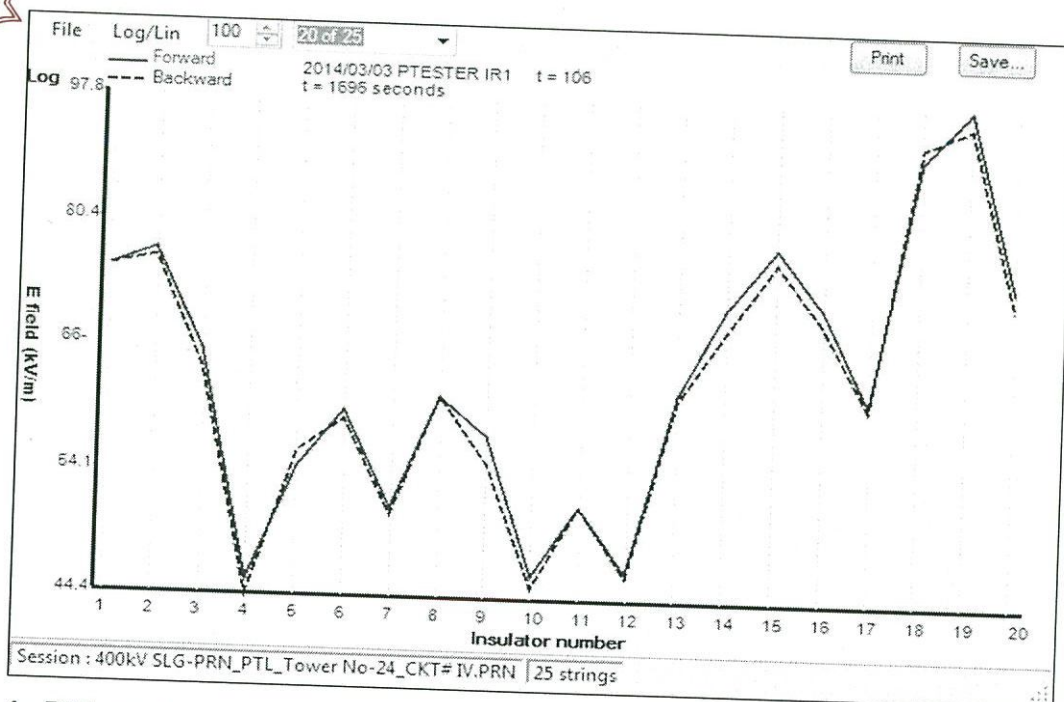


Fig – 4: PID measurement carried out on location No. 24 of 400kV Siliguri - Purnea Circuit-IV

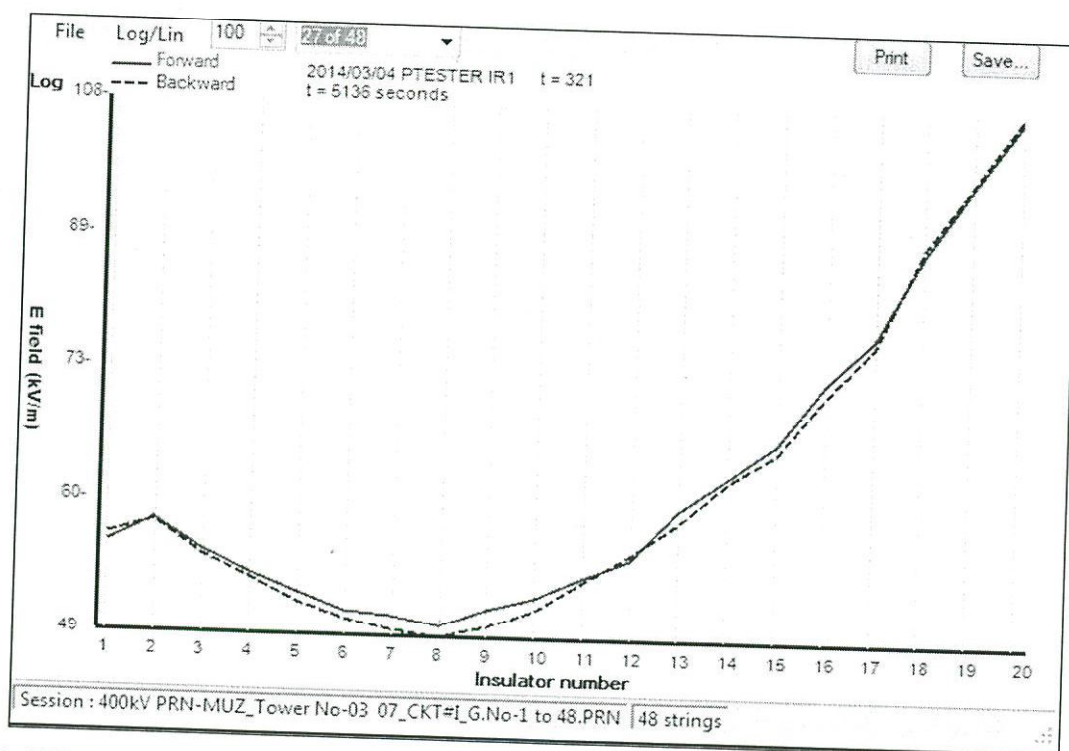


Fig – 5: PID measurement carried out on location No.7 of 400kV Purnea - Muzaffarpur Circuit-I





CPRI From above results, it has been observed that the condition of 160 KN insulators in 400 KV Siliguri –Purnea Line is alarming and almost all the strings have punctured insulators. On close examination of punctured insulators and insulators removed from line for examination, hair line cracks on porcelain surface are observed in many of the insulators. Dust is getting accumulated on this hair cracks and during foggy season those cracks get moist which in turn reduces the effective creepage length resulting in flash over of the insulator string. The reason for development of these hair line cracks may be attributed to gradual ageing process of the insulators during use over a period of time. The present situation is very alarming as these insulators strings may fail anytime specially in humid condition during fog and rain. Repeated failure of insulators will make the grid unreliable and stability will be compromised.

CONCLUSIONS AND RECOMMENDATIONS

1. The laboratory investigations of new and aged insulators showed twenty percent failures of aged insulators compared to new one.
2. Most of the insulators failed in the field are of tension mode strings compared to suspension insulators as per the PID measurements.
3. Almost all failures have taken place during foggy condition at night.
4. The reason of the failure of insulators is development hairline cracks on porcelain surface which is causing flash over during foggy/humid condition. The reason of development of these hairline cracks may be attributed to gradual ageing during use of the insulators over a period of time more than six years.
5. Hence, it is strongly recommended that the defective 160kN insulators should be replaced at the earliest in order to restore the reliability of the lines.
6. It is suggested that these 160kN insulators may be replaced by Polymer insulators as polymer insulators are free from such problems.





APPENDIX: 1

CPRI

DETAILS OF EQUIPMENT USED



Positron puncture insulator detector



Name of Region : EASTERN REGION

Sl. No.	Details of stations/Units required to operate under RGMO/FGMO as per IEGC							Whether operating under RGMO	Whether operating in FGMO with manual intervention to achieve RGMO	whether exempted from FGMO/RGMO by CERC	Whether applied to CERC for exemption /extension	whether units operating with locked governors	indicate in case of status is not available
	Name of State	Type	Name of Utility	Sector (CS/SS/Private)	Name of Station	Name of Stage/ Unit	Installed capacity (MW)						
1	JHARKHAND	Thermal	TVNL	SS	Tenughat	1	210	No			No		Difficulties in implementing RGMO & exemption not
2				SS		2	210	No			No		
3		Hydro	JSEB	SS	Subarnrekha	1	65	Yes					
4				SS		2	65	Yes					
5	WEST BENGAL	Termal	WBPDCL	SS	Bandel TPS	1	82.5	No			Yes		
6				SS		2	82.5	No			Yes		
7				SS		3	82.5	No			Yes		
8				SS		4	82.5	No			Yes		
9				SS		5	210	No			Yes		
10				SS	Santalalih	5	250	Yes					Unit#6 could not be implemented because of
11				SS		6	250	No					
12				SS	Kolaghat	1	210	No	No	No	Yes	Yes	Nil
13				SS		2	210	No	No	No	Yes	Yes	Nil
14				SS		3	210	No	No	No	Yes	Yes	Nil
15				SS		4	210	No	No	No	Yes	Yes	Nil
16				SS		5	210	No	No	No	Yes	Yes	Nil
17				SS		6	210	No	No	No	Yes	Yes	Nil
18				SS	Bakreshwar	1	210	Yes					
19				SS		2	210	Yes					
20				SS		3	210	Yes					
21				SS		4	210	Yes					
22				SS	Sagardighi	1	300	No	No	No	No	Yes	Without OEM support it is not possible to put in FGMO/RGMO. At present OEM support is not
23				SS		2	300	No	No	No	No	Yes	
24		Hydro		SS	Raman Hydel	1	12.5	No					Station is not in RGMO. WBSETCL is pursuing with Ramman
25				SS		2	12.5	No					
26				SS		3	12.5	No					
27				SS		4	12.5	No					
28				SS	PPSS	1	225	No			Yes		
29				SS		2	225	No			Yes		
30				SS		3	225	No			Yes		
31				SS		4	225	No			Yes		
32		Thermal	CESC	SS	Budge-Budge	1	250	Yes					
33				SS		2	250	Yes					
34				SS		3	250	Yes					
35		Thermal	DPL	SS	DPL	7	300	Yes					
36				SS		1	210	No					Not adequate response in RGMO
37	Orissa	Hydro	OHPC	SS	IB TPS	2	210	No					
38				SS		1	49.5	No			Yes		
39				SS	Burla	2	49.5	No			Yes		
40				SS		3	32	No			Yes		
41				SS		4	32	No			Yes		
42				SS		5	37.5	No			Yes		
43				SS		6	37.5	No			Yes		
44				SS		7	37.5	No			Yes		
45				SS	Chiplima	1	24	No			Yes		
46				SS		2	24	No			Yes		
47				SS		3	24	No			Yes		
48				SS	Balimela	1	60	No			Yes		
49				SS		2	60	No			Yes		
50				SS		3	60	No			Yes		
51				SS		4	60	No			Yes		
52				SS		5	60	No			Yes		
53				SS		6	60	No			Yes		
54				SS	Rengali	7	75	No			Yes		
55				SS		8	75	No			Yes		
56				SS		1	50	No			Yes		
57				SS		2	50	No			Yes		
58				SS		3	50	No			Yes		
59				SS		4	50	No			Yes		
60				SS	Upper Kolab	5	50	No			Yes		
61				SS		1	80	No			Yes		
62				SS		2	80	No			Yes		
63				SS		3	80	No			Yes		
64				SS	Indravati	4	80	No			Yes		
65				SS		1	150	No			Yes		
66				SS		2	150	No			Yes		
67				SS		3	150	No			Yes		
68				SS		4	150	No			Yes		
69				69									
70		Thermal	DVC	CS	Bokaro-B	1	210	No			Yes		RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC
71				CS		2	210	No			Yes		
72				CS		3	210	No			Yes		
73				CS	Chandrapura	1	140	No			Yes		RGMO mode of operation would not be possible for units1, 2 and 3. Because of
74				CS		2	140	No			Yes		
75				CS		3	140	No			Yes		
76				CS		7	250	No					
77				CS	WARIA	8	250	No					Efforts are being made for RGMO mode of operation
78				CS		3	210	No			Yes		
79				CS	Mejia	4	210	No			Yes		
80				CS		1	210	No			Yes		
81				CS		2	210	No			Yes		
82				CS		3	210	No			Yes		
83				CS		4	210	Yes					
84				CS		5	250	Yes					
85				CS		6	250	Yes					
86				CS	Mejia - B	7	500	No					Efforts are being made for RGMO mode of operation
87				CS		8	500	No					
88				CS	DSTPS	1	500	No					Units 1 & 2 would put in RGMO within a short
89				CS		2	500	No					

90	Central Sector	Hydro		CS	Maithon	1	20	No						RGMO mode of operation would not be possible for units1, 2 and 3. Because of
91				CS		2	20	No						
92				CS		3	23.2	No						
93				CS	Panchet	1	40	No					RGMO mode of operation would not be possible for	
94				CS		2	40	No						
95				CS	Farakka STPP-I	1	200	Yes						
96				CS		2	200	Yes						
97				CS		3	200	Yes						
98				CS		Farakka STPP-II	1	500	Yes					
99				CS			2	500	Yes					
100	CS	Farakka-U#6		500		Yes					Kept in RGMO mode from April, 2014			
101	Thermal	NTPC	CS	Kahalgaoan STPP	1	210	Yes							
102			CS		2	210	Yes							
103			CS		3	210	Yes							
104			CS		4	210	Yes							
105			CS		5	500	Yes							
106			CS		6	500	Yes							
107			CS		7	500	Yes							
108			CS	Talcher STPP Stg-I	1	500	Yes							
109			CS		2	500	Yes							
110			Hydro	NHPC	CS	* Rangit	1	20	No					Pondage capacity is to generate power upto 3 hours only.Hence not under
111	CS	2			20		No							
112	CS	3			20		No							
113	CS	Teesta HEP			1	170	Yes							
114	CS				2	170	Yes							
115	CS				3	170	Yes							
				46										
116	IPP	Thermal	IPP	PS	Maithon RB TPP	1	525	Yes						
117						2	525	No						Under RGMO since Jan'2014
118					Sterlite	1	600	Yes						
119						2	600	Yes						
120						3	600	Yes						
121						4	600	Yes						
122					Adhunik Power	1	270	No						Not Implemented & exemption not applied
123						2	270	No						

CPRI will provide the following instruments for NSDD/ESDD measurements (1 set for 10-15 locations)

- Measuring cylinder
- Surgical gloves
- Container
- Cotton/ cotton cloth
- Conductivity meter with cell. Cell constant= 1
- Temperature probe
- Filter paper
- Funnel
- Desiccator/ drying oven
- Weighing balance

CPRI will also provide the following instruments for layer conductivity measurements (2-4 sets per state) depending on number of locations

- 2kV voltage source
- Plastic Tent

State utilities to arrange the following equipment for NSDD/ESDD:

- **De mineralized water**
- **230V supply (in case supply is not available near by they can collect the pollutant water in 20 bottles of 500ml each per location and do measurements at their substation)**

State utilities to arrange the following equipment for Layer conductivity measurement:

- **Steam generator (Gas stove with 10-15 ltr pressure cooker)**
- **230 V supply or portable generator**

This must be carried out at site (tower) itself.

Eastern Region Pollution Mapping Training Program

Team	Location	From	To
Team-1 (CPRI Bengaluru)	Durgapur	19 th May	20 th May
	Ranchi	21 st May	22 nd May
	Jamshedpur	23 rd May	24 th May
	Siliguri	26 th May	27 th May
	Subhasgram	29 th May	30 th May
Team 2 (CPRI Bengaluru)	Patna	19 th May	20 th May
	Muzaffarpur	21 st May	22 nd May
Team3 (CPRI Hyderabad)	Bhubaneswar	20 th May	21 st May
	Rurkela	23 rd May	24 th May
	Jeypore	26 th May	27 th May

Proposed programme for conducting Black Start exercise in 2014-15

Sl No.	Name of Hydro Station	schedule	Actual	Schedule	Actual	Remarks
		Test-I		Test-II		
1.	U. Kolab	Last week of May, 2014		Last week of January, 2015		
				1st week of February, 2015		
2.	Maithon	1 st week of June, 2014		1 st week of October, 2014		
3.	Rengali	2 nd week of June, 2014		3rd week of November, 2014		
				Last week of November, 2014		
				1st week of December, 2014		
4.	U. Indravati	3 rd week of June, 2014		2nd week of February, 2015		
				3rd week of February, 2015		
6.	Subarnarekha	2 nd week of October, 2014		2nd week of December, 2014		
		3 rd week of October 2014		3rd week of December, 2014		
		Last week of October, 2014		Last week of December 2014		
				1st week of January, 2015		
				2nd week of January, 2015		
				3rd week of January, 2015		
7.	Balimela	1 st week of November, 2014		1 st week of March, 2015		
8.	Teesta-V	2 nd week of November, 2014		Last week of February, 2015		
9.	Rengali	2nd week of June, 2014		3rd week of November, 2014		
				Last week of November, 2014		
10	Chuzachen	May, 2014		1st week of December, 2014		

ERPC: KOLKATA

Proposed Maintenance Programme of thermal units as per LGBR 2014-15 (Rev 2)

SYSTEM	POWER STATION	Unit NO.	Effective Capacity (MW)	Maintenance Programme	Remarks	No.of Days
DVC	CTPS	Unit No. 8	250	03.06.2014 to 23.06.2014	AOH	20
WBPDC	KTPS	Unit No 5	210	25.06.2014 to 08.08.2014	BTG/GT/DCS	45
		Unit No 1	210	25.06.2014 to 14.07.2014	Boiler OH	20
TTPS	SgTPP	Unit No 1	300	01.06.2014 to 24.06.2014	Boiler OH	24
	TTPS	Unit No 5	110	25.06.2014 to 29.07.2014	Boiler OH+ESP R&M	35
NTPC	FSTPS	Unit No 1	200	05.06.2014 to 09.07.2014	Boiler+W/W panel replacment	30
	KhSTPP Stg-I	Unit No 2	210	Rescheduled from 15.06.14 to 04.07.14 because of Loksabha election.	Boiler	20
	TSTPP Stg-II	Unit No 6	500	15.06.2014 to 14.07.2014	Boiler+Gen.	30

Note: There is no change in the maintenance programme of Hydro Generating units as proposed and submitted by the constiuents of Eastern Region.

**EASTERN REGIONAL LOAD DESPATCH CENTRE
KOLKATA**

TRANSMISSION ELEMENTS OUTAGE APPROVED IN 97TH OCC MEETING OF ERPC

S/D APPROVED IN OCC									
Sr. No	NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS	S/D availed BY	Reason	SUBJECT TO CONSENT FROM AGENCY
1	400 KV BALIA - PATNA - I	15-05-2014	07:00	16-05-2014	22:00	OCB	NR	BAY CONSTRUCTION WORK AT BALIA	
2	400 KV BALIA - PATNA - II	17-05-2014	07:00	18-05-2014	22:00	OCB	NR	BAY CONSTRUCTION WORK AT BALIA	
3	400 KV 125 MVAR B/R - 1 AT NEW RANCHI	17-05-2014	09:00	17-05-2014	17:00	ODB	ER-I	TO COMPLETE THE ERECTION OF 765 KV & 400 KV AUXILIARY BUS FOR	
4	220 KV CTPS - BTPS	17-05-2014	09:00	01-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 91/0	DVC
5	AUTO RECLOSURE OF 400 KV RNC - RKL -I & II	17-05-2014	10:00	31-05-2014	17:00	ODB	POWERGRID/	AUTO RECLOSURE OF THE MENTIONED CKTS. TO BE PUT INTO NON AUTO	A/R SD WILL BE CLERAED 10 DAY BAIS
6	A/R of Subhasgram - Jerat	17-05-2014	09:00	31-05-2014	17:00	ODB	ER-II	OPGW installation works	wbsetcl/A/R SD WILL BE CLERAED 10 DAY BAIS
7	400KV LAKHIASARAI- KAHALGAON -1	18-05-2014	08:00	18-05-2014	18:00	ODB	ER-I	FOR L/R STABILITY TEST & OTHER TEST OF SAID REACTOR(NEW ELEMENT)	NLDC
8	400 KV 125 MVAR B/R - 2 AT NEW RANCHI	19-05-2014	09:00	19-05-2014	17:00	ODB	ER-I	TO COMPLETE THE ERECTION OF 765 KV & 400 KV AUXILIARY BUS FOR	
9	765/400 KV 500*3 MVAR ICT - II AT NEW RANCHI	20-05-2014	09:00	21-05-2014	17:00	ODB	ER-I	TO COMPLETE THE ERECTION OF 765 KV & 400 KV AUXILIARY BUS FOR SWITCHING OF SPARE TRANSFORMER & OTHER BALANCE CONSTRUCTION ACTIVITIES.	NLDC
10	ICT#2 at Durgapur	20-05-2014	15:00	20-05-2014	18:00	ODB	ER-II	Local remote switch implementation under NTAMC	DVC
11	220 KV Durgapur-DVC#1	21-05-2014	15:00	21-05-2014	18:00	ODB	ER-II	Local remote switch implementation under NTAMC	DVC
12	132 KV S/C HATIDAH - SHEIKHPURA T/L (OF BSEB)	22-05-2014	08:00	23-05-2014	18:00	ODB	ER-I	FOR STRINGING OF 400 KV D/C KISHANGANJ - PATNA T/L OF POWERGRID	BIHAR
13	132KV S/C HATHIDAH- SHEIKHPURA (BSEB)	22-05-2014	08:00	23-05-2014	18:00	OCB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV PATNA-KISHANGANJ	BIHAR
14	400 KV RAIGARH - SUNDERFARH - D/C	22-05-2014	10:00	22-05-2014	12:00		IND BHARAT	LILONG BOTH CKT AT INDBHARAT JHARSUGUDA	NLDC
15	400 KV JSR - RKL - II	23-05-2014	08:00	01-06-2014	18:00	OCB	ER-I	FOR LILO WORK AT CHAIBASA	A/R OF RKL - RNC D/C COULD NOT BE POSSIBLE DURING THIS SD PERIOD
16	220KV RAMCHANDRAPUR-JODA	23-05-2014	08:00	24-05-2014	18:00	ODB	ER-I	FOR LILO WORK 400 KV JSR - RKL LINE AT CHAIBASA	OPTCL
17	400KV KHLG-BARH- I & 400 BARH - PATNA - I	25-05-2014	08:00	25-05-2014	18:00	OCB	ER-I	FOR DIVERSION WORK AT BARH/ KHG - BARH LINE WILL BE CHARGED THROUGH BARH - PATNA - I	NLDC
18	400 BARH - PATNA - I	25-05-2014	08:00	05-06-2014	18:00	OCB	ER-I	FOR DIVERSION WORK AT BARH	NLDC
19	220 KV BTPS - BARHI	25-05-2014	09:00	26-05-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 94/0 TO 95/0)	BIHAR
20	400 KV Rourkeal - Sundergarh - Raigarh - I	25-05-2014	09:00	25-05-2014	17:00	ODB	ER - II	OPGW installation works	NLDC
21	400KV KHLG-BARH- II	26-05-2014	08:00	04-06-2014	18:00	OCB	ER-I	FOR DIVERSION WORK AT BARH	NLDC
22	315MVA ICT-1 AT JSR	26-05-2014	08:00	26-05-2014	16:00	ODB	ER-I	NEW 220KV ISOLATOR COMMISSIONING IN ICT-1	JHARKHAND
23	400/220KV, 500MVA ICT-1 AT GAYA	26-05-2014	07:00	26-05-2014	15:00	ODB	ER-I	FOR AMP WORKS	BIHAR
24	400KV Maithon-RTPS (DVC)	26-05-2014	09:00	30-05-2014	17:00	ODB	ER-II	PIR removal of main Bay CB .S/D required for crane movement. Line will be charged through TIE bay when crane movement is not required during PIR removal work	DVC
25	315MVA ICT-2 AT JSR	27-05-2014	08:00	27-05-2014	16:00	ODB	ER-I	NEW 220KV ISOLATOR COMMISSIONING IN ICT-2	JHARKHAND
26	132KV SSRM-DEHRI	27-05-2014	10:00	27-05-2014	16:00	ODB	ER-I	FOR AMP WORKS	BIHAR
27	220 KV Dalkhola-Malda-I	27-05-2014	8:00 Hrs	27-05-2014	18:00 Hrs	ODB	ER-II	Retrofitting of 3 nos. CTs under ADDCAP	
28	+/- 500 kv HVDC Talcher-Kolar	27-05-2014	06:00	28-05-2014	18:00	ODB	ER-II	S/D required for power line crossing of +/- 500 kv HVDC Talcher-Kolar line crossing by 765 kv S/C Angul-Jharsuguda line-I at Loc. No. 6/0 & 7/0 and 765 kv S/C Angul-Jharsuguda Line-II at Loc. No. 7/0 & 8/0	NLDC
29	400KV RNC-NRNC- I & II	28-05-2014	07:00	03-06-2014	18:00	OCB	ER-I	FOR DIVERSION OF LINE AS PER NHAI REQUIREMENT.	
30	400/220KV, 315MVA ICT-2 AT GAYA	28-05-2014	07:00	28-05-2014	15:00	ODB	ER-I	FOR AMP WORKS	BIHAR
31	132KV SSRM- MOHANIA	28-05-2014	10:00	28-05-2014	16:00	ODB	ER-I	FOR AMP WORKS	BIHAR
32	132 KV D/C BARH - BIHARSHARIF T/L (OF BSEB)	28-05-2014	08:00	29-05-2014	18:00	ODB	ER-I	FOR STRINGING OF 400 KV D/C KISHANGANJ - PATNA T/L OF POWERGRID	BIHAR
33	132 KV D/C BARH-BIHARSHRIFF(BSEB)	28-05-2014	08:00	29-05-2014	18:00	OCB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV PATNA-KISHANGANJ	BIHAR
34	400 KV ANGUL - JITPL - BOLANGIR	29-05-2014	08:00	02-06-2014	17:00	OCB	JITPL	To complete dedicated JITPL-Angul 400 kv line from LILO Point to Phulpada (Beyond LILO portion)	NLDC
35	400 KV B/R - I AT ANUGUL	29-05-2014	08:00	29-05-2014	18:00	ODB	PG	ERECTION OF RADIATOR, FIRE FIGHTING WORK, TESTING OF EQUIPMENT OF 416 BAY	NLDC
36	765KV NRNC-DHARAMJAYGARH	29-05-2014	07:00	30-05-2014	18:00	ODB	ER-I	FOR LINE MAINTENANCE WORK	NLDC
37	132KV BANKA-BANKA (OF BSPHCL)	29-05-2014	09:00	29-05-2014	12:00	ODB	ER-I	FOR AMP WORKS	BIHAR
38	400KV JSR-DURGAPUR	29-05-2014	09:30	29-05-2014	13:30	ODB	ER-I	LINE ISOLATOR ALIGNMENT & CHECKING FOR NTAMC PURPOSE	

39	400KV BSF-GAYA ALONGWITH ITS 50MVAR L/R AT BSF	29-05-2014	07:00	29-05-2014	18:00	ODB	ER-I	FOR REPLACEMENT OF 390KV LAs WITH 336 KV LAs	NLDC
40	132KV MOHANIA-KARAMNESA	29-05-2014	10:00	29-05-2014	16:00	ODB	ER-I	FOR AMP WORKS	BIHAR
41	220 KV Dalkhola-Malda-II	29-05-2014	8:00 Hrs	29-05-2014	18:00 Hrs	ODB	ER-II	Retrofitting of 3 nos. CTs under ADDCAP	
42	400 KV B/R - III AT ANUGUL	30-05-2014	08:00	30-05-2014	18:00	ODB	PG	ISOLATOR REPAIRING WORK	NLDC
43	132 KV BTPS - GOMIA	30-05-2014	09:00	31-05-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 89/0 TO 90/0)	BIHAR
44	400 KV Sundergarh - Raigarh # 1	30-05-2014	09:00	30-05-2014	16:00	ODB	ER-II	Insulator replacement at Location No.- 757	NLDC
45	400 KV ANUGUL - JITPL	31-05-2014	08:00	31-05-2014	18:00	ODB	PG	AMC WORK	NLDC
46	400KV RNC-MTN-1 & 400KV RNC-RAGHUNATHPUR	31-05-2014	10:00	31-05-2014	17:00	ODB	ER-I	FOR ATTENDING CLEARANCE FROM 220 KV SANTALDIH - CHANDIL S/C (OF WBSEB)	DVC
47	220KV SANTALDIH-CHANDIL	31-05-2014	10:00	31-05-2014	17:00	ODB	ER-I	FOR ATTENDING CLEARANCE FROM 220 KV SANTALDIH - CHANDIL S/C (OF WBSEB)	WBSEB
48	315MVA ICT-II at Maithon	31-05-2014	09:00	31-05-2014	17:00	ODB	ER-II	LA replacement work & 220KV CT Connector replacement work	DVC
49	A/R of Bolangir - JITPL	01-06-2014	09:00	31-06-2014	17:00	ODB	ER-II	OPGW installation works	A/R SD WILL BE CLERAED 10 DAY BAIS PROVISIONALLY/ PLS. MENTIONED THE EXACT TIME REQUIRED FOR COMPLETION OF THE WORK & THE PROGRESS OF THE WORK
50	400 KV B/R-I,II,III AT ANUGUL	01-06-2014	08:00	01-06-2014	18:00	ODB	PG	TESTING OF CONTROL EQUIPMENT FOR SASA COMMISSIONING WORK	NLDC
51	400 KV JITPL - ANUGUL - MERAMUNDALI AND BUS - II AT ANUGUL	01-06-2014	08:00	01-06-2014	18:00	ODB	PG	BUS - II EXTENSION WORK FOR JITPL BAY	NLDC
52	765/400 KV 500*3 MVAR ICT - II AT NEW RANCHI	01-06-2014	09:00	08-06-2014	17:00	ODB	ER-I	TO COMPLETE THE ERECTION OF 765 KV & 400 KV AUXILIARY BUS FOR SWITCHING OF SPARE TRANSFORMER & OTHER BALANCE CONSTRUCTION ACTIVITIES	NLDC
53	A/R of Rengali - Keonjhar	01-06-2014	09:00	30-06-2014	17:00	ODB	ER-II	OPGW installation works	A/R SD WILL BE CLERAED 10 DAY BAIS PROVISIONALLY/ PLS. MENTIONED THE EXACT TIME REQUIRED FOR COMPLETION OF THE WORK
54	A/R of RAIGARH- Sudhargarh Ckt-I	01-06-2014	09:00	30-06-2014	17:00	ODB	ER-II	OPGW installation works	A/R SD WILL BE CLERAED 10 DAY BAIS PROVISIONALLY/ PLS. MENTIONED THE EXACT TIME REQUIRED FOR COMPLETION OF THE WORK & THE PROGRESS OF THE WORK
55	A/R OF 765 kv Gaya - sasaram	01-06-2014	09:00	30-06-2014	17:00	ODB	ER-II	OPGW installation works	A/R SD WILL BE CLERAED 10 DAY BAIS PROVISIONALLY/ PLS. MENTIONED THE EXACT TIME REQUIRED FOR COMPLETION OF THE WORK & THE PROGRESS OF THE WORK
56	400 KV ANUGUL - MERAMUNDALI	02-06-2014	08:00	02-06-2014	18:00	ODB	PG	AMC WORK	NLDC
57	400 KV Rourkela - Ranchi # 1	02-06-2014	10:00	02-06-2014	14:00	ODB	ER-II	Implementation of revised relay settings on account of line impedance measurement and changing of CT ratio for Main-I & Main-II Distance protection from 1000/1 to 2000/1 as per revised relay settings.	
58	132 KV KONAR - HAZARIBAG ROAD D/C	02-06-2014	09:00	03-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 44/0 TO 44A/0)	BIHAR
59	220 kv Durgapur - DVC#2	02-06-2014	10:00	02-06-2014	18:00	ODB	ER-II	Retrofitting of 220KV CB under ADDCAP & Local remote switch implementation under NTAMC	DVC
60	400 KV Bongaigaon-New Siliguri D/C	02-06-2014	06:00	04-06-2014	16:00	ODB	ENICL	STRINGING OF BINAGURI - BONG - III & IV	APPROVED
61	400 KV Bongaigaon-New Siliguri - I	02-06-2014	06:00	07-06-2014	16:00	ODB	ER-II	Replacement of insulators damaged by miscreants.	APPROVED
62	400 KV Rourkela - Ranchi # 2	03-06-2014	10:00	03-06-2014	14:00	ODB	ER-II	Implementation of revised relay settings on account of line impedance measurement and changing of CT ratio for Main-I & Main-II Distance protection from 1000/1 to 2000/1 as per revised relay settings.	
63	132KV ARA-JAGDISHPUR	03-06-2014	08:00	03-06-2014	12:00	ODB	ER-I	FOR AMP WORKS	BIHAR
64	220KV Maithon-Dhanbad-I	03-06-2014	09:00	03-06-2014	17:00	ODB	ER-II	Y-PH CVT replacement	DVC
65	400KV Maithon-MPL-II	03-06-2014	09:00	03-06-2014	17:00	ODB	ER-II	Strung bus repair,Y-Ph line CT replacement	MPL
66	132KV ARA-ARA	04-06-2014	08:00	04-06-2014	12:00	ODB	ER-I	FOR AMP WORKS	BIHAR
67	400KV KHLG-BARH- I & 400 BARH - PATNA - I	05-06-2014	08:00	05-06-2014	18:00	OCB	ER-I	FOR DIVERSION WORK AT BARH	NLDC
68	315MVA ICT-I at Maithon	05-06-2014	08:00	05-06-2014	12:00	ODB	ER-II	220KV Y& B-Ph Bushing inspection	DVC
69	400 KV Jeerat - Behrampur Line	06-06-2014	07:00	06-06-2014	15:00	ODB	ER-II	Line LA replacement , Line Reactor SFRA measurement	NLDC/WBSETCL
70	400KV Maithon-Kahalgaoon-II Line with LR	06-06-2014	09:00	06-06-2014	17:00	ODB	ER-II	PRD inspection/leakge arrest/PRD replacement of LR,Line CVT replacement	
71	400 KV PURNEA - BIHARSARIFF - II	06-06-2014	11:00	06-06-2014	14:00		ENICL	MAINTENANCE WORK	NLDC
72	400KV KHLG-BSF-2	07-06-2014	08:00	09-06-2014	18:00	OCB	ER-I	FOR LIL0 WORK OF 400 KV KHLG - BSF - 2 AT LAKHISARAI	NLDC
73	400KV KHLG-LAKHISARAI-1	07-06-2014	08:00	08-06-2014	18:00	OCB	ER-I	FOR LIL0 WORK OF 400 KV KHLG - BSF - 2 AT LAKHISARAI	NLDC
74	400KV LAKHISARAI-BSF-1	07-06-2014	08:00	08-06-2014	18:00	OCB	ER-I	FOR LIL0 WORK OF 400 KV KHLG - BSF - 2 AT LAKHISARAI	NLDC
75	132 KV KONAR - HAZARIBAG ROAD D/C	07-06-2014	09:00	08-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 51/0 TO 52/0)	BIHAR

76	315 MVA ICT - II AT ARAMBAG	08-06-2014	07:00	08-06-2014	15:00		WBSETCL	MAINTENANCE WORK	
77	400 KV PURNEA - BIHARSARIFF - II	08-06-2014	11:00	08-06-2014	14:00		ENICL	MAINTENANCE WORK	NLDC
78	400 KV Bongajgaon-New Silliguri - II	08-06-2014	06:00	13-06-2014	16:00	ODB	ER-II	Replacement of insulators damaged by miscreants.	APPROVED
79	400 KV MALDA-FARAKKA-II & 400 KV MAIN BUS-II.	10-06-2014	08:00	10-06-2014	17:00	ODB	ER-II	Isolator remote operation checking under NTAMC	NLDC
80	80 MVAR B/R-2 AT BSF	10-06-2014	08:00	10-06-2014	14:00	ODB	ER-I	FOR AMP WORKS	
81	ICT#1 at Durgapur	10-06-2014	08:00	13-6-2014	18:00	ODB	ER-II	Modification of lead length and replacement of Bushings, Retrofitting of 220KV CB under ADDCAP, Local remote switch implementation under NTAMC	DVC
82	220KV Maithon-Kalyaneshwari-I	10-06-2014	09:00	10-06-2014	17:00	ODB	ER-II	Line isolator remote operation checking	DVC
83	400 KV Bus Reactor at Jeerat	10-06-2014	07:00 HRS	10-06-2014	16:00 HRS	ODB	ER-II	SFRA measurement , Tan delta measurement	WBSETCL
84	ICT-1 (100 MVA) at Birpara	10-06-2014	0900 Hrs	11-06-2014	1700 Hrs	ODB	ER-II	Commissioning of RTCC panel	WBSETCL
85	400 KV B/R AT BARH	10-06-2014	09:30	11-06-2014	16:30		NTPC	PM WORK & RELAY TESTING	
86	400 KV MTN - KODERMA - 2	11-06-2014	08:00	12-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED .ON RESTORATION THE LINE WILL BE CHARGED ATA 400 KV GAYA - MTN - II	NLDC
87	400 KV MTN - KODERMA - 2	11-06-2014	08:00	16-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED .ON RESTORATION THE LINE WILL BE CHARGED ATA 400 KV GAYA - KODERMA - II	NLDC
88	220KV Maithon-Kalyaneshwari-II of DVC	11-06-2014	09:00	11-06-2014	17:00	ODB	ER-II	Replacement of CVT due to humming sound	DVC
89	315MVA ICT-I at Rourkela	11-06-2014	09:00	11-06-2014	17:00	ODB	ER-II	To attend oil leakage in OLTC and rectification of driving mechanism problem by M/S BHEL	
90	400 KV B/R - I AT FARAKKA	11-06-2014	09:30	11-06-2014	16:30		NTPC	PM WORK & RELAY TESTING	
91	220 KV BSF - TENUGHAT	12-06-2014	09:00	13-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 76/0 TO 77/0)	BIHAR/JHARKHAND
92	400 KV Subhasgram – Sagardighi Line	12-06-2014	08:00 HRS	12-06-2014	17:00 HRS	ODB	ER-II	Replacement of insulators damaged by miscreants.	WBSETCL
93	ICT-2 (160 MVA) at Birpara	12-06-2014	0900 Hrs	13-06-2014	1700 Hrs	ODB	ER-II	Commissioning of RTCC panel	WBSETCL
94	400 KV MTN - KODERMA - 1	13-06-2014	08:00	14-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED .ON RESTORATION THE LINE WILL BE CHARGED ATA 400 KV GAYA - MTN - I	NLDC
95	400 KV MTN - KODERMA - 1	13-06-2014	08:00	15-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED .ON RESTORATION THE LINE WILL BE CHARGED ATA 400 KV GAYA - KODERMA - I	NLDC
96	400 KV MTN - KODERMA - 1	13-06-2014	08:00	14-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED .ON RESTORATION THE LINE WILL BE CHARGED ATA 400 KV GAYA - MTN - I AND 400 KV KODERMA GAYA - I	NLDC
97	315MVA ICT-II at Rourkela	13-06-2014	09:00	13-06-2014	17:00	ODB	ER-II		
98	220KV Maithon-Dhanbad-II of DVC	14-06-2014	09:00	14-06-2014	17:00	ODB	ER-II	TBC isolator checking for remote operation under NTAMC	DVC
99	400 KV KOLAGHAT - KHARGPUR	15-06-2014	07:00	15-06-2014	15:00		WBSETCL	MAINTENANCE WORK	
100	400 KV ARAMBAG - PPSP -II	15-06-2014	09:00	15-06-2014	16:00		WBSETCL	MAINTENANCE WORK	
101	400 KV Binaguri-Tala Ckt-I	16-06-2014	0900 Hrs	16-06-2014	1700 Hrs	ODB	ER-II	Replacement of damage conductor in Rly crossing.	NLDC
102	220KV Budhipadar-Korba ckt-III	16-06-2014	09:00	16-06-2014	17:00	ODB	ER-II	Replacement of R-Phase defective CVT (Oil leakage)	NLDC
103	220 KV Dalkhola-Malda-I	16-06-2014	08:00	16-06-2014	18:00	ODB	ER-II	CT change under ADDCAP.	
104	400 KV MALDA-FARAKKA-I	17-06-2014	08:00	17-06-2014	17:00	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
105	400 KV BSF - GAYA LINE	17-06-2014	08:00	24-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED. ON RESTORATION THE SAID LINE WILL BE CHARGED AS 765 KV GAYA - BALIA	NLDC
106	400 KV SSRM - BALIA	17-06-2014	08:00	22-06-2014	18:00	OCB	ER-I	PERMANENT S/D OF SAID CKT. IS REQUIRED. ON RESTORATION THE SAID LINE WILL BE CHARGED AS 400 KV BSF - SSRM - IV	NLDC
107	400 KV BSF - SSRM - 3	17-06-2014	08:00	21-06-2014	18:00	ODB	ER-I	S/D OF SAID CKT. IS REQUIRED IN VIEW OF CHARGING OF 400 KV BSF - SSRM - IV & 765 KV GAYA - BALIA LINE.	NLDC
108	400 KV Binaguri-Tala Ckt-II	17-06-2014	0900 Hrs	17-06-2014	1700 Hrs	ODB	ER-II	Replacement of damage conductor in Rly crossing.	NLDC
109	315 MVA ICT at Farakka	17-06-2014	08:00	24-06-2014	18:00	OCB	ER-II	Oil replacement work of Newly Commissioned ICT at Farakka & Balance fire fighting system work.	JHARKHAND
110	315 MVA ICT-3 at Subhasgram	17-06-2014	09:00 HRS	17-06-2014	17:00 HRS	ODB	ER-II	CRM , LA maintenance , 220 KV side CT oil sampling work	WBSETCL
111	400 KV MALDA-PURNEA-I & 400 KV BUS-I.	18-06-2014	08:00	18-06-2014	17:00	ODB	ER-II	Isolator remote operation checking under NTAMC	NLDC
112	220 KV D/C Birpara-Chukha Circuit-I	18-06-2014	0900 Hrs	19-06-2014	1700 Hrs	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
113	132 KV KAHALGAON - KAHALGAON	18-06-2014	09:30	18-06-2014	17:30		NTPC	PM WORK & RELAY TESTING	BIHAR
114	400 KV MALDA-PURNEA-II & 400 KV BUS-II.	19-06-2014	08:00	19-06-2014	17:00	ODB	ER-II	Isolator remote operation checking under NTAMC	NLDC
115	220 KV BSF - TENUGHAT	19-06-2014	09:00	20-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 58/0 TO 59/0)	BIHAR/JHARKHAND
116	400KV Maithon-Kahalgaon-I Line with LR	19-06-2014	09:00	19-06-2014	17:00	ODB	ER-II	Reactor isolator operation checking for NTAMC ; leakage arrest from reactor	
117	315 MVA ICT-4 at Subhasgram	19-06-2014	09:00 HRS	19-06-2014	17:00 HRS	ODB	ER-II	CRM , LA maintenance	WBSETCL
118	220 KV D/C Birpara-Chukha Circuit-II	20-06-2014	0900 Hrs	21-06-2014	1700 Hrs	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
119	220 KV Dalkhola-Malda-II	20-06-2014	08:00	20-06-2014	18:00	ODB	ER-II	CT change under ADDCAP.	
120	220 KV Subhasgram-CESC – I	20-06-2014	09:00 HRS	20-06-2014	13:00 HRS	ODB	ER-II	LA maintenance	WBSETCL
121	400 KV KAHALGAON -MAITHON - II	21-06-2014	09:30	21-06-2014	17:30		NTPC	PM WORK & RELAY TESTING	NLDC
122	220 KV Subhasgram-CESC – II	21-06-2014	09:00 HRS	21-06-2014	13:00 HRS	ODB	ER-II	LA maintenance , 220 KV CT oil sampling work	WBSETCL

123	220 KV D/C Birpara-Malbase S/C	23-06-2014	0900 Hrs	24-06-2014	1700 Hrs	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
124	132 KV MALDA-WBSETCL-I	24-06-2014	08:00	24-06-2014	17:00	ODB	ER-II	Isolator remote operation checking under NTAMC	WBSETCL
125	132 KV MALDA-WBSETCL-II	24-06-2014	08:00	24-06-2014	17:00	ODB	ER-II	Isolator remote operation checking under NTAMC	WBSETCL
126	315 MVA ICT-2 at Subhasgram	24-06-2014	09:00 HRS	24-06-2014	17:00 HRS	ODB	ER-II	Tan delta measurement for violation confirmation	WBSETCL
127	132 KV KONAR - HAZARIBAG ROAD D/C	25-06-2014	09:00	26-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 62/0 TO 63/0)	BIHAR
128	220 KV Birpara-Salakati Ckt-I	25-06-2014	0900 Hrs	25-06-2014	1700 Hrs	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
129	400 KV KAHALGAON - BANKA - I	25-06-2014	09:30	25-06-2014	17:30		NTPC	PM WORK & RELAY TESTING	NLDC
130	220 KV Birpara-Salakati Ckt-II	26-06-2014	0900 Hrs	26-06-2014	1700 Hrs	ODB	ER-II	Replacement of insulators damaged by miscreants.	NLDC
131	132 KV BTPS - KONAR D/C	29-06-2014	09:00	30-06-2014	17:00	ODB	ER-I	FOR POWERLINE CROSSING WORK OF 400 KV BOKARO - KODERMA(LOC 67/0 TO 68/0)	BIHAR
132	132 kV Rangpo-Gangtok & 132 kV Rangit-Gangtok	04-06-2015	09:00	05-06-2014	15:00	ODB	ER-II	For crossing by 400 kV Teesta-NSLG D/C LILO line at New Mellii	SIKKIM

Annexure-C.2

**Anticipated Power Supply Position for the month of
Jun-14**

SL.NO	PARTICULARS	PEAK DEMAND MW	ENERGY MU
1	BIHAR		
i)	NET MAX DEMAND	2650	1312
ii)	NET POWER AVAILABILITY- Own Source	295	47
	- Central Sector	1738	1139
iii)	SURPLUS(+)/DEFICIT(-)	-617	-126
2	JHARKHAND		
i)	NET MAX DEMAND	1050	650
ii)	NET POWER AVAILABILITY- Own Source	369	244
	- Central Sector	650	402
iii)	SURPLUS(+)/DEFICIT(-)	-31	-4
3	DVC		
i)	NET MAX DEMAND (OWN)	2625	1575
ii)	NET POWER AVAILABILITY- Own Source	4535	2559
	- Central Sector	470	329
	Long term Bi-lateral (Export)	2069	1490
iii)	SURPLUS(+)/DEFICIT(-)	311	-177
4	ORISSA		
i)	NET MAX DEMAND	3750	2232
ii)	NET POWER AVAILABILITY- Own Source	2894	1637
	- Central Sector	1037	656
iii)	SURPLUS(+)/DEFICIT(-)	181	61
5	WEST BENGAL		
5.1	WBSEDCL		
i)	NET MAX DEMAND (OWN)	5250	2930
ii)	CESC's DRAWAL	840	222
iii)	TOTAL WBSEDCL's DEMAND	6090	3152
iv)	NET POWER AVAILABILITY- Own Source	3710	1668
	- Import from DPL	20	-23
	- Central Sector	1902	1269
v)	SURPLUS(+)/DEFICIT(-)	-458	-238
5.2	DPL		
i)	NET MAX DEMAND	300	220
ii)	NET POWER AVAILABILITY	320	197
iii)	SURPLUS(+)/DEFICIT(-)	20	-23
5.3	CESC		
i)	NET MAX DEMAND	1950	968
ii)	NET POWER AVAILABILITY - OWN SOURCE	1070	717
	FROM WBSEDCL	880	222
iii)	TOTAL AVAILABILITY	1950	939
iv)	SURPLUS(+)/DEFICIT(-)	0	-29
6	WEST BENGAL (WBSEDCL+DPL+CESC) (excluding DVC's supply to WBSEDCL's command area)		
i)	NET MAX DEMAND	7500	4118
ii)	NET POWER AVAILABILITY- Own Source	5100	2582
	- Central Sector	1902	1269
iii)	SURPLUS(+)/DEFICIT(-)	-498	-267
7	SIKKIM		
i)	NET MAX DEMAND	85	39
ii)	NET POWER AVAILABILITY- Own Source	0	0
	- Central Sector	132	85
iii)	SURPLUS(+)/DEFICIT(-)	47	46
8	EASTERN REGION At 1.03 AS DIVERSITY FACTOR		
i)	NET MAX DEMAND	17146	9926
	Long term Bi-lateral	2069	1490
ii)	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)	16556	9460
iii)	PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)	-589	-466