Eastern Regional Power Committee Kolkata-33

Salient Decisions taken in 83rd OCC meeting held on 25.03.13

- 1. All constituents should give their views on "Draft procedure for transmission element outage planning" at the earliest. (Item no. B2)
- 2. It was decided to take up the issue of long outage of 132 kV Rangit-Melli line of PDD Sikkim to ERPC/TCC meeting. (Item no. B3)
- 3. Separate meeting was conveyed on 3rd April, 2013 at ERPC Secretariat to discuss on Interconnection of CESC Network (Nonadanga) at Subhasgram PowerGrid with Powergrid, CESC, WBSETCL, WBPDCL, ERPC and ERLDC. (Item no. B4)
- 4. OCC decided that a protection team should visit chandil substation for protection coordination at this sensitive S/S and accordingly the Issue was referred to 15th PCC meeting scheduled to be held on 9th April, 2013. (Item no. C5)
- 5. OCC advised secretariat to hold a special meeting on new islanding schemes of WBSETCL/DPL/DVC/NTPC. (Item no. C8 (ii))
- 6. Constituents were requested to send their compliances/action plan latest by one week time. All STUs were also requested to estimate the timeline along with the fund requirement for complying observations in 3rd party audit, and for Renovation and Up gradation of Protection System of each sub-stations (at 220KV and above) under respective control area. (Item no. C25)

Status of decisions taken in previous OCC meetings, not yet resolved

SI.	Particulars	Present Status
No.		
2	It was agreed that as per ERPC direction, all SLDCs/STUs to take up the issue with their embedded captive plants for compliance to provide required help to Load Despatch Centres for restoration of the grid during any disturbance and confirm their status to ERPC Secretariat by 25 January, 2013. (81 st OCC) OCC requested all constituents to	Till date no compliance received except Haldia Power Station of Tata Power Co. Ltd and BSPHCL. OPTCL informed that, Vedanta and Bhushan accepted to provide required help to Load Dispatch Centres for restoration of the grid during any disturbance. OPTCL added that, compliances from other captive power plants in their control area will be send as and when received. Except CESC the same is yet to be received
	share the details of existing islanding schemes under each control area with ERPC Secretariat and ERLDC positively by 25 January, 2013. (81 st OCC)	from other constituents. WBPDCL, WBSETCL, JSEB & DVC informed that, no islanding schemes are present in their control area. OPTCL informed that, details of existing islanding schemes under their control area had been forwarded to ERLDC in last year. However, OPTCL agreed to send it again to ERLDC/ERPC.
3	OCC requested to all constituents to take appropriate actions at their end to establish the existing communication system (SCADA) with ERLDC healthy by June 2013 without fail. To monitor the status of progress OCC advised ERLDC to convene SCADA committee meeting every month starting from February, 2013.	Accordingly SCADA meeting for the month of February was held on 14 th February. ERPC secretariat already communicated in writing the requirements in respective states/control area for SCADA system needs to be restored by June,13. ERLDC presented the reporting status of existing communication system (SCADA) with ERLDC which needs to be restored by June, 2013. During deliberation Powergrid informed that, utilities were asked for priority list of their installation of RTUs. Powergrid informed that, priority list was received from all the constituents except BSEB, JSEB and Sikkim. All the constituents were requested to take urgent action for restoration of communication system (SCADA) with ERLDC which needs to be restored by June, 2013.
4	It was agreed that all utilities including Powergrid should submit the grid incidence report as per specified format, otherwise it would be treated as non-compliance of section 5.2 (r) of IEGC (80th OCC).	In 82 nd OCC meeting it was decided that, ERLDC once again circulate the format and all utilities were requested to submit the grid incidence report in the format with in stipulated time. ERLDC informed that, JSEB was not submitting in format with in stipulated time in compliance of section 5.2(r) of IEGC. JSEB informed that, as their sub-stations were failing to submit relevant information so, SLDC was not sending

		the reports in proper format with in stipulated time. JSEB assured to take appropriate action to comply with section 5.2(r) of IEGC.
5	OCC requested all utilities to submit the information on GT and ICT tap coordination as given in agenda item B5 latest by next OCC (80th OCC).	ERLDC informed that, NTPC Kaniha, OPTCL, BSEB and Sterlite submitted the relevant information. ERLDC added that, station wise data will be compiled and placed in next OCC. Accordingly, GT and ICT tap position details are compiled and placed. Tap position details yet to be received from constituents were requested to submit the same by next OCC.
6	OCC felt the need of identifying some radial feeders in each of the constituents system which can be disconnected at the direction of ERLDC to prevent overdrawal. (77 th OCC)	It was informed that, OPTCL, DVC and WBPDCL had given the relevant information and other constituents were requested to submit the same by next OCC.
7	As per decision taken in 75 th OCC meeting, all constituents, ISGS, IPP and POWERGRID are to submit daily energy data as per format developed and circulated by ERLDC by 01:00 hrs for the preceding day.	In 82 nd OCC, members advised ERLDC to circulate the format once again and all utilities were requested to send their report in the format over e-mail. Further, ERLDC mentioned that large DISCOs like Tisco and Jusco are not being monitored and requested JSEB to take up the issue. ERLDC requested all SLDCs to take appropriate action to monitor large Discos in their control area and give feedback in next OCC. It was also informed that, all SLDCs should send the report of their respective control area after compilation. In 83 rd OCC ERLDC informed that, most of the constituents sending the relevant data. ERLDC requested WBSETCL to send combined report instead of reports from individual plants.

Minutes of 83rd OCC Meeting held on 25.03.13 at ERPC, Kolkata

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

Member Secretary I/c, ERPC greeted the participants in the 83rd OCC meeting and highlighted the major decisions taken in the 82nd OCC meeting updating their status of implementation. OCC members were requested to take utmost care in executing the OCC decisions in time. After that the agenda items were taken up one by one.

Item no. A.1: Confirmation of minutes of 82nd OCC meeting of ERPC held on 18.02.13

The minutes were circulated vide letter dated 27.02.13 to all the constituents and also uploaded in ERPC website.

NTPC requested to record the discussion in item no. C3 (iii).

"NTPC, Talcher informed that, the issue of SCADA data of TSTPS to SRLDC still remains unresolved. This issue was discussed in 81st OCC, wherein ER-ULDC agreed to explore the possibility of providing data to SRLDC as agreed in the meeting held at NTPC, Kaniha on 17.09.2012. NTPC informed that they are yet to receive any communication from ERTS-II.

ERTS-II informed that they shall revert back on this issue before next OCC. In view of the importance of availability of SCADA data to SRLDC, OCC requested ER-ULDC to look into the matter and revert back at the earliest."

NTPC requested to mention under item no C.14

"NTPC had already submitted the comments on Automatic Demand Management/GSES system."

NTPC requested modification in item No C.3 on Islanding Scheme of and accordingly the first para of the MOM would "NTPC representative presented the islanding scheme for Farakka. Presentation is enclosed in **Annexure-III**. OCC in principle agreed to the islanding scheme of NTPC Farakka and suggested ERLDC to assess the load. ERLDC agreed to look into it by next OCC."

Members may please consider the amendment of the minutes.

Deliberation in the meeting

Members agreed for the amendment. MOM of 82nd OCC was confirmed with this amendment.

PART B :: NEW ISSUES

Item no. B1: Repeated tripping of 400kV Patna-Barh-II on over-voltage - ERLDC

It has been observed that 400kV Patna-Barh-II is tripping repeatedly on over-voltage with Stage-I over-voltage tripping being initiated at Barh end, and corresponding inter-trip being received at Patna end. In most of the situations voltage at Barh has been reported to be hovering around 436kV to 437kV during initiation of the tripping. Also as per information w.r.t over-voltage settings as available at ERLDC end, 400kv Patna-Barh-III presently has the lowest setting at 110%, 5 sec (delay).

NTPC/Powergrid may kindly explain and corroborate the trippings w.r.t over-voltage Stage-I settings and Bus voltages at Barh/Patna at the time of tripping.

Deliberation in the meeting

Powergrid mentioned that, trippings were reduced after the implementation of revised over voltage relay settings as decided in last OCC. Powergrid added that, it would charge 125 MVAR reactor at Patna end and that may reduce the overvoltage problem further.

Item no. B2: Draft procedure for transmission element outage planning - ERLDC

Coordination for outages vide the RPC forum is an important function of RPCs and RLDCs. The above is done regularly in the OCC meetings and such coordination leads to availing of shutdowns/outages keeping the Grid security sacrosanct. However, considering the NEW grid running in synchronism and future formation of a PAN India grid it is essential that a well documented procedure for availing outages be developed as presently, shutdown taken in a remote corner of one region may affect the Grid/outages taken or proposed to be taken in another region.

Accordingly, a draft procedure for outage planning of transmission elements has been prepared and already uploaded in ERPC web site (**www.eastrpc.org**). All members are requested to go through the draft procedure and offer their views regarding the same. The procedure would be finalised after suitably incorporating the comments received from all the constituents.

Members may discuss and advise.

Deliberation in the meeting

Member Secretary I/c requested ERLDC to give a presentation on the subject matter. Accordingly, ERLDC gave the presentation and fruitful deliberations were held. Presentation is enclosed at **Annexure-I**. During deliberation it was emphasized that procedure could be designed only within the provisions of IEGC. OCC requested all constituents to give their views at the earliest.

Item no. B3: Long Outage of 132kV Rangit – Melli line of PDD Sikkim - ERLDC

The 132kV Rangit-Melli S/C Line of Sikkim is under long outage since 1.9.2012. The Power Supply to Gangtok and Melli is thus presently maintained through 132kV sections between Shiliguri-Melli-Gangtok and Shiliguri-Kurseong-Rangit-Gangtok. Majority of these sections is

on Double circuit tower. Outage of any of these sections affects power supply to Sikkim adversely as single section often gets overloaded. Further one ckt of the 132kV section of Shiliguri- NBU D/C is also under outage because of breaker compressor problem at Shiliguri end. With the augmentation of 220/132kV ITCs at Shiliguri, the power evacuation constraints to NBU as well as to Sikkim system might continue if Shiliguri-NBU is not made double Ckt. Under the aforesaid circumstances the normalisation of the following lines are extremely essential for reliable supply to Sikkim and NBU area

- 1. 132kV Rangit-Melli S/C
- 2. 132kV Shiliguri-NBU second circuit.

POWERGRID and PDD Sikkim may update the status.

Deliberation in the meeting

- 1. OCC felt that Sikkim is not taking required action on this matter and thereby violating IEGC provisions. The matter was referred to TCC/ERPC for further guidance.
- 2. Powergrid informed that, relays had already been installed in Siliguri-NBU 132 kV line and the line would be put in service by 10th April 2013 after overhauling of breaker.

Item no. B4: Interconnection of CESC Network (Nonadanga) at Subhasgram PowerGrid - ERLDC

A 220kV interconnection of CESC system is being established at Subhasgram 400k/220kV station of POWERGRID ERII. CESC has obtained connectivity for termination of its Haldia 600MW IPP at Subhasgram. The necessary bay extension work as well as commissioning of 400/220kV ICT at Subhasgram is almost under completion stage. Further 220kV interconnection from Subhasgram to EM bypass of CESC is also under progress. CESC being a DISCOM of West Bengal, The following issues require deliberation and finalised:

- i) Control area Demarcation in view of connectivity with CTU network.
- ii) Scheduling issues
- iii) Metering and settlement issues.
- iv) Telemetering and voice communication
- v) Operational issues at Subhasgram substation.

CESC, WBSTCL, SLDC and POWERGRID ER-II may deliberate.

Deliberation in the meeting

It was decided to have a separate meeting with Powergrid, CESC, WBSETCL, WBPDCL, ERPC and ERLDC on 3rd April, 2013 at ERPC Secretariat for further deliberation.

Item no. B5: Evacuation arrangement of DSTPS and Mejia B - ERLDC

The evacuation system of Mejia B and DSTPS is presently is as follows

- i) 400kV Mejia Maithon D/C
- ii) 400kV Mejia Jamshedpur S/C
- iii) 400kV Mejia-DSTPS S/C
- iv) 400kV DSTPS Jamshedpur S/C

With the present level of Mejia and DSTPS generation of over 1300 MW MW the N-1 security criteria is often not satisfied. During 21st TCC meeting PowerGrid proposed termination of both the ckts of Jamshedpur at DSTPS. This would have enable completion of original connectivity as planned for evacuation of DSTPS unit 1. In the meantime DSTPS unit II has also been declared commercial with effect from 5.3.2013. While DVC is still continuing the arrangement of evacuation with 400kV Mejia-DSTPS line whereas the 400kV DSTPS – Jamshedpur (2nd ckt) and Mejia – Maithon 3rd ckt are remaining unitlised rendering evacuation constrains for these stations. DVC may expedite action for releasing of Mejia-Maithon 3rd ckt and allow POWERGRID for termination of Jamshedpur D/C also for safe evacuation of its generation from DSTPS.

Powergrid and DVC may deliberate.

Deliberation in the meeting

DVC informed that, DSTPS-Ragunathpur would be completed within 3 months and requested OCC to allow connectivity with DSTPS-Jamshedpur. DVC was informed that 21st TCC/ERPC already cleared charging of DSTPS-Jamshedpur section and accordingly action could be taken at respective ends for carrying out TCC/ERPC decision.

PART C :: ISSUES REFERRED FROM LAST OCCs

Item no. C1: Identification of feeders for distress load shedding - ERLDC (Item No. B1 of 82nd OCC meeting)

In 77th OCC meeting ERLDC had given the following agenda

Quote

While analysing the disturbances occurred on 30th and 31st July,12, it was noted that one of the reasons for above said disturbances is overdrawal of power from the grid. In order to avoid recurrence of such disturbance due to overdrawal, it is felt essential to identify some radial feeders in each of the constituents system which can be disconnected at the direction of ERLDC to prevent overdrawal.

ERLDC will direct the SLDC of the violating constituent/s through written message to disconnect above said identified feeders in case overdrawal persist even after issuing 'C' type message or message issued to relieve system constraints. Constituents, after compliance of ERLDC direction, will confirm their action by written message.

Further following information are needed for the above said identified feeders

1. Quantum of load(both peak and off-peak) and area covered

While selecting such feeders, constituents need to consider the quantum and nature of essential load connected to that feeder. Further feeders in which UFRs are connected must not be included the list of those identified feeders.

Constituents had agreed to look into the matter and revert back in 78th OCC meeting. The same is yet to receive.

In last OCC ERLDC informed that, OPTCL has submitted the relevant information. OCC requested all the constituents to comply with 77th OCC decision and submit relevant information by next OCC.

ERLDC may please update the latest status.

Deliberation in the meeting

It was informed that, OPTCL, DVC and WBPDCL had given the relevant information and other constituents were requested to submit the same by next OCC.

Item no. C2: Need for Bus strengthening at Malda and Birpara consequent to augmentation of transformation capacity at North Bengal – ERLDC (Item No. B2 of 82nd OCC meeting)

Augmentation of transformation capacity has been already been carried out in North Bengal vide installation of additional 160MVA, 220/132kV ICTs at Siliguri, Birpara, Malda. Reconductoring work has also been taken up parallely for enabling secure off-take of additional power consequent to augmentation of the transformation capacity at the above substations.

In the 82nd OCC meeting, Powergrid had informed that, re-conductoring work at Siliguri had been completed and also the same was in progress at Birpara and Malda. WBSETCL had also informed that, re-conductoring work was is in progress at Birpara(WB) and would be completed by March' 2013. The same at Malda is expected to be completed by May' 2013.

Powergrid/WBSETCL may inform regarding the scope of work, type of conductor being used and provide an update regarding the latest status.

Deliberation in the meeting

Powergrid informed that, re-conductoring work at Siliguri, Birpara and Malda was completed. WBSETCL had also informed that, re-conductoring work at Birpara(WB) and Malda would be completed by April' 2013.

Item no. C3: Review of over-voltage Stage-I settings at 400KV Patna S/s – ERLDC (Item No. B3 of 82nd OCC meeting)

One 50MVAR line Reactor is connected to 400KV Patna-Barh-I & II (each circuit) and time gradation needs to be differentiated sufficiently to enable delayed tripping of the connected lines at Patna. Also, in view of repeated trippings of 400KV lines from Patna, the settings need to be lowered for some circuits to enable tripping of these lines on over-voltage on priority basis. Considering all of above and power flows on the various lines, it is proposed to trip one circuit each of 400KV Patna-Balia-I and 400Kv Patna-Barh-III simultaneously in case of rise of voltage. Subsequently, another circuit each for the above sections could be tripped. Considering above, the proposed revised over-voltage settings are given by ERLDC in 82nd OCC.

In last OCC, Powergrid and NTPC in principle agreed for the implementation of the same. Both the utilities added that, this would be implemented after approval from their respective corporate office. ERLDC advised to change the settings at both ends with proper coordination.

After that, NTPC intimated the implementation of revised stage-I overvoltage settings of Barh-Patna lines at Barh end vide FAX message dated 13th Mar, 2013.

Powergrid and NTPC may update the latest status.

Deliberation in the meeting

Powergrid and NTPC informed that, revised overvoltage settings of Barh-Patna lines were implemented at both ends.

Item no. C4: Collection of Daily Energy Data – ERLDC

(Item No. B4 of 82nd OCC meeting)

As per decision taken in 75th OCC meeting, all constituents, ISGS, IPP and POWERGRID are to submit data as per format developed and circulated by ERLDC by 01:00 hrs for the preceding day. Following are the status

- 1. BSEB-data being collected over phone, not submitting in proper format
- 2. JSEB- data being collected over phone, not submitting in proper format
- 3. DVC-data are sent by fax.
- 4. OPTCL- not implemented
- 5. WBSETCL-not implemented. However Santhaldi, Bakreswar and CESC are sending data in specified format
- 6. NTPC Implemented
- 7. IPP- Only SEL is sending data in the specified format but the same has not been implemented by MPL and Adhunik Power.
- 8. POWERGRID- Implemented

In last OCC, MPL and Adhunik Power agreed to send the relevant data from 1st Mar, 2013. ERLDC once again circulated the format and all utilities were requested to send their report in the format over e-mail. It was also informed that, all SLDCs should send the report of their respective control area after compilation.

Further, ERLDC mentioned that large DISCOs like Tisco and Jusco are not being monitored and requested JSEB to take up the issue. ERLDC requested all SLDCs to take appropriate action to monitor large Discos in their control area and give feedback in next OCC.

ERLDC may update the latest status and Members may share their position for non compliance of OCC decision.

Deliberation in the meeting

ERLDC informed that, most of the constituents sending the relevant data. ERLDC requested WBSETCL to send combined report instead of reports from individual plants.

JSEB explained that an official correspondence from ERPC forum in this regard may empower its SLDC to take appropriate action for monitoring Tisco and Jusco. OCC agreed.

Item no. C5: Uncoordinated tripping of lines from Chandil/Hatia Substations of JSEB - ERLDC (Item No. B5 of 82nd OCC meeting)

Repeated tripping of lines from Chandil/Hatia substations has been occurring in the recent past. On discussions it was pointed out that, such faults were mostly of transient nature, as in majority of occasions all the tripped lines could be taken back into service signifying that there were no permanent faults. It may kindly be noted that such repeated trippings show the need for protection coordination in JSEB system. The need for protection coordination has been deliberated in various forums of ERPC, but there has been no visible improvement with regard to protection coordination in form of reduced unwarranted trippings from the above substations. Specifically, even in case of any transient faults on a line or a fault in a remote substation, all lines from Chandil/Hatia are getting tripped, signalling a clear need for review of coordination of protection.

Accordingly, JSEB is requested to carry out a detailed analysis, listing the reasons for such uncoordinated trippings of all lines from Chandil/Hatia in form of a preliminary report and forward a copy of the same to this end at the earliest. Subsequently a detailed report could jointly be developed after site inspection if required, recommending actions to be taken for ensuring proper protection coordination and reduction of such un-warranted trippings.

The above matter was discussed in the 82nd OCC meeting and JSEB was requested to carry out a detailed analysis of the trippings at their end. Subsequently a detailed report could be developed jointly, after site inspection if required, recommending actions to be taken for ensuring proper protection coordination and reduction of such un-warranted trippings.

Accordingly JSEB informed that, review of settings of the relays for proper protection coordination was in progress, and they would revert back by next OCC meeting.

However, on 07/03/13, at 19:40Hrs, all the three 100MVA, 220/132kV ICTs at Chandil tripped leading to tripping of 2 x 150MVA, 220/132kV ICTs at Ramchandrapur. As per report from JSEB, the ICTs tripped on over-load. SCADA data from ERLDC does not corroborate such overload, as loading of the three OCTs were around 190MW before the tripping.

Similar disturbances again took place twice on 12/03/13 repeatedly at 09:40Hrs and 11:30 hrs wherein all 220kVlines from chandil S/s tripped leading to total blackout at Chandil and outage of all loads being fed from Chandil S/s.

A letter from GM, ERLDC has also been dispatched to Chairman, JSEB in this regard.

Considering above JSEB may kindly provide the following information and note the following:

- (i) For all trippings details of relay indications are not being provided by JSEB. Consequently, ERLDC is not in a position to analyse the above trippings. JSEB may kindly take necessary action to furnish the same in future after any disturbance.
- (ii) JSEB has not furnished MW loadings of the ICTs before tripping initiation. JSEB is requested to furnish details of actual line/element loadings/flows in terms of

MW/MVAR in future when furnishing such reports as per the circulated format.

- (iii) Details of action taken regarding review of relay settings as decided to be done by JSEB (as per last OCC meeting) may be furnished to the OCC forum.
- (iv) JSEB may indicate the details of Over-load / Over-current settings including details of relays used for tripping of 22/132kV ICTs on over-current/over-load.

Deliberation in the meeting

OCC had taken serious view on non-submission of tripping details by JSEB to ERPC/ERLDC in complete non-compliance of IEGC provisions. JSEB was requested to submit the details with immediate effect. OCC also decided that a protection team should visit chandil substation for protection coordination at this sensitive S/S and accordingly the Issue was referred to 15th PCC meeting scheduled to be held on 9th April, 2013 for further deliberation.

Item no. C6: Submission of Grid Incidence Report as per specified format - ERLDC (Item No. B3 of 80th OCC meeting)

In 80th OCC meeting, it was noted that tripping report/s received from constituents was not as per requisite format. OCC in its 80th & 81st meeting impressed upon all utilities including Powergrid to submit the grid incidence report as per specified format, otherwise it would be treated as noncompliance of section 5.2 (r) of IEGC.

In last OCC ERLDC informed that, proper format and time frame of grid incidence reports are being monitored from last month. It was found that, NTPC Barh, JSEB, Sterlite are not submitting the reports in proper format. Powergrid, WBPDCL, WBSETCL and OPTCL are submitting the reports in proper format. ERLDC once again circulated the format and all utilities were requested to submit the grid incidence report in the format with in stipulated time in compliance of section 5.2(r)of IEGC. Status report will be placed by ERLDC in OCC meetings.

ERLDC may update constituent wise latest status.

Deliberation in the meeting

ERLDC informed that, JSEB was not submitting in format with in stipulated time in compliance of section 5.2(r) of IEGC. JSEB informed that, as their sub-stations were failing to submit relevant information so, SLDC was not sending the reports in proper format with in stipulated time. JSEB assured to take appropriate action to comply with section 5.2(r) of IEGC.

Item no. C7: Charging of one circuit of 132 kV PTPS (DVC)-PTPS (JSEB) line- DVC (Item No. B1 of 81st OCC meeting)

DVC informed that there are two nos of 132 kV interstate tie lines between DVC (Patratu) and JSEB (Patratu) viz. Line#84 and Line#85. The replacement work of the bay and breaker for line#84 has been completed from JSEB end and JSEB is ready to charge the line from their end. PGCIL has also completed the commissioning of required nos of meters both at JSEB and DVC end for registering the tie flow energy. But till date Line #84 is not charged from JSEB end.

In 81st OCC meeting it was decided to charge the Line #84 from both ends and it was also advised by OCC to install separate CTs so that separate check meter's arrangement could be provided.

In last OCC JSEB informed that, Bay is ready for charging the line. It was decided to charge the line by 25th February, 2013 and communicate the status to ERPC secretariat.

Consequently, JSEB intimated vide Letter No. 127/ULDC/SLDC Ranchi dated 12th Mar, 2013 that tapping between Line#84 and Line#85 of D/C line has been removed and both circuits put into the service on 8th Mar, 2013.

DVC & JSEB may update the latest status.

Deliberation in the meeting

DVC and JSEB informed that, both circuits are in service from 8th Mar, 2013.

Item no. C8: Grid disturbances in NEW grid on 30th and 31st July 2012- recommendation of ERPC (Item No. B2 of 81st OCC meeting)

In the 23rd ERPC meeting it was decided that:

i. All captive power plants in Eastern Region, which are connected to Eastern Grid, should provide required help to Load Dispatch Centres for restoration of the grid during any disturbance; otherwise, the Captive Plants will not be allowed to remain connected with Grid. Each SLDC/STU should take up the issue with their embedded captive plants for compliance of the aforesaid direction and confirm their status to ERPC Secretariat.

Till date no compliance received except Haldia Power Station of Tata Power Co. Ltd, BSPHCL and Tisco (DVC).

Members may explain their position.

Deliberation in the meeting

OPTCL informed that, Vedanta and Bhushan accepted to provide required help to Load Dispatch Centres for restoration of the grid during any disturbance. OPTCL added that, compliances from other captive power plants in their control area would be send as and when received.

ii. More islanding schemes should be planned in Eastern Region for ensuring adequate start up power during grid disturbance. It was decided to take the implementation of new islanding scheme in Bakreswar TPS and Chandrapura TPS in first phase and WBPDCL and DVC were advised to place road map for the same.

WBPDCL presented the road map for the implementation of islanding scheme of Bakreswar TPS in 81st OCC. DVC submitted the schedule of the implementation

of islanding scheme of Chandrapura TPS vide their letter No. LD/19/comml/650 Dated 22nd January, 2013

WBPDCL & DVC may share the latest status.

Deliberation in the meeting

DVC and WBPDCL informed that, implementation is in progress as per road map.

On existing Islanding schemes OPTCL informed that, details of existing islanding schemes under their control area had been forwarded to ERLDC in last year. However, OPTCL agreed to send it again to ERLDC/ERPC.

OPTCL may update their position

Deliberation in the meeting

OPTCL assured to give the details as early as possible.

ERPC advised WBSETCL to take up the issue of islanding scheme with Tata Power (Haldia). In this regard, WBSETCL suggested that an islanding scheme for DPL system could also be conceived. WBSETCL and DPL were requested to submit a proposal in this regard to ERPC Secretariat for further discussion in sub-committee meetings.

In last OCC WBSETCL informed that, WBSETCL would present the scheme in next OCC. DPL added that, Islanding scheme of DPL with unit#7 and local loads is under finalization and it would be placed in next OCC.

WBSETCL & DPL may please present their scheme

Deliberation in the meeting

WBSETCL and DPL informed that, both the schemes are under finalization and would be placed in next OCC

In last OCC NTPC representative presented the islanding scheme for Farakka. OCC in principle agreed to the islanding scheme of NTPC Farakka and suggested NTPC to assess the load and placed the final scheme in next OCC. NTPC agreed to look into it.

NTPC may please update.

Deliberation in the meeting

ERLDC was requested to assess the load status for finalizing the islanding scheme for NTPC Farakka so that final scheme could be placed in next OCC.

On DVC's proposal for designing an islanding scheme with DVC as a whole DVC was advised to place their proposal to ERPC Secretariat for discussion in subcommittee meetings.

In last OCC DVC informed that, the islanding scheme of the DVC taking DVC as a whole would be placed in next OCC.

DVC may share their scheme with the house

Deliberation in the meeting

DVC informed that, the islanding scheme of the DVC taking DVC as a whole would be placed at the earliest.

OCC advised secretariat to hold a special meeting on new islanding schemes of WBSETCL/DPL/DVC/NTPC.

iii. All concerned stakeholders should take immediate measures to ensure total SCADA data availability to ERLDC.

It was directed that all utilities should take appropriate actions at their end to establish the existing communication system (SCADA) with ERLDC healthy by June 2013 without fail.

The issue was discussed in last SCADA meeting on 14th February, 2013 and in last OCC Powergrid informed that, utilities were asked for priority list of their installation of RTUs. But Communications were not made to Powergrid. OCC requested all utilities to give the priority list of RTUs to Powergrid by 25 February, 2013. ERPC vide its letter dated 21st February, 2013 communicated to all the constituents regarding the status of communication system (SCADA) with ERLDC which needs restoration by June, 2013 and advised to take urgent action.

Status of communication system (SCADA) with ERLDC, which needs restoration by June, 2013 is enclosed at **Annexure- II**.

Powergrid may update the status on priority list and members may update their position.

Deliberation in the meeting

Powergrid informed that, priority list was received from all the constituents except BSEB, JSEB and Sikkim. All the constituents were requested to take urgent action for restoration of communication system (SCADA) with ERLDC which needs to be restored by June, 2013 as enclosed in the **Annexure-II**.

For BARH, NTPC informed that, data is started coming to ERLDC. Voice communication is not through due to non availability of PLCC spare channel. As per connection agreement (Annexure-III) the responsibility to provide PLCC channel is with PGCIL. NTPC had raised this matter to PGCIL. PGCIL expressed their limitations for providing spare channel as the other channel is being used for data of Patna substation. After deliberation, OCC recommends to refer this matter to TCC meeting for further deliberation.

For LV side data NTPC informed that they had already submitted their replies to CERC.

NHPC informed that, RTUs placed in Rangit power station are in working condition. These RTUS are the property of PGCIL (ULDC), Kolkata and being looked after by them. It has been confirmed from ERLDC that all the required data are receiving at ERLDC, Kolkata.

Item no.C9: Restoration of 400 kV Sagardighi-Parulia line-1

In last OCC WBSETCL informed that, till date no requisition received from Powergrid end and anti theft charging of the line is not done. Powergrid was requested to complete the anti theft charging of the line as per their need and inform the latest status positively by 25th of February.

WBSETCL and Powergrid may update the latest status.

Deliberation in the meeting

WBSETCL and Powergrid informed that, the line would be restored by 5th April, 2013.

Item no. C10: Switching of 400 KV Baripada-Mendhasal D/C

In last OCC OPTCL informed that, Powergrid had given training to OPTCL O&M personnel for operating the CBs of line. OPTCL agreed to operate CBs of the line at Mendhasal S/s and assured OCC of timely restoration of the same by avoiding switching operation delay.

OPTCL and Powergrid may update.

Deliberation in the meeting

OPTCL informed that, OPTCL personnel were operating the line CBs and at present there is no delay in switching operation.

Item no. C11: Commissioning of 220 kV bus bar protection at Ramchandrapur & Chandil substations (JSEB) – (Item No. B13 of 22nd TCC meeting)

In the last OCC meeting JSEB informed that, material has already been procured and reached the site. JSEB added that, work is in progress and it would be completed by 15th Mar, 2013.

JSEB may update the latest status.

Deliberation in the meeting

JSEB informed that, work is in progress and it would be completed by end of April, 2013.

Item No. C12: Procurement and installation of numerical relays by JSEB for Lalmatia substations

(Item No. B14 of 22nd TCC meeting)

In the last OCC meeting JSEB informed that, installation of relays is in progress and it would be completed by Mar, 2013.

JSEB may update the latest status.

Deliberation in the meeting

JSEB informed that, installation of relays is in progress and it would be completed by 31st Mar, 2013.

Item no. C13: GT and ICT Tap coordination throughout the Easter Region --- ERLDC

A large number of 400KV substations in Eastern Region such as Ranchi, Maithon, Jamshedpur, Rourkela etc. experiencing over voltage most of the time. This leads to frequent tripping of number of 400KV lines on over voltage with consequent reduction of network redundancy. To prevent such over voltage problem, a review of the present tap position of all GTs and ICTs throughout the region is necessary. The present tap details with corresponding transformation ratio of GTs and ICTs available with ERLDC were circulated and all utilities are requested to check and inform the following for each GT/ICT:

	GT	ICT
1	No of Taps and corresponding voltage ratio	No of Taps and corresponding voltage ratio
2	Present Tap position	Present Tap position
3	MVA rating	MVA rating
4	Over load capacity	Over load capacity
5	Reactance and Resistance at nominal	Reactance and Resistance at nominal
	tap (in % of the transformer rating)	tap (in % of the transformer rating)

Till date Powergrid, NTPC, Tista-V, Rangit, BSEB, WBSETCL, WBPDCL, Sterlite and Adhunik Power had submitted the relevant information.

In last OCC ERLDC informed that, station wise data will be compiled and placed in next OCC.

Accordingly, GT and ICT tap position details yet to be received from constituents is placed in **Annexure-IV**.

Members of constituents from where the information is still pending may share with OCC their problems if any, in submitting the information.

Deliberation in the meeting

All the constituents yet to submit relevant data were requested submit the same by next OCC.

Item no. C14: Annual Outage plan of transmission element--- ERLDC

Draft LGBR was sent to CEA, New Delhi for approval. CEA has not yet communicated the generation target data as approved by the ministry. As soon as it comes Separate meeting will

be convened at ERPC secretariat in April, 2013 for finalization after getting approved LGBR from CEA.

Members may please note.

Deliberation in the meeting

Members noted

Item no. C15: Damage of 63 MVAR shunt reactor bay at Tala end – DGPC

In last OCC meeting, DGPC informed that, work order has been placed and the reactor would be in service by Mar, 2013.

DGPC may update the status.

Deliberation in the meeting

DGPC informed that, the reactor would be in service by 30th April, 2013

Item no. C16: Review of load relief under various stages of UFR

As per decision taken in 77th OCC meeting, following are status of implementation of frequency setting and quantum of load to be shed through UFR to be adopted in ER grid. In the 81st OCC, BSEB and JSEB have updated the actual quantum of load relief. The revised table indicating the details of planned vis-a-vis actual UFR quanta are depicted below:

States	Stage-I (48.8 Hz)		Stage-II (48.6 Hz)		Stage-III (48.2 Hz)	
	Agreed	Actual	Agreed	Actual	Agreed	Actual
BSEB	80	87	80	67	115	40
JSEB	50	58	50	51	70	70
DVC	110	132.4	110	142.7	155	166.1
Odisha	150	160.5	150	158.5	208	209.5
WB (including CESC)	285	313	285	285	397	430
Total	675	750.9	675	704.2	945	915.6

Scheme for Emergency setting at 47.6 Hz will remain unchanged

From the above table it is observed that quantum of load relief for BSEB for Stage-II & III are less than that planned. Also it was decided that to obtain proper load relief, actual load amounting to twice the amount of planned load for shedding through UFR should be connected, to obtain proper relief at the time of emergency.

In last OCC BSEB informed that, new panels are erected and feeders are being identified to achieve the target load relief in Stage-II & Stage-III. Expected to meet the target by next OCC.

- i. Bihar may intimate status of implementation of revised load relief in Stage-II & Stage-III.
- ii. Further, all constituents are requested to inform ERLDC feeder wise operation of UFR for each stage, whenever operates.

Deliberation in the meeting

BSEB updated implementation the revised load relief. The revised table indicating the details of planned vis-a-vis actual UFR quanta are depicted below:

States	Stage-I	(48.8 Hz)	Stage-II (48.6 Hz)		Stage-III (48.2 Hz)	
	Agreed	Actual	Agreed	Actual	Agreed	Actual
BSEB	80	88	80	82	115	122.5
JSEB	50	58	50	51	70	70
DVC	110	132.4	110	142.7	155	166.1
Odisha	150	160.5	150	158.5	208	209.5
WB (including CESC)	285	313	285	285	397	430
Total	675	751.9	675	719.2	945	998.1

Item no. C17: Reactive Capability testing of generators – ERLDC

a) Review of reactive power generation/drawal performance of generators

Reactive power generation vis-à-vis 400kV station bus voltages of units at the following generating stations were monitored.

Maximum and minimum voltage observed (data taken from SCADA)

Plant	Maximum and Minimum voltage observed for Feb 13 (KV)
Farakka STPS	428, 411
Khalgaon STPS	433, 413
Talcher STPS	419, 406
MPL	429,417
Sterlite	432,421
Mejia B	432, 422
Bakreshwar TPS	408, 389

Generating stations have been monitored for sample dates in the month of Feb '13

Power Plant	Date for monitoring
Farakka STPS	8 th , 21 st , 24 th
Khalgaon STPS	8 th , 17 th ,24 th
Talcher STPS	6 th , 17 th , 18 th
Bakreshwar TPS	8 st , 18 th ,24 th
Sagardighi TPS	8 th , 13 th
MPL	19 th ,24 th
Mejia-B	19 th , 24 th
Teesta	17 th , 24 th

Performance analysis:

i. Farakka : Though there was absorption of reactive power through GTs, but the 200 MW unit starts injecting VAR in the system whenever voltage fall below 420 kV. MVAR data of unit 3 is not reporting since long.

ii. Kahalgaon : Both 210MW & 500MW units at khSTPP, absorbed VAR or injected zero VAR into the Grid for most of the time and hence performance of the units are satisfactory.

iii. Talcher: - As there was absorption of reactive power through GT for most of the time hence performance of units are satisfactory.

iv. Sagardighi: Performance of unit 1 of sagardighi was unsatisfactory as it was continuously generating VAR even under high voltage condition.

v. Bakreswar:- Performance of units at Bakreswar TPS was satisfactory

vi. Mejia-B/DSTPS/Maithon-RB :- Absorption of MVAR towards GT observed

vii. Teesta-V:- Performance of units at Teesta-V is satisfactory

viii. Sterlite:- Although Sterlite absorbs VAR during high voltage condition the same is not as per its capability.

Defaulting generators may respond.

Deliberation in the meeting

ERLDC presented the performance of the generators and members noted.

b) Schedule for reactive capability tests

In the last OCC meeting FSTPP and DVC expressed their inability to carry out reactive capability test due to coal shortage. Also reactive capability test for Santaldih Unit#5, #6 was not done by WBPDCL on 3rd and 4th February, as planned in 81st OCC meeting.

NTPC, WBPDCL and DVC may intimate their latest status.

Deliberation in the meeting

WBPDCL informed that, Santaldih Unit #6 is ready for and decided to carry out the same on 29th March, 2013. WBSETCL informed that, Kolaghat is ready for reactive capability test but exact date of testing is yet to be decided. FSTPP and DVC expressed their inability to carry out reactive capability test at present due to coal shortage.

Item no. C18: Auto Reclosure Facility at Tala end

Enabling of single phase Auto reclosure facility at Tala end of all DGPC feeders connected with Indian grid was discussed in number of OCC meetings. In the 71st OCC meeting, DGPC informed that BHEL, in a meeting with DGPC in Bhopal, cleared the enabling of auto reclosures of all DGPC feeders connected to Indian Grid.

In the 78th OCC meeting, DGPC informed that they had test charged single phase auto reclosure features in Feeder-I on 6th November 2012, but it was not successful. DGPC informed the following target dates for enabling the auto-reclosures in Tala Feeders:

0 0	0
<u>Feeder No.</u>	Target Date
Feeder-I	By November 2012
Feeder-II	By December 2012
Feeder-III	By January 2013
Feeder-II	By February 2013

In 81st OCC Meeting, DGPC representative informed that, Auto reclosing scheme of Feeder-II was tested successfully on 14 January, 2013 but approval from competent authority for commissioning of the same is still waited.

In last OCC DGPC informed that, on approval from their authority it may take one month for commissioning of the Feeder-II. ERLDC requested DGPC to put the Feeder –II auto reclosing feature in service by next OCC. DGPC added that, testing of rest of the feeders will be done after April, 2013.

DGPC may update the latest status.

Deliberation in the meeting

DGPC informed that, Auto reclosing scheme of Feeder-III & IV were tested successfully and found satisfactory. Testing of Feeder-I would be done in April, 2013. DGPC added that, all the feeders would put in service by May, 2013.

Item no. C19: Procurement of spare transformers by Powergrid

The procurement of spare transformer and reactors by Powergrid as a part of disaster management plan in Eastern Region has been discussed and approved in various ERPC meetings (13th to 18th meeting). The latest status as informed by Powergrid is given below:

- Order for 4 number of spare transformers placed on : 19th July 2011
- Order for 1 number of spare reactor placed on: 11th July 2011
- Delivery is expected by 14 months from date of placement of order
- 315 MVA spare transformers at Biharshariff and Jamshedpur were already installed, while the same at Durgapur and Rourkella would be installed by March 2013
- One 80 MVAR reactor was already supplied to Rourkella.

In last OCC Powergrid informed the status of the following spare elements:

- a. 315 MVA transformer at Durgapur was reached the site.
- b. 1 number of 150/160 MVA, 220/132 kV ICTs at Baripada would be installed by within a week
- c. 1 number of 50 MVA, 132/66 kV ICT at Gangtok could not reach the site. Therefore, the same will be shifted to Rangpo.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid informed the status of the following spare elements:

- a. 315 MVA transformer at Durgapur was commissioned
- b. 1 number of 150/160 MVA, 220/132 kV ICTs at Baripada would be installed by April, 2013
- c. 1 number of 50 MVA, 132/66 kV ICT at Gangtok reached Siliguri

Item No. C20: Permanent connectivity of Dalkhola (WB)-Dalkhola (PG) and dismantling of ERS in Dalkhola (WB)-Dalkhola (PG) section

In the last OCC meeting, Powergrid informed that XLPE cable reached the site and permanent connectivity of Dalkhola(PG)-Dalkhola(WB) would be completed by March 2013.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid informed, permanent connectivity of Dalkhola(PG)-Dalkhola(WB) would be completed by 15th April, 2013.

Item no. C21: Procurement of ICTs for Chukha Transmission system by Powergrid

The following augmentation works under the scope of PGCIL (for which transmission charges would be borne by WBSETCL) were already concurred by the Standing Committee Meeting (20-09-10) on Power System Planning for Eastern Region:

- i. Additional 1X160 MVA, 220/132kV Transformer with associated bays at 220/132kV Siliguri Substation.
- ii. Replacement of 1X50 MVA, 220/132kV Transformer by 1X160MVA, 220/132kV Transformer at 220/132kV Birpara Substation.
- iii. Replacement of 2X50 MVA, 220/132kV Transformer by 2X160MVA, 220/132kV Transformer at 220/132kV Malda Substation.

In the last OCC, Powergrid informed that

- i. 160 MVA transformer was installed at Siliguri.
- ii. 160 MVA transformer was installed at Birpara.
- One 160 MVA transformer at Malda was already commisioned and other 160 MVA transformer expected to be commissioned by 23rd February, 2013.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid informed that

- *i.* 160 MVA transformer was commissioned at Siliguri.
- *ii.* 160 MVA transformer was commissioned at Birpara.

iii. Both 160 MVA transformers at Malda were commisioned.

Item no. C22: Status of PLCC channel in 400 kV Farakka-Jeerat line and 400 kV Farakka-Sagardighi

Channel-2 of PLCC link in 400 kV Farakka-Jeerat line at Jeerat end is not working since 01.09.10. PLCC at 400 kV Farakka-Sagardighi is also not working since long time.

In the last OCC meeting, Powergrid informed that new PLCC panels had reached the site and would be commissioned by March, 2013.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid informed that, PLCC link in 400 kV Farakka-Jeerat line would be commissioned by March, 2013 and PLCC link 400 kV Farakka-Sagardighi line would be commissioned in April, 2013

Item no. C23: Restricted Governor Mode of Operation --- ERLDC

In 80th OCC, DVC informed that BHEL representative did not turn up and the issue could not be sorted out. However, DVC assured to take it up further and hoped that Mejia#8 would be put into RGMO by 1st week of January 2013. In the 79th OCC meeting, MPL informed that they had put their units on RGMO on 6th and 9th November 2012 and put the units in RGMO on continuous basis w.e.f. mid of December 2012.

In 81st OCC, DVC representative informed that Mejia#8 would be put into RGMO by 1st week of January 2013. MPL informed that they had put their units in RGMO mode but digital signal is not working and it would be available by April 2013.

In last OCC DVC informed that, Mejia#8 could not put into RGMO. MPL informed that, digital signal would be made available by April 2013.

The present status of units of ER under RGMO is enclosed in **Annexure-V**.

All concerned are requested to update the status of RGMO to ERLDC and ERPC.

Deliberation in the meeting

Members noted

Item no. C24: Mock Black start exercises in Eastern Region --- ERLDC

i. As per clause no 5.8(b) of IEGC, mock exercise for Blackstart facilities to be carried out in every six months. In the last OCC meeting it was decided to carry out mock blackstart of Teesta after restoration of Birpara ICT. Mock Black Start on Upper Kolab HEP, OHPC is also due.

In 81st OCC, NHPC informed that Teesta is ready for the Mock Black start exercise and it was decided to conduct the same on. Accordingly, the mock black start for Teesta-V HEP was successfully carried out on 24th February, 2013. The black start report is attached at **Annexure-VI.**

In last OCC OHPC informed that, DG set of Upper Kolab HEP was installed and tested, yet to be commissioned. Mock Black start exercise would be carried out after March, 2013.

OHPC may update the status.

Deliberation in the meeting

OHPC informed that, Upper Kolab HEP is ready for Mock Black start exercise and it would be carried out on 2nd April, 2013.

ii. It is mandatory for DG sets meant for black start to conduct test run on monthly basis and submit report to ERLDC. It was earlier decided that if test run report is not submitted by a particular utility, DG set of that utility will be considered as healthy and the onus of healthiness would lie with the utilities. Test report for Feb'13 is yet to be received from Constituents except Rangit and Teesta. WBSETCL sent report up to Oct'12. OPTCL, JSEB yet to send any report.

Constituents are requested to deliberate.

Deliberation in the meeting

Members noted

Item no. C25: Status of "Third Party Protection Audit"

Till date the audit group had completed on-site auditing of 42 nos 400 kV, 1 HVDC and 11 nos 220 kV sub-stations. List of the observations were circulated in last OCC meeting and constituents were asked for compliances/Action plan on observations. List of the observations along with compliances received from the constituents are as placed and also available in ERPC website (**www.eastrpc.org**).

In addition to that, audit group had recently completed the on-site auditing of two 220 kV Sub-stations (Biharshariff and Arra) and one HVDC station (Pasauli). One more 220 kV Sub-station (Howrah) would be done on 26th Mar, 2013.

Members may please note and constituents yet to submit the compliance/action plan for the balance observations may update the status.

Deliberation in the meeting

NTPC updated compliances on observations. Updated constituents wise list is placed in Annexure-VII and also available in ERPC website (www.eastrpc.org). Constituents were requested to send their compliances/action plan latest by one week time. All STUs were also requested to estimate the timeline along with the fund requirement for complying observations in 3rd party audit, and for Renovation and Up gradation of Protection System of each sub-stations(at 220KV and above) under respective control area.

PART D:: OPERATIONAL PLANNING

Item no. D1: Prolonged outage of power system elements in Eastern Region

(i) Generating units:

Generating Station	UNIT NO	CAP(MW)	DATE	REASONS FOR	Restoration Status
				OUTAGE	
STERLITE	4	600	18.12.12	TAKEN OUT	
				FOR PG TEST	
MEJIA	2	210	11.01.13	LOW SYSTEM	
				DEMAND	
MEJIA	1	210	08.02.13	TUBE LEAKAGE	

(ii) Transmission elements

Name	Agency	Date of	Reason	Restor	ation Status
		Outage		Original	Latest
400 kV Sagardighi-Parulia -1	WBPDCL	25.04.12	11 no tower	March'13	March'13
			collapse		
315MVA, 400/220 kV ICT –IV	WBSETCL	14.06.12	Fire Hazard	March'13	March'13
at Arambag					
132 kV CT i.r.o. 132 kV NBU	Powergrid	10.12.10	Old relay needs	February'12	CT already
(WBSETCL)-Siliguri (PG)#1 at			to be replaced		replaced. Old
Siliguri end					relay scheduled
					to be replaced by
					Mar'13.
132KV Rangit-Melli	Sikkim	1.9.12	Tower tilting at		No progress
			Loc.128		reported by
					NHPC. Sikkim
					representative is
					not present.
132KV Lalmatia-Sabour	JSEB	2.1.13	R-Ph CT burst at		CT replaced on
			Laimatia		on Jan'13
400 KV DURGAPUR –		25.04.12	3 Nos Tower		Mar'13
SAGARDIGHI			collapsed		
400 KV BINAGURI - PURNEA –	Powergrid	01.12.12	S/D availed by		70 km of 170 km
П			Powergrid for		line was
			reconductoring		completed and
			work		the rest will be
					completed by
					June'13
400 KV BINAGURI - TALA - IV	DGPC	13.12.12	S/D taken by		Mar'13
			DGPC		
400 KV BINAGURI - TALA - II	DGPC	06.03.13	Kept open on		
			Overvoltage		

Concerned utilities may share the latest status.

Deliberation in the meeting

Concern utilities updated the dates and Members noted.

Item no. D2: Information regarding commissioning of new transmission element -- ERLDC

(i) Scheduling and accounting for GMR,Kamalanga (3 x 350MW) project in Orissa The 1x350MW GMR plant has since been commissioned (27.1.13) in Odisha has been delivering infirm power. The plant received its interim arrangement of connectivity by way of LILOing of 400kV S/C between TSTPP – Meramundali.

Pending Long term grant to GMR, the issue of scheduling of the plant and availing 25% of share by GRIDCO was discussed during the last 82nd OCC meeting held on 18.2.13 GMR was advised by OCC to take up the issue of its scheduling with OPTCL.

OPTCL and GMR may update the status.

Deliberation in the meeting

Members advised GMR to take up the issue with OPTCL and put forward to OCC if the issue is not resolved.

(ii) Commissioning of Chuzachen (2x55MW)Power plant in Sikkim

The 2x55MW Chuzachem power plant of Sikkim is going to be commissioned shortly. The station is having an interim arrangement of evacuation through LILO arrangement of 132kV Melli Gangtok S/C of CTU. The final arrangement of termination of this station would be 132kV D/C between Chuzachen and Rangpo(CTU). A meeting was conveyed by ETRPC at Teesta V between Chuzachen(Gati infrastructure pvt Ltd), PDD Sikkim, ERLDC and ERPC on 26th Feb'2013. Following were discussed and agreed

• Chuzachen (Gati Infrastructure Ltd) applied for 99MW of LTA for evacuation of power other than Sikkim. The LTA grant would be effective after establishment of associated transmission system planned.

• For the balance quantum of Power to be availed by Sikkim, LTA grant would be sought by Sikkim to CTU at the earliest.

• Till LTA Grant is effective the plant may sale its generation under short term open access subject to availability of transmission margin.

• Chuzachen with interact with POWERGRID for necessary communication arrangement and establish telemetering and voice communication with ERLDC.

• The scheduling of power would be done by ERLDC and accounting would be prepared by ERPC as agreed to by Sikkim. Accordingly Chuzachen would register itself as an user of ERLDC.

• The metering location at Chuzachen had already been intimated to PowerGrid for necessary installation. Chuzachen may interact with PowerGrid ERII for necessary installation of meters

Members may please note.

Deliberation in the meeting

Members noted

(iii) Latest status of commissioning of following generating station and transmission elements may please be furnished.

New generating units:

S.No.	Power Plant	Unit size	Expected date
2	GMR	1x350MW	February'13
3	Koderma	2x500MW	U#1 March'13
4	Corporate Power	1x257MW	
5	Teesta-III	1x200MW	
6	Raghunathpur	1x600MW	Mar'13

New transmission elements

SL No.	Transmission Line	Expected date
1	400 kV Maithon-Gaya D/C	June'13
2	400 kV Gaya Koderma D/C	June'13
3	400 kV DSTPS – Raghunathpur D/C	Mar'13
4	400 kV Raghunathpur-Ranchi D/C	
5	400 kV Meramandali-Dubri D/C	Pending in court
6	400 kV Corporate-Ranchi D/C	
7	220 kV Begusari-Purnea D/C	
8	220 kV Purnea(pg) Madhepur D/C	Mar'13
9	220 kV Dalkhola-Dalkhola (WB) D/C	Mar'13
10	220 kV Dhanbad-Girdih D/C	Feb'13
11	220 kV Girdih-Koderma D/C	ROW problem

Concerned utilities may update the likely date of synchronization and inform commissioning of other new generating station and transmission element which are not included in above said list.

Deliberation in the meeting

Members noted

Item no. D3: Anticipated power supply position during April-13

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of April-13 were prepared by ERPC Secretariat on the basis of LGBR for 2013-14, keeping in view that the units are available for generation and expected load growth etc. The details are placed for discussion.

Members may confirm.

Deliberation in the meeting

Modified anticipated power supply position for the month of March, 2013 after incorporating constituents' observations is given at **Annexure- VIII.**

Item No. D4: Shutdown proposal of transmission lines and generating units for the month of April-13

Members may finalize the Shutdown proposals of the generating stations and transmission elements for the month of April'13 as placed.

Members may confirm.

Deliberation in the meeting

Approved maintenance programme of transmission elements during the month of April, 2013 is at **Annexure-IX.** OCC requested ERLDC to allow Shutdown as per this programme but before allowing all the concerned affected utilities should be suitably informed.

NTPC informed that, NTPC would take shut down of FSTPS unit#6 (500 MW) for 35 days from 1st April, 2013 to 5th May, 2013 for maintenance work instead of FSTPS unit#4 (500 MW) as agreed in LGBR meeting. After deliberation, OCC members agreed for the shutdown of FSTPS unit#6 (500 MW) for 35 days from 1st April, 2013 to 5th May, 2013. FSTPS unit#4 (500 MW) will remain synchronized with the grid.

NTPC also assured to maximize the generation of rest of the units during above shut down.

PART E:: OTHER ISSUES

Item no. E1: UFR operation during the month of February'13

Since system frequency did not touch 48.8 Hz in Febuary'13, UFR did not operate.

Members may note.

Deliberation in the meeting

Members noted

Item no. E2: Commissioning of new units/transmission elements during the month of February 2013

- 1. 160MVA ICT-II at Malda was loaded for the first time for the first time at 19:05 Hrs on 01/02/13.
- 2. 400KV Maithon-Koderma-I was taken into service for the first time at 12:02 Hrs on 05/02/13.
- 3. 400KV Maithon-Koderma-II was taken onto service for the first time at 18:12 hrs on 06/02/13.
- 4. 160MVA ICT-I at Malda was charged on no load on 23/02/13 and subsequently loaded for the first time at 13:43 Hrs of 23/02/13.
- 5. 430MVA, 400/20kV GT-II of GMR Energy Limited charged on no load alongwith UATs & STs on 23/02/13.
- 6. 64 MW IPP of NBVL, Kharagprasad synchronised with OPTCL grid system on 26/02/13 at 11:27Hrs.
- 7. 315MVA ICT-II at Keonjhar charged on no load at 23:08 hrs of 28/02/13.

- 8. 125MVAR B/R at Ranchi charged for the first time at 23:14 Hrs of 28/02/13.
- 9. 765/400kV, 1500MVA ICT-III at Pusauli(3 x500MVA) was charged for the first time from 400kV side at 23:25 Hrs of 28/02/13. Subsequently, 765KV main Bus-II was charged for the first time at 23:38 Hrs.
- 10. 330MVAR Bus Reactor at Pusauli (3x110MVAR) was charged for first time at 23:43Hrs of 28/02/13. Subsequently, 330MVAR Line Reactor(3 x110 MVAR) of 765kV Sasaram-Fatehpur was charged from Bus-II, for the first time at 23:52 Hrs of 28/02/13.
- 11. 50MVAR(3 x16.67MVAR) Line Reactor of 400kV Baripada-Keonjhar at Baripada charged for the first time at 16:55 hrs of 03/03/13.
- 12. DSTPS UNIT#2 was declared under COD w.e.f 00:00 Hrs of 05/03/13.

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

Deliberation in the meeting

Members noted

Item no. E3: Non-compliance of directions issued by SLDC --- ERLDC

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

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

No report from any constituent received. Hence ERLDC consider 'Nil' report for all Constituent for February'13.

Members may note.

Deliberation in the meeting

Members noted

Item no. E4: Grid incidences during the month of February'13

Disturbance Place	Date & Time of occurrence	Generation loss (MW)	Load loss (MW)	Remark	Category
Disturbance in JSEB (Chandil) s/s	03.02.13, 12:42hrs	0	151	A long paper hording came with the flow of wind & fell on the Y-Ø & R-Ø of Powergrid bay at Chandil switchyard leading to tripping of 220kV Ranchi (PG)-Chandil and all other ckts from chandil s/s and consequently to total power supply failure at Chandil S/s. At 12:46hrs, 132kV Adityapur-Rajkharswan ckt tripped. Traction supply interrupted	GD-1

				at Kendposhi, Rajkharswan, Golmuri and Manique	
Disturbance in JSEB (Chandil) s/s	05.02.13, 04:21hrs	0	189	At 04:21hrs, LA blast occurred at Hatia S/s. The fault was not cleared from Chandil end, due to which all 220kV, 132kV lines/ICTs emanating from Chandil s/s tripped causing total power failure at Chandil s/s. Traction supply interrupted at Kendposhi, Rajkharswan, Golmuri and Manique.	GD-1

Deliberation in the meeting

Members noted

(i) Repeated tripping of lines from Meramundali S/s of OPTCL

It has been observed that whenever there is a fault in 400kV Meramundali-Mendhasal line(connected to 400kV Bus-I only at Meramundali as Tie breaker is NA) or near Mendhasal S/s, the breakers at Meramundali end do not operate in Zone-I time either by Zone-I Distance Protection or under Zone-II-carrier aided scheme(permissive under-reach), resulting in detection of stuck breaker condition and LBB actuation leading to tripping of those lines emanating from Meramundali 400kV Bus-I (on LBB operation) who do not have their tie-breaker in service and hence cannot be transferred to 400kV Bus-II.

The following disturbances have occurred in the recent past:

1) On 20/02/13 at 16:25 Hrs: 400kV Y-Ph LA of ICT-II at Mendhasal burst leading to LBB activation at Meramundali and tripping of lines with incomplete dia from 400Kv Bus-I.

2) On 28/02/13 at 12:31 Hrs: RPh E/F in 400Kv Meramndali-Mendhasal line leads to LBB actuation and tripping of lines with incomplete dia from 400Kv Bus-I at Meramundali.

3) On 09/03/13 at 17:05 Hrs: YPh E/F Z1, 59.5% from Meramundali end on 400Kv Meramundali-Mendhasal line occured, but Zone-I, distance protection at Meramundali end did not operate leading to LBB actuation and tripping of lines with incomplete dia emanating from Meramundali 400kV Bus-I.

As can be seen in all the above cases fault has been detected in Meramundali-Mendhasal line or at Mendhasal remote end S/S and distance protection Z-I, Z-II under permissive underreach scheme have not operated to clear the fault in Zone-I time (for SI. No 2 & 3) leading to LBB actuation. Also, all those feeders with incomplete dia could not get transferred to 400kV Bus-II and have tripped as their tie breakers were under outage.

OPTCL may accordingly clarify the following:

1) OPTCL may explain the reason for non-operation of distance protection at Meramundali end in Zone-I time (for sl. No2 & 3) and consequent actuation of LBB alongwith with relevant relay indications, ELs and DR outputs. In case of stuck breaker condition actually happening, OPTCL may explain the repeated instances of occurrences of such conditions.

2) OPTCL may explain the current outage status of tie breakers w.r.t 400kV Bus-I & Bus-II at Meramundali and the no of tie-breakers through which 400kV Bus-I & Bus-II are coupled at Meramundali.

Deliberation in the meeting

OPTCL had submitted the details. The issue was referred to 15th PCC meeting scheduled to be held on 9th April, 2013 at ERPC, Kolkata.

Item no. E5: Upgradation of 400kV Bina-Gwalior-Agra I & II sections to 765kV --- ERLDC

Powergrid has taken up the upgradation of of 400kV Bina-Gwalior-Agra I & II sections to 765kV with works being scheduled in phased manner from 5th March, 2013 to 25th March, 2013. 400KV Bina-Gwalior-Agra II section has already been upgraded to 765kV on 10/03/13. Shutdown of Section-I for upgradation is planned tentatively on 17th March, 2013.

Member may note.

Deliberation in the meeting

Members noted

Item no. E6: List of Reliability coordinators.

List of reliability coordinators is enclosed in **Annexure-X**. Nominations are also required from IPPs

Members may note and IPPs to nominate reliability coordinators.

Deliberation in the meeting

Members noted and IPPs were requested to nominate the coordinators.

Item no. E7: Report on UFR Inspection carried out during the month of Febuary'13.

UFR inspection group carried out inspection of Balasore, Bhadrak substations on 12.02.2013 and Kendpara, Chandikhol and Khurda substations on 13.02.2013 of OPTCL. The report is enclosed in **Annexure-XI**.

Members may note

Deliberation in the meeting

Members noted

Item no. E8: Review of grid performance during the month of Febuary'13

ERLDC may present the salient features of grid parameters during the month.

Deliberation in the meeting

Members noted

Item no. E9: Any other point

(i) Pollution mapping for Eastern Region - Powergrid

Inquiry committee on Grid Disturbance in Northern Region on 2nd Jan'2010, recommended Powergrid to complete pollution mapping in association with CPRI. Detils of pollution mapping including expenditure involved in implementation of the same are enclosed in **Annexure-XII.** All constituents requested to go through and give their comments.

Members may please discuss.

Deliberation in the meeting

All constituents requested to give their views and comments on the matter and powergrid was requested to give a presentation on this subject in ensuing commercial/OCC meeting to be held on 10^{th/}16th April, 2013 at ERPC Secretariat. Powergrid agreed to give the presentation.

(ii) Eastern Railway Agenda

a) Power Interruption from Jharkhand State Electricity Board for Jamtara & Sankarpur Traction Sub Station for the month of January & February, 2013 is as under:

Sl.	Date	Name of	Supply	From	То	Duration	Cause of failure
No		GSS/TSS	Athority	(hh:mm)	(hh:mm)	in Minutes	
1	28.01.13	JMT	JSEB	19:53	19:56	03	Line no 34 tripped from
				21.05	21.08	03	Maithon Hydel through DPR
							zone-1
		BDME	JSEB	19.53	20.47	54	
				21:05	21:14	09	
2	18.02.13	JMT	JSEB	17:34	17:49	15	Line no. 34 tripped from
		BDME	JSEB	17:34	17:52	18	Maithon Hydel through DPR
							zone-1

Though power interruptions are reducing but, it should be eliminated.

Deliberation in the meeting

JSEB assured to look into it.

b) Change over from DVC (Mython Hydel) to NTPC supply at Baidyanath dham/GSS takes much time by JSEB for bus modification

JSEB requires necessary permission from ERLDC during change over takes the time. In the last special Meeting held 22.11.12 where it was decided to hold a separate Meeting in between JSEB, Railway Officials & ERPC at Bidyanath dham/GSS sometimes around 2nd week of February, 2013 for early commissioning of the bus modification. As on date this is not materialized.

Deliberation in the meeting

ERPC /ERLDC/Railways team would visit and a Separate meeting would be arranged positively in the month of April to discuss the issue.

c) Low voltage problems at Adisaptagram/FP (WBSETCL)

The problem of low voltage, during the period of feed from Arambag source, is still continuing. The voltage problem is causing late running of trains and need to be addressed immediately. The maximum and minimum voltage from 10.03.13 to 18.03.13 at Adisaptagram feeding post is checked and it is found that during supply from Arambag source, the voltage at Adisaptagram/FP drops to as low as 21.5 KV which is totally unacceptable.

Deliberation in the meeting

WBSETCL agreed to resolve the low voltage problem.

Meeting ended with thanks to the chair

Annexure-A

Participants in the 83rd OCC Meeting

Venue: ERPC Conference Room, Kolkata

Time: 11:00 hrs

Date: 25.03.13 (Monday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature
1	A.K. bauchsomelly	meste	ERPC	9433068533	mserpe-peuen Enic.in	Abour yopm.
2	P-Mukhofadhyay	Care	ERESE	9633041890	Ergmail Com	In zola
3	Stà Slaitne	B(5.3 -	Frank South	9433041802	dkshrivesten 55@ yahov.co.iz	Sta ilaco
4	BKProban	DGM	lomeyro	943474201	promising a	12
5	Jiten Dan	Chrief Mal	POWERCHIE	943181570	Oiten Chaney Now	
6	Swight Banerje	c.M.	ERLDE	9433041823	surjet agmail a	m Ky.
7	B. Pern	DCE(E)	DVC	9903247102	brahmanauda. pm @ olve.govin	Bom
8	S MAYAN	AGM(05)	NTPOP22	9437041581	Snayahompe	Den
9	RAKESH KOMAR	AGm (os)	NTPC/ER-J	9431011381	Parksismen 12 Entpercoin	Rankesson
10	MANNET KR. JHA	Manager (PHM)	Nn Pc/ Telela-2	9800003743	Bykjnh becyahw.	m?
11	K.N. Nath	Dy Mgr(m)	NHPC/Rangit	8016087080	nathningnym@	- Out
12	Subhash Mish	ESE T.C. TSR	JSEB	9431707314		-
13	Lundup Nanggal	Head, DGAC COEVATA COEGA	DGPC	tais 7722544	nan gysling Ogenil	Blang 1
14	ASHISH GATTANS	D7.6.M.	APNRL	90074-71762	e adhanikan toni	n Ceith
15	SHASHWATA DUTTA	HEAD CHUSTRIX	ENICL	95603000	Shashwala, DULAN DSTerliti	Mu
16	M.K. Thakeny	St. Enginery	ERIDC	9432357832	mut_cleet Q.	mit
17	Sausav K Sahay	Engineer	ERLOC	9432013175	Sahay Sausor	Schay
18	J-R-Mohupatra	G. Engr.	ERLDE	2433041873	Egmant.com.	Tule
19	Tshering Chhozyel	Ay. EE (m)	DGPC	-	Tshering illogiye	and
20	Thinky Dagir	JE (6)	DEPC	-	thinly depe @	dely

"Coming together is a beginning, staying together is progress, and working together is success." -Henry Ford

[Page 1]

Participants in the 83rd OCC Meeting

Venue: ERPC Conference Room, Kolkata

Time: 11:00 hrs

Date: 25.03.13 (Monday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature	
21	RANJAN BLOWAS	St /ALDC	DPL	9434735785	Manjantiswayl a genail.com.	phins	
22	RAILON CHALLORMAN	DGM	CESI	98310-5261	, in the second s	acly	
23	H.P. Mahapatra	Manager	OHAC	9861164943	hpm.ohpe @gmail.cm	He	
24	D. Beherr	D7. Marose	OPTCL	9438907417-	auchosantechom @ neditt. Cem	Bhr	
25	UMAKANTA SAHOD	AGM.	SLDC, OFTEL, POISSR	9438907403	Wesbbsre yaked lon	the	
26	ANIRUDHA SETHY	A. Manasp	GRIDLO BREK	943850635	Sethicaninerth Operatilier	Latry	
27	SWAPAN MAITY	DGM	w BPDel	9432021168	simaily @ ubpdcl.co.im	S.Mily-	
28	TAPAN KUHAR DE	A. C. 6	WESEDCL	9433870748	kumartapude @ gmail com	That.	***
29	P. Saha	CESCAD	WBSZTCL	9836093600		braho	
30	A. Binsas	C.E., SLDC	WBSETCL	9831093513	amitava, bissos 22@ guail- com	· Abinan.	
31	A.K. SHARMA	EEE	TUNL	9931306973	aksttps@ gmail, Com	Acris	
32	G.K. CHOUB	EY ESE	BSPHCL	94700017	50 gkc-1959 @ sediffmen	, gkchou	pey)
33	Akshay Kr	E.J.E SLDL	JSEB	9431913933	syldensel &	eneril Patrone	2
34	A.K. Sharma.	GEDETER	Eastan	900202030	4 april cede Des	rai metistuzo	2
35	G. Lao	AEE	ERPC	9547891353		Gripada	
36	B. SAPRIMEL	SE(PS)	Effe	94330657	4	3203.	
37	JOYDEB RANAYOPADH	reg sele)	ERPC			8B-	
38	S. Roy	AEE	ERPC			GBAP	
39	S.M. Jha	E.E	ERPC			Siy gr	
40	SK. SAWA	SSE	£. Rly.	9002025315	Sanjay, Scha39 De gmail Com	an	

"Coming together is a beginning, staying together is progress, and working together is success." -Henry Ford

Participants in the 83rd OCC Meeting

Venue: ERPC Conference Room, Kolkata

Time: 11:00 hrs

Date: 25.03.13 (Monday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature
41	S. K. Sengulta	Tch Advia	BSPHCL	98-36020195		the
42	V. Kelyanna	EE	EXP	J	-	CBJ
63 43	P.K. Hendn.	SE(E)	WHSETCH SLDE, HINH	993308692	a	62
64 44	A. Kannakar	Se(E)	WBSETCL	94 3333 9597	asit kannakal	-850-
65 45	4. Raichand ron	ACE (3LDC)	COBSETCL	-		a de j
.66 46	R.158 Maraperne.	Sr. Mar.	woode	8902495704	~	00 2573/13
67 47	B. De.	AM	CESC	91,62312.742	debarsti de Øsp-sg. in	St. Sister.
-68 48	Sarbatosh Dee	A/m	OPGC	9556002226	sambalosh.das@opge	ion ster
- 69 49	D.N. Guru	War	aberc	7338715434	Dhirendra. Jus Copq. G. in	- fr
70	Manta Pari	AE(M)	DGPCL	+9751748206	1 gmail-com	2/5/03/13
H 51	Tshewing James	his DEE	DGPCL	17118055	tshewanglo @g	nail.go, Fand
72	Tsheving Duba	HE	DGPCL	17713350	Bevolue 56 0 gmail: com	Ligh
73	P. Bonurjei	PE .	MBSEPCL	9432140765	prestante @ gmaitem	Sit
74 54	R. p. Singh.	DGM.	M TPC, ER-1	9431011366	rpsinghol @	Xms to
35 55	P.Hanshavardhane	Esr.	POLNERCERID, ER2.	91434049232	hvpgcil Qgmeiles	8-17-842
76 56	S. Kondr	Manager	ERLDC. POSOCO	9433041854		Saran
-77 57	S.K. Chandraker	mgr.	ERLDC Posoco	5433041800	E gmail. Com	· Guis
78 58	S: K Sahari	illgr	Powerprod	9434748242	satish-02.0 Hick Cypter. co. sn	SE
79 59	D.KAR	AGM	NTPC, Talel	2 94370935	Ð	sty
- 80 60			4 (d)			10

"Coming together is a beginning, staying together is progress, and working together is success." -Henry Ford

Annexure-I



Procedure for Transmission Elements Outage Planning

Introduction

- Outage Coordination
 - Important functions of RPCs/NLDC/RLDCs
- Proper co-ordination of transmission outages
- $^{\rm o}\,$ Reliability of operation of the All India grid
- Certainty to the electricity markets.
- $^\circ\,$ Proper crew resource mobilization at the work sites to ensure that outage time is minimized.
- Proper coordination of works by different entities to ensure that outage time is optimised.

Objective & Scope

- **Objective**: Streamline the process of outage coordination between SLDCs, RLDCs, NLDC, RPCs, owners of transmission assets and transmission element outage Indenting Agencies.
- **Scope**: Applicable to RPCs, RLDCs, NLDC, SLDCs, STUs, load serving entities and indenting agency

Procedure for discussing outages in OCC meeting

Activity	Agency Responsible	Deadline
Submission of shutdown proposals for next month	Indenting Agency	3rd day of the current month
Compilation of shutdown requests for next month and upload on website	RPCs	5 th day of the current month
Study of proposed outages impact	System Study sub- committee of RPCs	Before OCC meeting
Discussion in OCC meeting	RPCs	Preferably 10 th to 15 th day of the current month
List of approved transmission outages to SLDCs/RLDCs/NLDC	RPCs	Latest by 18 th of the current month
Tentative readjusted timings/dates of transmission element outages for next month based on OCC approved outages. (for outages where NLDC is approving LDC)	NLDC	Latest by 31 st of the current month

Procedure for discussing outages in OCC meeting

- Important Points to be considered while discussing outages in OCC meeting:
 - Outages request of inter-regional lines and intra-regional lines affecting the transfer capability of any inter regional corridor, outage request shall be submitted in both the concerned RPCs.
 - Outage to be considered approved provided it is approved in both the RPCs
 Outages in the same corridor not to be approved simultaneously
 - other than the cases where it complement each other
 - Multiple shutdown of same element for work by multiple agencies to be avoided.

Approving and Consenting Load Despatch Centre

- Approving Load Despatch Centre: The Load Despatch Centre responsible for approving any transmission outage shall be called Approving Load Despatch Centre.
- **Consenting Load Despatch Centre**: The agency whose consent is required by Approving Load Despatch Centre for approving any outage shall be called Consenting Load Despatch Centre.
| Appro
Desp | oving and Con
atch Centre | senting L | oad |
|---------------|--|------------------------------------|-----------------------------------|
| SI No | Type of Outage | Consenting Load
Despatch Centre | Approving Load
Despatch Centre |
| 1 | 765 kV or above Lines | Concerned RLDCs | NLDC |
| 2 | Inter-Regional Lines | Concerned RLDCs | NLDC |
| 3 | HVDCs | Concerned RLDCs | NLDC |
| 4 | International Interconnections | Concerned RLDC | NLDC |
| 5 | Intra-Regional Lines affecting transfer
capability of any inter regional
corridor. | Concerned RLDCs | NLDC |
| 6 | Intra-Regional Lines which does not
affect transfer capability of any inter
regional corridor and included in the
list of important elements of RLDCs
(excluding lines covered under si
no.1,3,4 and 5) | SLDCs | RLDCs |
| 7 | All other lines (excluding sl no. 1,2,3,4,5,6) | SLDC | SLDC |

Proc	edure for appro	oval of o	outage
		Approving Load	d Despatch Centre : NLDC
SI No	Activity	Day	Time
1	Request of shutdown from Indenting agency to concerned RLDC.	D-3	1000 hrs
2	Forwarding request of shutdown requiring NLDC approval from RLDC to other concerned RLDCs and NLDC (along with the recommendations and study result)	D-2	1000 hrs
3	Comments of other RLDCs or NLDC	D-2	1800 hrs
4	Approval or Rejection of Request	D-1	1200 hrs

		Approving Load	Despatch Centre : RL
Sl No	Activity	Day	Time
1	Request of shutdown from Indenting agency to concerned SLDC (where indenting agency is state entity) / RLDC.	D-3	1000 hrs
2	Forwarding request of shutdown to RLDC along with the recommendations and study result	D-2	1000 hrs
3	RLDC to study the impact of proposed outages		
1	Approval or Rejection of Request	D-1	1200 hrs

Procedure for approval of outage

- OCC approved outages shall be considered for approval on D-3 basis.
- Outages impacting the transfer capability of more than one corridor not to be allowed simultaneously.
 - An outage impacting the transfer capability of more than one corridor may be allowed.
- Outage deferred due to system constraint or any other reason
- Tentative dates for shutdown to be given by approving load despatch centre.

Procedure for approval of outage

- Reasons for refusal to be clearly intimated by approving load despatch centre.
- Approved outage not availed in real time
- Outage not to be allowed again in that month.
- Fresh proposal to be submitted in next OCC meeting.

Approval of Emergency Outages

- **Emergency Outages** : Outages not approved in OCC meeting but havingimpact on human and equipment safety and/or to meet any other emergency requirement or special conditions.
- Emergency outages shall be allowed immediately or within the short possible time depending upon system conditions and its severity.

Availing Outages and normalising outages in real time

- Indenting agencies to strictly adhere to approved timings.
- Code for availing outage /normalising outage to be taken from SLDC/RLDC/NLDC.
- Outage to be availed /normalised within 15 minutes of availing the code but not later than 30 minutes.
- Code to become null and void if outage not availed /normalised within 30 minutes of issuing code.
- Repeated delay in normalisation of outages to be reported to RPCs

Request for charging new elements

Activity	Agency Responsible	Deadline
Request for probable charging new elements for the next calendar month to RPCs	Owner of the transmission asset	3 rd day of the current month
Study of proposed charging of new elements	System Study sub- committee of RPCs	Before OCC meeting
Discussion in OCC meeting	RPCs	Preferably 10 th to 15 th day of the current month
List of new elements to be charged in next month	RPCs	Within 3 days of OCC meeting or latest by 18 th day of current month

1	Format IA	Request For Transmission Element Outage	Indenting Agency	RPC
2	<u>Format IB</u>	Request For Bus, Bay, ICTs, Reactor, FACTS, FSCs, SVCs etc Outage	Indenting Agency	RPC
3	Format IIA	List of monthly proposed shutdowns of Transmission Lines	RPC	Website
•	Format IIB	List of monthly proposed shutdowns of Bus, Bay, ICTs, Reactor, FACTS, FSCs, SVCs etc	RPC	Website
;	Format IIIA	List of monthly approved shutdowns of Transmission Lines	RPC	NLDC/RLDC/SLDC
;	Format IIIB	List of monthly approved shutdowns of Bus, Bay, ICTs, Reactor, FACTS, FSCs, SVCs etc	RPC	NLDC/RLDC/SLDC

7 Format IV Element Outage Indenting Agency RLDC/SLDC 8 Format V Format VI Request for Transmission Element Outage RLDC NLDC 9 Format VI Format VIIA Approval of Outage RLDC / NLDC Indenting Agency/RLD 10 Format VIIA Monthly Shutdown Report For Transmission Lines SLDC/RLDC RPC 11 Format VIIB Monthly Shutdown Report For Ear Bus Bay (C) & Beort For Ear Bus Bay (C) & Beort For SLDC/RLDC SLDC/RLDC RPC	List	of Form	nats			-
B Format V Request for Transmission Element Dutage RLDC NLDC 9 Format VII Approval of Outage RLDC / NLDC Indenting Agency/RLD 10 Format VIIA Monthly Shutdown Report For Transmission Lines SLDC/RLDC RPC 11 Format VIIB Monthly Shutdown Report For For Rus Bay (IC R Bector SLDC/RLDC RPC	7	<u>Format IV</u>	Request for Transmission Element Outage	Indenting Agency	RLDC/SLDC	
9 Format VI Approval of Outage RLDC / NLDC Indenting Agency/RLD 10 Format VIIA Monthly Shutdown Report For Transmission Lines SLDC/RLDC RPC 11 Format VIIB Monthly Shutdown Report For For Plus Bay (IC) Report For For Plus Bay (IC) Report For SLDC/RLDC RPC	8	<u>Format V</u>	Request for Transmission Element Outage	RLDC	NLDC	
10 Format VIIA Monthly Shutdown Report For Transmission Lines SLDC/RLDC RPC 11 Format VIIB Monthly Shutdown Report For Evr Rus Bay (CF) Report For SLDC/RLDC RPC	9	Format VI	Approval of Outage	RLDC / NLDC	Indenting Agency/RLDC	
11 Format VIIB Monthly Shutdown Report For SLDC/RLDC RPC	10	Format VIIA	Monthly Shutdown Report For Transmission Lines	SLDC/RLDC	RPC	
FACTS, FSCs, SVCs etc	11	Format VIIB	Monthly Shutdown Report For For Bus, Bay, ICTs, Reactor, FACTS, FSCs, SVCs etc	SLDC/RLDC	RPC	

u 1
u :

F	=Orr F	nat Format I	; (A): Req	uest For	Transn For the	nissio	on Eleme	nt Outa	ge by Indenting	agen	cy to	RPC	1	
F	-Orr F Ig Agency	mat Format I	(A): Req	uest For	Transm For the	nissia	on Eleme	nt Outa	ge by Indenting	agen	cy to	RPC	1	
Indenting	F ng Agen cy	Format I	(A): Req	uest For	Transn For the	nissio Month	on Eleme	nt Outa	ge by Indenting	agen	cy to	RPC		
Indenting	ig Agen cy			Line Det	For the	Month			Date					
				Line Det	- 11 -									
				une Det	ils					Proposed Date and Time				1
							Inter							
N	ame of the						Regional /							
Re	Requesting	Voltage	From	То			Intra	Daily/		From	From	То	To	
il.No. Aj	Agency	Level (kV)	Substation	Substation	Owner	Ckt ID	Regional	Continous	Reason	Date	Time	Date	Time	Remarks
Forr	mat I(B):	Reques	t For Bus	s, Bay, IC	Ts, Rea	actor,	FACTS, I	SCs, SV	Cs etc Outage b	y Inde	entin	g age	ncy 1	to RPC
Indenting	ig Agency				For the f	Month			Date	<u> </u>			_ 1	
				Line Deta	IIIS					Propos	sed Da	te and	IIme	
							Inter							
N	vame of the						Kegional /				.	_		
Ke	requesting	Voltage					intra De classel	Daily/	.	From	From	10	10	.

	For	ma	t II								~	<		
	Format I	I(A): Lis	t of Rece	ived Pro	posals	for T	ransmis	sion Ele	ment Outage fro	om Di	ffere	ent Ag	genc	ies
Name	ame of the RPC				For the I	Month			Date					
			Line Details						Propo	osed D	ate and	Time		
SI No.	Name of the Requesting	Voltage Level (kV)	From	To Substation	Owner	Ckt ID	Inter Regional / Intra Regional	Daily/	Reason	From	From	To	To Time	Remarks
51.140.	Agency	Level (kv)	Jubstation	Jubstation	Owner	-	Regional	Continious	1 14683011	Date	Inne	Date	Inne	INCINGING
	Format II(B): List o	of Receiv	ed Propo	osals fo	r Bu	s, Bay, IC	Ts, Read	tor, FACTS, FSC	s, SVC	is etc	Out	age f	rom
						Diffe	rent Age	encies						
Name	of the RPC				For the N	Ionth			Date					
				Line Deta	ils					Proposed Date and Time				
	Name of the						Inter Regional /	Della/			_			
SI.No.	Requesting Agency	voitage Level (kV)	Name of th	ne Element	Owner		intra Regional	Daily/ Continous	Reason	Prom Date	From Time	Date	io Time	Remarks

	For	m	at l													<	<		
				Forma	t III(A)	List	of OCC a	pprove	d shutdowns of	Trans	smis	sion L	ines						
Na	me of the RPC			Fo	r the Mor	th			Issue Date										
				Line Deta	ils					Propo	sed Da	ate and	Time	Appro	ved D	ate and	Time		
šlNo.	Name of the Requesting Azency	Voltage Level (kV)	From Substation	To Substation	Owner	Ckt ID	Inter Regional / Intra Regional	Daily/ Continous	Reason	From Date	From Time	To Date	To Time	From Date	From Time	To Date	To Time	Control Area/ Corridor impacted	Remarks
	Format III(B): List of OCC approved shutdowns of Bus, Bay, ICTs, Reactor, FACTS, FSCs, SVCs etc																		
N	ame of the RPC			R	or the Mo	nth			Issue Date										
				Line Deta	ails					Appro	oved D	ate and	Time	Appro	wed D	ate and	Time		
	Name of the Requesting	Voltage					Inter Regional / Intra	Daily/		From	From	То	То	From	Fram	To	То	Control Area/ Corridor	
SLNo	Agency	Level (kV)	Name of t	he Element	Owner	Ckt ID	Regional	Continous	Reason	Date	Time	Date	Time	Date	Time	Date	Time	impacted	Remarks

-				-
	Eormat IV: Rec	west for Transmissi Senting Agency to F	on Element Outage by LIDC/SLDC	
Format IV	Korra et the Report Address of the Repar	ns Remmu Hing Acetory		
	None of the signed	87		
	Acre dina peron			
	Gallage Level			
	ourse -	- + -		
	OCC Approved (rea/ to	61.1		
	December of O data	from Date.	To Date:	
	And an a second s	from Term-	To Time-	
	Qaliy/Continuous			
	Reason for Dutage			
	Approxing 8. storby	et.		
			r - 5	
	Place: Data Three		significae	

Format V: Request for Transmission Element Outage by RIGC to NUCC	
Format V: Request for Transmission Element Delage by REDC to NEDC	
Marrie of the Reguesting Agency	
Norm of the element	
101/062/200(001/207 705/207)	
Donwr	
DOC Alapitumus: VisioNea	
dCC Reference rise.	
Duration of Quage Providence To Safe Providence To Safe	
Type Only Concinent.	
Reapon for Gusage	
Earnest Vis (Ass	
latisfy Concustor Vec / Voc	
Nexuella of States Albeic met Yes / Mu	
Revision in TTC Required: Vesition Filter,	
R No. Consister Celgical TTC Rooker TTC Uniting Constrained	
Carecteons	
i never i	
Files: Dele New	
	Nordfitzersen i Talage and big i Dange i Dang



										1											
	Format VII																				
			Format	t VII(/	l): Mo	nthly S	shutd	own Repor	t For Ti	ansmis	sion	Lines	by R	LDC	s/SL	DCs					
Name affile NUDC/NDC	ettee																				
	Approvalide tails		LineDetail				0.	tage Details	Dute a	nd Time reque Indenting Agen	ited Ty	OCC Ap	proved d Time	sa	edule d	Date and	Time	Actu	al Dute and Time		
2.No Resetting Agency	ngamah Inau ngamah Inggra Judothykwane (awishi) (Judothi Judothi Judot																				
	Forr	nat VII	(B): Monthly	y Shut	down	Repo	rt For	For Bus, B	ay, ICT	s, React	or, F	ACTS	, FSC	s, SI	/Cs	etc b	y SL	DC	s/RLDCs		
Name of the						for the	Manth											Τ	Issuefate		
T	Ap proval D et ails		Line Details				Outage	Details	Date and by Inde	time requeste nting Agency		XCC Appro	eved Time	Scher	tul ed D	fe and T	ine A	ktuel	Date and Time		
Reasing LNo. Agency	Approvin E Approva AuthorityNumber	l Voltage Level (kV)	Name of the element	Owner	ister Regional / Istra Regional	Planed/ Emergency	Daily/ Continuo	Rezion	From En	en To To Na Date Tim	from Date	from To Time Da	to te Time	from Date	from Time	1o 1 Date 1	o fec	om fr	om To To me Date Time	Revision in TT	C Itemarks

Annexure-II

List of RTU supplied but never reported to SLDC under ULDC scheme (status as on 12-02-2013)

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		132	Dumraon *	
2		220		Khagaul *
3	BSEB	132		Koshi*
4		132		Purnea *
5		132	Sitamarhi*	

List of RTU which has stopped reporting since very long under ULDC scheme(status as on 12-02-2013)

SL	Name of Utility	КV	Name of station	Name of station (Priority)
no				
1		132		Barauni TPS
2		132		Dehri
3	DCED	132		Karmanasa
4	DJED	132	Ramdayalu Grid	
5		132	Siwan	
6		132		Sultanganj

List of RTU under ULDC scheme where data is faulty/intermittent(status as on 12-02-2013)

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	DCED	132	Sonenagar	
2	DJED	132	Ramdaylu Grid	

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		220		Gopalganj
2		220		Darbhanga
3		220		Begusarai
4	DCED	132		Kisanganj
5	DJED	132		Arrah
6		132		Rajgir
7		132		Jagdishpur
8		220		Sipara

List of RTU supplied but never reported to SLDC under ULDC scheme (status as on 12-02-2013)

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	DVC	132	Patratu *	

List of RTU which has stopped reporting since very long under ULDC scheme(status as on 12-02-2013)

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		132	Putki	
2	DVC	132	Patherdiah	
3		132	Kalipahari	

List of RTU under ULDC scheme where data is faulty/intermittent(status as on 12-02-2013)

SL	Name of Utility	КV	Name of station	Name of station (Priority)
no				
1		220		220 KV CTPS – B(2x 250 MW)
2		400		DSTPS
3		132	Mosabani	
4	DVC	132		Jamshepur
5		132	Kumardubhi	
6		132	Panchet HPS	
7		400		Mejia -B

List of additional elements/feeder whose data is not available -station under ULDC project

SL no	Name of Utility	KV	Name of station	Name of station
1	DVC	220	Ramgarh	

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		400		Raghunathpur
2	DVC	220		Burnpur
3	DVC	220		Dhanbad
4		132		Chandil (Manique)

List of RTU supplied but never reported to SLDC under ULDC scheme (status as on 12-02-2013)

SL	Name of Utility	кν	Name of station	Name of station (Priority)
110				
1	OPTCL	220		Nalco*

List of RTU which has stopped reporting since very long under ULDC scheme(status as on 12-02-2013)

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	OPTCL	132		Machkund HPS

List of RTU under ULDC scheme where data is faulty/intermittent(status as on 12-02-2013)

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		132	Rairangpur	
2	OPTCL	132	ICCL	
3		132	Boalngir (o)	

List of additional elements/feeder whose data is not available -station under ULDC project

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	OPTCL	220		220 KV Vedanta (9X 135 MW)

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	OPTCL	400		JSL (Meramundali -400)

List of RTU which has stopped reporting since very long under ULDC scheme(status as on 12-02-2013)

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		220		Ramchandrapur
2		132		Jamtara
3		132		Deoghar
4		132		Garwah
5	ICER	132	Goelkera	
6	JJED	132	Jaduguda	
7		132	Kendposi	
8		132	Rajkharswan	
9		220		Patratu TPS
10		220		Tenughat TPS

List of RTU under ULDC scheme where data is faulty/intermittent(status as on 12-02-2013)

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	ISEB	132	Hatia	
2	JJED	132	Subranarekha	

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		220		Hatia New
2	JSEB	132		Manique (Chandil)
3		132		Japla

List of RTU which has stopped reporting since very long under ULDC scheme(status as on 12-02-2013)

SL	Name of Utility	кν	Name of station	Name of station (Priority)
no				
1	WBSETCL	220		DPL

List of RTU under ULDC scheme where data is faulty/intermittent(status as on 12-02-2013)

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		400		400 KV PPSP (4X 225 MW)*
2		400		Sagardighi TPS
3	WBSETCL	132	Bishnupur	
4		132	Alipurduar	
5		132	Birpara	

List of additional elements/feeder whose data is not available -station under ULDC project

SL no	Name of Utility	кv	Name of station	Name of station (Priority)
1	WBSETCL	220		DPL

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
1		400		Bidhan Nagar
2		400		Khargpur
3		200		Subhasgram
4		200	New Bishnupur	
5		200	Bantala	
6		200	New Town	
7		200	Krishna Nagar	
8		132		Karsueng
	WBSETCL	132	CESC generating Generator :	
			Budge Budge, Titagarh,	
9			Southern, New Cossipore	
10		220	CESC S/s: EM 220 kV	
		132	CESC : S/s :Kasba-132 kV, EM-	
			132 kV Jadavpur, Chakmir,	
11			Majerhat and CESC Belur.	
12		66		Kalingpong
13		220		Dalkhola

List of additional elements/feeder whose data is not available -station under ULDC project

SL	Name of Utility	KV	Name of station	Name of station (Priority)
no				
		400		400 kV Kahalgaon STPS : (4X 210
				+ 3X 500 MW)primary(LV) side of
	NTDC			GT is not available.
1	NIPC			
		400		400 kV Farakka : (3x 200 + 2 x
2				500 MW)

New station whose data is not available (POST ULDC PROJECT) - ISGS/IPP/Central sector/constituents-400KV,220KV,and important 132 KV

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	NTPC	400		NTPC Barh

List of RTU which has stopped reporting since very long under ULDC

SL no	Name of Utility	КV	Name of station	Name of station (Priority)
1	NHPC	132		Rangit

New station whose data is not available (POST ULDC PROJECT) -

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	MPL	400		400 KV Maithon Right bank (2X 525 MW)

List of RTU which has stopped reporting since very long under ULDC

SL no	Name of Utility	KV	Name of station	Name of station (Priority)
1	SIKKIM	132		Melli

For M/s MTPC Limited (Barn TPS

OSTC Cmer

Asservare V

Annexure-III

(To be decided by LD&C group)

Requirement of Channels : 2 Nes Data Channel (600Baud) & 1no. Speech Channel

Data Collection Point (DCP) : Khatgaon TPS (Existing Wideband Node of POWERGRID)

1. PLCC based Communication Link :

Earn TPS Generating Station - 400kV Khalgaon TPS : 2 Nos. of 4KHz link

 Wideband Communication Link(POWERGRID Portion - Configuration of Data & Voice channel in Wideband section) :

+DOKV Khalgaon TPS (Existing Wideband Node of POWERGRID) - ERLDC, Kolkata

Note

1. Bart TPS Generating Station of NTPC has been proposed to be a wideband node under the "Establishment of Fibre Optic Communication System for Central sector substations a generating stations in Eastern Region" project approved by ERPC and is under mplementation. Till the implementation of the said communication project, the speech and data of Bart TPS Generating Station of NTPC shall be routed to 400kV Khelgeon STPP(Data Collection Point) through the PLCC channel available on the Bart TPS - Khalgaon STPP Link

के. एस. गरम्याल / K. S. Garbyal महाप्रवेषक प्रभावी (बाढ़) / Gen. Manager W (Ban) रन्द्रीपीती बाढ़ / तु.स. प्रफ्रो ANTPC Bani, STPP तो.-एनटीपीसी बाढ़ा, जिल्लान्सटना Post-NTPC Ban, Dist.-Pama, Pin-803215

and the second of the second s

#3764 P.002

Annexure-IV

STATION: MALDA (PG) 2 X 315 MVA 400/220 KV ATR

TAP	220KV	400KV	P.U
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

STATION :	MALDA 3X50 MVA 220/132
	KV ATR

132 KV

151.8

150.15

148.5

146.85

145.2

143.55

141.9

140.25

138.6

136.95

135.2

133.65

132

130.35

128.7

127.05

125.4

P.U

1.150

1.138

1.125

1.113

1.100

1.088

1.075

1.063

1.050

1.038

1.024

1.013

1.000

0.988

0.975

0.963

0.950

220KV

220

220

220

220

220

220

220

220

220

220

220

220

220

220

220

220

220

TAP

1 2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

STATION : NEW PURNEA 1X315 MVA+ 500 MVA 400/220 KV

TAP	220KV	400KV	P.U
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

BIRPARA 1X100+1X 220/132 KV ATR

STATION:

TAP	220KV	132 KV	P.U
1	220	151.8	1.150
2	220	150.15	1.138
3	220	148.5	1.125
4	220	146.85	1.113
5	220	145.2	1.100
6	220	143.55	1.088
7	220	141.9	1.075
8	220	140.25	1.063
9	220	138.6	1.050
10	220	136.95	1.038
11	220	135.2	1.024
12	220	133.65	1.013
13	220	132	1.000
14	220	130.35	0.988
15	220	128.7	0.975
16	220	127.05	0.963
17	220	125.4	0.950

STATION : BARIPADA 2X315 MVA 400/220 KV ATR

TAP	220KV	400KV	P.U
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

STATION:

CHPC 220/11 KV GT U 1-4 (90 MW EACH)

TAP	PRI	SEC	P.U
1	11	235.5	1.070455
2	11	231	1.05
3	11	225.5	1.025
4	11	220	1
5	11	214.5	0.975

GT/ICT TAP DETAILS OF DVC SYSTEM

STATION: BTPS-B GT (U1 1-3, 250 MVA EACH)

TAP	PRI	SEC	PU
1	15.75	236.50	1.075
2	15.75	231.00	1.050
3	15.75	225.50	1.025
4	15.75	220.00	1.000
5	15.75	214.50	0.975
6	15.75	209.00	0.950

STATION : BOKARO (B) 2X150 MVA 220/132 KV ATR, MAKE: CROMPTON

TAP	132KV	220KV	P.U
1	132.00	242.00	1.1000
2	132.00	239.25	1.0875
3	132.00	236.50	1.0750
4	132.00	233.75	1.0625
5	132.00	231.00	1.0500
6	132.00	228.25	1.0375
7	132.00	225.50	1.0250
8	132.00	222.75	1.0125
9	132.00	220.00	1.0000
10	132.00	217.25	0.9875
11	132.00	214.50	0.9750
12	132.00	211.75	0.9625
13	132.00	209.00	0.9500
14	132.00	206.25	0.9375
15	132.00	203.50	0.9250
16	132.00	200.75	0.9125
17	132.00	198.00	0.9000

STATION : Mejia 220 KV GT U# 1-4, 250 MVA

TAP	PRI	SEC	PU
1	15.75	231	1.050
2	15.75	225.5	1.025
3	15.75	220	1.000
4	15.75	214.5	0.975
5	15.75	209.0	0.950

STATION : CTPS- 132 KV GT (U1 1-4, 165/140 MVA EACH)

TAP	PRI	SEC	PU
1	13.8	138.60	1.050
2	13.8	135.30	1.025
3	13.8	132.00	1.000
4	13.8	128.70	0.975
5	13.8	125.40	0.950

STATION : Mejia 220 KV GT (U# 5-6, 315 MVA)

TAP	PRI	SEC	PU
1	16.5	252	1.050
2	16.5	246	1.025
3	16.5	240	1.000
4	16.5	234	0.975
5	16.5	228	0.950

STATION : CTPS- 220 KV GT (U1 5,6 140 MVA EACH)

TAP	PRI	SEC	PU
1	13.8	231.00	1.050
2	13.8	225.50	1.025
3	13.8	220.00	1.000
4	13.8	214.50	0.975
5	13.8	209.00	0.950

CTPS 220 KV GT (U1 7, STATION : 315 MVA)

TAP	PRI	SEC	PU
1	16.5	252	1.050
2	16.5	246	1.025
3	16.5	240	1.000
4	16.5	234	0.975
5	16.5	228	0.950
	TAP 1 2 3 4 5	TAP PRI 1 16.5 2 16.5 3 16.5 4 16.5 5 16.5	TAP PRI SEC 1 16.5 252 2 16.5 246 3 16.5 240 4 16.5 234 5 16.5 228

CHANDRAPURA 100 MVA 220/132 KV	CT A
ATR 2 MAKE: BHEL	51A

STATION :	CHANDRAPURA 1X150	
	MVA 220/132 KV	

-			
TAP	132KV	220KV	P.U
1	145.20	220.00	1.1000
2	143.55	220.00	1.0875
3	141.90	220.00	1.0750
4	140.25	220.00	1.0630
5	138.60	220.00	1.0500
6	136.95	220.00	1.0375
7	135.30	220.00	1.0250
8	133.65	220.00	1.0125
9	132.00	220.00	1.0000
10	130.35	220.00	0.9875
11	128.70	220.00	0.9750
12	127.05	220.00	0.9625
13	125.40	220.00	0.9500
14	123.75	220.00	0.9375
15	122.10	220.00	0.9250
16	120.45	220.00	0.9125
17	118.80	220.00	0.9000

STATION :

TAP	132KV	220KV	P.U
1	132.00	242.00	1.1000
2	132.00	230.25	1.0875
3	132.00	236.50	1.0750
4	132.00	233.75	1.0625
5	132.00	231.00	1.0500
6	132.00	228.25	1.0375
7	132.00	225.50	1.0250
8	132.00	222.75	1.0125
9	132.00	220.00	1.0000
10	132.00	217.25	0.9875
11	132.00	214.5	0.9750
12	132.00	211.75	0.9625
13	132.00	209.00	0.9500
14	132.00	206.25	0.9375
15	132.00	203.50	0.9250
16	132.00	200.75	0.9125
17	132.00	198.00	0.9000

WARIA 2X150 MVA STATION : 220/132 KV ATR 1 & 2, MAKE: TELK

TAP	132KV	220KV	P.U
1	132	242.00	1.1000
2	132	239.25	1.0875
3	132	236.50	1.0750
4	132	233.75	1.0625
5	132	231.00	1.0500
6	132	228.25	1.0375
7	132	225.50	1.0250
8	132	222.75	1.0125
9	132	220.00	1.0000
10	132	217.25	0.9875
11	132	214.5	0.9750
12	132	211.75	0.9625
13	132	209.00	0.9500
14	132	206.25	0.9375
15	132	203.50	0.9250
16	132	200.75	0.9125
17	132	198.00	0.9000

STATION: WARIA 132 KV GT (U 1 to 3, 165 MVA)

TAP	PRI	SEC	PU
1	13.2	138.60	1.050
2	13.2	135.30	1.025
3	13.2	132.00	1.000
4	13.2	128.70	0.975
5	13.2	125.40	0.950

STATION : WARIA 220 KV GT (UI 4, 250 MVA)

TAP	PRI	SEC	PU
1	15.75	231.00	1.050
2	15.75	225.50	1.025
3	15.75	220.00	1.000
4	15.75	214.50	0.975
5	15.75	209.00	0.950

STATION : RAMGARH 2X150 MVA 220/132 KV ATR 1 & 2

TAP	132KV	220KV	P.U
1	132	242.00	1.1000
2	132	239.25	1.0875
3	132	236.50	1.0750
4	132	233.75	1.0625
5	132	231.00	1.0500
6	132	228.25	1.0375
7	132	225.50	1.0250
8	132	222.75	1.0125
9	132	220.00	1.0000
10	132	217.25	0.9875
11	132	214.5	0.9750
12	132	211.75	0.9625
13	132	209.00	0.9500
14	132	206.25	0.9375
15	132	203.50	0.9250
16	132	200.75	0.9125
17	132	198.00	0.9000

STATION : JAMSHEDPUR 2X150 MVA 220/132 KV 1&2

TAP	132KV	220KV	P.U
1	132.00	242.00	1.1000
2	132.00	230.25	1.0875
3	132.00	236.50	1.0750
4	132.00	233.75	1.0625
5	132.00	231.00	1.0500
6	132.00	228.25	1.0375
7	132.00	225.50	1.0250
8	132.00	222.75	1.0125
9	132.00	220.00	1.0000
10	132.00	217.25	0.9875
11	132.00	214.50	0.9750
12	132.00	211.75	0.9625
13	132.00	209.00	0.9500
14	132.00	206.25	0.9375
15	132.00	203.50	0.9250
16	132.00	200.75	0.9125
17	132.00	198.00	0.9000

ICT / GT TAP DETAILS IN GRIDCO

2	JAYNAGA	R 2X100 I	MVA		THER	UVALI 2X	100 MVA			<u>BHANJA</u>	NAGAR 1	X100+1X1	160 MVA			NARE	NDRAPU	<u>R.</u>		<u>T.T.P.</u>	<u>S. 150 MV</u>	Ά,
	220/13	32 KV ATR	2			220/132 k	<v atr<="" td=""><td></td><td></td><td></td><td>220/132 H</td><td><v atr<="" td=""><td></td><td></td><td>22</td><td>X160 MVA</td><td>, 220/132</td><td>KV ATR</td><td></td><td>220/13</td><td>2 KV ATR</td><td>2</td></v></td></v>				220/132 H	<v atr<="" td=""><td></td><td></td><td>22</td><td>X160 MVA</td><td>, 220/132</td><td>KV ATR</td><td></td><td>220/13</td><td>2 KV ATR</td><td>2</td></v>			22	X160 MVA	, 220/132	KV ATR		220/13	2 KV ATR	2
	MAKE : (CROMPTO	NC		MAKE	: AT1-GE0	C, AT2-BH	EL			MAKE : N	IGEF								MAKE	: GE	
				-		-		-	-											TAP	220 KV	13
TAP	132 KV	220 KV	PU		TAP	132 KV	220 KV	PU		TAP	132 KV	220 KV	PU		TAP	220 KV	132 KV	PU		1	220	11
1	132.00	242.00	1.1000		1	145.20	220	1.1000		1	145.20	220	1.1000		1	220	151.80	1.1500		2	220	11
2	132.00	239.25	1.0875		2	145.55	220	1.0875		2	145.55	220	1.0875		2	220	150.15	1.1375		3	220	12
3	132.00	236.50	1.0750		3	141.90	220	1.0750		3	141.90	220	1.0750		3	220	148.50	1.1250		4	220	12
4	132.00	233.75	1.0625		4	140.25	220	1.0625		4	140.25	220	1.0625		4	220	146.85	1.1125		5	220	12
5	132.00	231.00	1.0500		5	138.60	220	1.0500		5	138.60	220	1.0500		5	220	145.20	1.1000		6	220	12
6	132.00	228.25	1.0375		6	136.95	220	1.0375		6	136.95	220	1.0375		6	220	143.55	1.0875		7	220	12
7	132.00	225.50	1.0250		7	135.30	220	1.0250		7	135.30	220	1.0250		7	220	141.90	1.0750		8	220	12
8	132.00	222.75	1.0125		8	133.65	220	1.0125		8	133.65	220	1.0125		8	220	140.25	1.0625		9	220	12
9	132.00	220.00	1.0000		9	132.00	220	1.0000		9	132.00	220	1.0000		9	220	138.60	1.0500		10	220	12
10	132.00	217.25	0.9875		10	130.35	220	0.9875		10	130.35	220	0.9875		10	220	136.95	1.0375		11	220	12
11	132.00	214.50	0.9750		11	128.70	220	0.9750		11	128.70	220	0.9750		11	220	135.30	1.0250		12	220	12
12	132.00	211.75	0.9625		12	127.05	220	0.9625		12	127.05	220	0.9625		12	220	133.65	1.0125		13	220	12
13	132.00	209.00	0.9500		13	125.40	220	0.9500		13	125.40	220	0.9500		13	220	132.00	1.0000		14	220	12
14	132.00	206.25	0.9375		14	123.75	220	0.9375		14	123.75	220	0.9375		14	220	130.35	0.9875		15	220	13
15	132.00	203.50	0.9250		15	122.10	220	0.9250		15	122.10	220	0.9250		15	220	128.70	0.9750		16	220	13
16	132.00	200.75	0.9125		16	120.45	220	0.9125		16	120.45	220	0.9125		16	220	127.05	0.9625		17	220	13
17	132.00	198.00	0.9000		17	118.80	220	0.9000		17	118.80	220	0.9000		17	220	125.40	0.9500		18	220	13
				•					-		•			•					·	19	220	13
	BURLA G	GT U4 1-7									BALIMEL	A GT U 1-	-6			BALIMEL	A GT U 7-	8		20	220	13
	(U 1,2,5,6	6,7 EACH	37.5 MW)			RENGA	_I GT U 1-	5			(60 MW E	EACH)				(75 MW E	ACH)			21	220	13
	U 3,4 EA	CH 24 MV	V) .			(50 M\	N EACH)				,	,					,			22	220	13
			,				,			TAP	PRI	SEC	P.U.	1	TAP	PRI	SEC	P.U.		23	220	13
TAP	PRI	SEC	P.U.	I I	TAP	PRI	SEC	P.U.	1			(PHASE)					(PHASE)			24	220	13
FIXED	11	132	1	i I	1	11	235	1.0682	1	1	11	146.7	1.1550	1	1	11	150.2	1.1827		25	220	13
					2	11	230	1.0455		2	11	143.21	1.1275		2	11	146.7	1.1551		26	220	13
	CHIPLIM	A GT U 1-	3		3	11	225	1.0227		3	11	139.72	1.1000		3	11	143.21	1.1276		27	220	14
	(24 MW E	EACH)			4	11	220	1.0000		4	11	136.23	1.0725		4	11	139.72	1.1001		28	220	14
TAP	PRI	SÉC	P.U.	1	5	11	215	0.9773		5	11	132.24	1.0411		5	11	136.22	1.0726		29	220	14

(U U 3

TAP	PRI	SEC	P.U.		
FIXED	11	132	1		
CHIPLIMA GT U 1-3					
(24 MW EACH)					
TAP	PRI	SEC	P.U.		
FIXED	11	132	1		

	17.11	1 1 1 1	OLO	
P.U.			(PHASE)	
1.0682	1	11	146.7	1.1
1.0455	2	11	143.21	1.1
1.0227	3	11	139.72	1.1
1.0000	4	11	136.23	1.0
0.9773	5	11	132.24	1.0

TAP	PRI	SEC	P.U.
		(PHASE)	
1	11	150.2	1.1827
2	11	146.7	1.1551
3	11	143.21	1.1276
4	11	139.72	1.1001
5	11	136.22	1.0726
6	11	132.73	1.0451
7	11	129.24	1.0176

	MAKE · GE					
	TAP	220 KV	132 KV	PU		
	1	220	118.80	0.9000		
	2	220	119.63	0.9063		
	3	220	120.45	0.9125		
	4	220	121.28	0.9188		
	5	220	122.10	0.9250		
	6	220	122.93	0.9313		
	7	220	123.75	0.9375		
	8	220	124.58	0.9438		
	9	220	125.40	0.9500		
	10	220	126.23	0.9563		
	11	220	127.05	0.9625		
	12	220	127.88	0.9688		
	13	220	128.70	0.9750		
	14	220	129.53	0.9813		
	15	220	130.35	0.9875		
	16	220	131.18	0.9938		
	17	220	132.00	1.0000		
ļ	18	220	132.83	1.0063		
	19	220	133.65	1.0125		
	20	220	134.48	1.0188		
	21	220	135.20	1.0250		
-	22	220	136.13	1.0313		
	23	220	136.95	1.0375		
	24	220	137.78	1.0438		
	25	220	138.60	1.0500		
	26	220	139.43	1.0563		
	27	220	140.25	1.0625		
	28	220	141.08	1.0688		
	29	220	141.90	1.0750		
	30	220	142.73	1.0813		
Ţ	31	220	143.55	1.0875		
	32	220	144.38	1.0938		
	33	220	145.20	1.1000		

ICT / GT TAP DETAILS IN GRIDCO

DUBURI 3X100 MVA 220/132 KV ATR MAKE : GEC

<u>T.T.P.S. 2X160 MVA</u>
220/132 KV ATR
MAKE : NGEF

BALASORE 2X100 MVA 220/132 KV ATR

INDRAVATI 315 MVA 400/220 KV ATR-I

TAP	220 KV	132 KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	132.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

TAP	220 KV	132 KV	PU
1	220	151.80	1.1500
2	220	150.15	1.1375
3	220	148.50	1.1250
4	220	146.85	1.1125
5	220	145.20	1.1000
6	220	143.55	1.0875
7	220	141.90	1.0750
8	220	140.25	1.0625
9	220	138.60	1.0500
10	220	136.95	1.0375
11	220	135.30	1.0250
12	220	133.65	1.0125
13	220	132.00	1.0000
14	220	130.35	0.9875
15	220	128.70	0.9750
16	220	127.05	0.9625
17	220	125.40	0.9500

TAP	220 KV	132 KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	132.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

TAP	220 KV	400 KV	P.U.
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

TTPS ST.I GT U# 1-4 (60 MW EACH)

TAP	220 KV	132 KV	PU
1	13.8	145.30	1.1008
2	13.8	141.90	1.0750
3	13.8	138.70	1.0508
4	13.8	135.40	1.0258
5	13.8	132.00	1.0000
6	13.8	128.80	0.9758

TTPS ST.II GT U# 5-6

11

9

TAP	220 KV	132 KV	PU				
1	11	264	1.2000				
2	11	258	1.1727				
3	11	252	1.1455				
4	11	246	1.1182				
5	11	240	1.0909				
6	11	234	1.0636				
7	11	228	1.0364				
8	11	222	1.0091				

216

0.9818

U. KOLAB GT U 1-4

(80 MW EACH)						
TAP	PRI	SEC	P.U.			
1	11	247.25	1.1239			
2	11	241.50	1.0977			
3	11	235.75	1.0717			
4	11	230.00	1.0455			
5	11	224.25	1.0193			
6	11	218.50	0.9932			

MAKE : BHEL							
TAP 132 KV 220 KV PU							
1	145.20	220	1.1000				
2	143.55	220	1.0875				
3	141.90	220	1.0750				
4	140.25	220	1.0625				
5	138.60	220	1.0500				
6	136.95	220	1.0375				
7	135.30	220	1.0250				
8	133.65	220	1.0125				
9	122.00	220	1.0000				
10	130.35	220	0.9875				
11	128.70	220	0.9750				
12	127.05	220	0.9625				
13	125.40	220	0.9500				
14	123.75	220	0.9375				
15	122.10	220	0.9250				
16	120.45	220	0.9125				
17	118.80	220	0.9000				

CHANDAKA 3X100 MVA

220/132 KV ATR

BUDIPADAR 2x160MVA										
TAP	TAP 220 KV 132 KV PU									
1	220	145.20	1.100							
2	220	143.55	1.088							
3	220	141.90	1.075							
4	220	140.25	1.063							
5	220	138.60	1.050							
6	220	136.95	1.038							
7	220	135.30	1.025							
8	220	133.65	1.013							
9	220	132.00	1.000							
10	220	130.35	0.988							
11	220	128.70	0.975							
12	220	127.05	0.963							
13	220	125.40	0.950							
14	220	123.75	0.938							
15	220	122.10	0.925							
16	220	120.45	0.913							
17	17 220 118.80 0.900									

KATAPALI 2X100 MVA 220/132 KV ATR MAKE : BHEL

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	143.55	220	1.0875
3	141.90	220	1.0750
4	140.25	220	1.0625
5	138.60	220	1.0500
6	136.95	220	1.0375
7	135.30	220	1.0250
8	133.65	220	1.0125
9	132.00	220	1.0000
10	130.35	220	0.9875
11	128.70	220	0.9750
12	127.05	220	0.9625
13	125.40	220	0.9500
14	123.75	220	0.9375
15	122.10	220	0.9250
16	120.45	220	0.9125
17	118.80	220	0.9000

BIDANASI 2X100 MVA
220/132 KV ATR
MAKE : BHEL

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	143.55	220	1.0875
3	141.90	220	1.0750
4	140.25	220	1.0625
5	138.60	220	1.0500
6	136.95	220	1.0375
7	135.30	220	1.0250
8	133.65	220	1.0125
9	132.00	220	1.0000
10	130.35	220	0.9875
11	128.70	220	0.9750
12	127.05	220	0.9625
13	125.40	220	0.9500
14	123.75	220	0.9375
15	122.10	220	0.9250
16	120.45	220	0.9125
17	118.80	220	0.9000

IBTPS 220 KV GT U # 1-2, 250 MVA

TAP	PRI	SEC	PU
1	15.75	231	1.050
2	15.75	225.5	1.025
3	15.75	220	1.000
4	15.75	214.5	0.975
5	15.75	209	0.950

TARKERA 4X100 MVA 220/132 KV ATR MAKE : BHEL

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	143.55	220	1.0875
3	141.90	220	1.0750
4	140.25	220	1.0625
5	138.60	220	1.0500
6	136.95	220	1.0375
7	135.30	220	1.0250
8	133.65	220	1.0125
9	132.00	220	1.0000
10	130.35	220	0.9875
11	128.70	220	0.9750
12	127.05	220	0.9625
13	125.40	220	0.9500
14	123.75	220	0.9375
15	122.10	220	0.9250
16	120.45	220	0.9125
17	118.80	220	0.9000

New Bolangir 2X100 MVA 220/132 KV ATR

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	143.55	220	1.0875
3	141.90	220	1.0750
4	140.25	220	1.0625
5	138.60	220	1.0500
6	136.95	220	1.0375
7	135.30	220	1.0250
8	133.65	220	1.0125
9	122.00	220	1.0000
10	130.35	220	0.9875
11	128.70	220	0.9750
12	127.05	220	0.9625
13	125.40	220	0.9500
14	123.75	220	0.9375
15	122.10	220	0.9250
16	120.45	220	0.9125
17	118.80	220	0.9000

ICT / GT TAP DETAILS IN GRIDCO

$\begin{array}{c c c c c c c c c c c c c c c c c c c $		JODA 100 MVA		JODA 100 MVA				
MAKE : NGEFMAKE : GETAP220 KV132 KVPU1220118.80.90001220119.60.90632220144.381.09383220120.50.91253220144.381.08754220121.30.91884220142.731.08135220122.90.93136220144.381.06887220123.80.93757220144.081.06859220124.60.94388220138.601.05009220126.20.956310220136.951.037512220127.90.968812220136.951.037514220129.50.981314220136.551.012516220131.20.993816220134.481.018815220136.11.0313220136.31.025017220136.31.006318220137.71.037523220127.980.987515220130.350.98752020134.51.018820220130.350.987515220130.350.98752020134.51.018820220130.350.987523220136.10.93821220136.11.031322220127.880		220/132 KV ATR 1			220/132 KV ATR 2			2
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		MAKE :	NGEF		 	MAKE :	GE	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	TAP	220 KV	132 KV	PU	TAP	220 KV	132 KV	PU
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	220	118.8	0.9000	1	220	145.20	1.1000
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2	220	119.6	0.9063	2	220	144.38	1.0938
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	3	220	120.5	0.9125	3	220	143.55	1.0875
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	4	220	121.3	0.9188	4	220	142.73	1.0813
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	5	220	122.1	0.9250	5	220	141.90	1.0750
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	6	220	122.9	0.9313	6	220	141.08	1.0688
8 220 124.6 0.9438 8 220 139.43 1.0563 9 220 125.4 0.9500 9 220 138.60 1.0500 10 220 126.2 0.9563 10 220 137.78 1.0438 11 220 127.9 0.9688 12 220 136.95 1.0375 12 220 128.7 0.9750 13 220 135.30 1.0250 14 220 130.4 0.9875 15 220 132.83 1.0063 16 220 132.8 1.0000 17 220 132.00 1.0000 17 220 132.8 1.0063 18 220 133.5 0.9875 20 220 134.5 1.0188 20 220 130.35 0.9875 21 220 135.3 1.0250 19 220 130.35 0.9875 220 137.8 1.0438	7	220	123.8	0.9375	7	220	140.25	1.0625
9 220 125.4 0.9500 9 220 138.60 1.0500 10 220 126.2 0.9563 10 220 137.78 1.0438 11 220 127.1 0.9625 11 220 136.95 1.0375 12 220 127.9 0.9688 12 220 136.13 1.0313 13 220 128.7 0.9750 13 220 134.48 1.0188 15 220 130.4 0.9875 15 220 133.65 1.0125 16 220 132.8 1.0000 17 220 132.00 1.0000 18 220 133.7 1.0125 19 220 133.5 0.9875 20 134.5 1.0188 20 220 136.1 1.0313 22 220 136.1 0.9938 19 220 135.3 1.0250 21 220 136.4 0.9688 21 220 136.1 1.0313 22 220 127.05 0.9625 <td>8</td> <td>220</td> <td>124.6</td> <td>0.9438</td> <td>8</td> <td>220</td> <td>139.43</td> <td>1.0563</td>	8	220	124.6	0.9438	8	220	139.43	1.0563
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	9	220	125.4	0.9500	9	220	138.60	1.0500
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	10	220	126.2	0.9563	10	220	137.78	1.0438
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	11	220	127.1	0.9625	11	220	136.95	1.0375
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	12	220	127.9	0.9688	12	220	136.13	1.0313
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	13	220	128.7	0.9750	13	220	135.30	1.0250
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	14	220	129.5	0.9813	14	220	134.48	1.0188
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	15	220	130.4	0.9875	15	220	133.65	1.0125
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	16	220	131.2	0.9938	16	220	132.83	1.0063
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	17	220	132	1.0000	17	220	132.00	1.0000
19 220 133.7 1.0125 19 220 130.35 0.9875 20 220 134.5 1.0188 20 220 129.53 0.9813 21 220 135.3 1.0250 21 220 128.70 0.9750 22 220 136.1 1.0313 22 220 127.88 0.9688 23 220 137.8 1.0438 24 220 126.23 0.9563 25 220 138.6 1.0500 25 220 124.58 0.9488 27 220 139.4 1.0563 26 220 126.23 0.9500 26 220 139.4 1.0563 26 220 124.58 0.9438 27 220 141.3 1.0625 27 220 122.10 0.9250 28 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 122.8 0.9188 31 220 <td< td=""><td>18</td><td>220</td><td>132.8</td><td>1.0063</td><td>18</td><td>220</td><td>131.18</td><td>0.9938</td></td<>	18	220	132.8	1.0063	18	220	131.18	0.9938
20 220 134.5 1.0188 20 220 129.53 0.9813 21 220 135.3 1.0250 21 220 128.70 0.9750 22 220 136.1 1.0313 22 220 127.88 0.9688 23 220 137.8 1.0438 24 220 126.23 0.9563 25 220 138.6 1.0500 25 220 124.58 0.9563 26 220 139.4 1.0563 26 220 123.75 0.9375 28 220 141.1 1.0688 28 220 123.75 0.9375 28 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 122.10 0.9250 31 220 143.6 1.0875 31 220 122.8 0.9188 31 220 144.4 1.0938 32 220 124.50 0.9063 32 220 <td< td=""><td>19</td><td>220</td><td>133.7</td><td>1.0125</td><td>19</td><td>220</td><td>130.35</td><td>0.9875</td></td<>	19	220	133.7	1.0125	19	220	130.35	0.9875
21 220 135.3 1.0250 21 220 128.70 0.9750 22 220 136.1 1.0313 22 220 127.88 0.9688 23 220 137 1.0375 23 220 127.05 0.9625 24 220 137.8 1.0438 24 220 126.23 0.9563 25 220 139.4 1.0563 26 220 124.58 0.9438 27 220 141.1 1.0688 28 220 122.93 0.9375 28 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 122.10 0.9250 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	20	220	134.5	1.0188	20	220	129.53	0.9813
22 220 136.1 1.0313 22 220 127.88 0.9688 23 220 137 1.0375 23 220 127.05 0.9625 24 220 137.8 1.0438 24 220 126.23 0.9563 25 220 139.4 1.0563 26 220 124.40 0.9500 26 220 140.3 1.0625 27 220 123.75 0.9375 28 220 141.1 1.0688 28 220 122.93 0.9313 29 220 142.7 1.0813 30 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	21	220	135.3	1.0250	21	220	128.70	0.9750
23 220 137 1.0375 23 220 127.05 0.9625 24 220 137.8 1.0438 24 220 126.23 0.9563 25 220 138.6 1.0500 25 220 124.58 0.9503 26 220 139.4 1.0563 26 220 124.58 0.9438 27 220 141.3 1.0625 27 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 144.4 1.0938 32 220 124.58 0.9063 33 220 144.4 1.0938 32 220 118.80 0.9000	22	220	136.1	1.0313	22	220	127.88	0.9688
24 220 137.8 1.0438 24 220 126.23 0.9563 25 220 138.6 1.0500 25 220 125.40 0.9503 26 220 139.4 1.0563 26 220 124.58 0.9438 27 220 140.3 1.0625 27 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 144.4 1.0938 32 220 124.52 0.9105 32 220 144.4 1.0938 32 220 118.80 0.9000	23	220	137	1.0375	23	220	127.05	0.9625
25 220 138.6 1.0500 25 220 125.40 0.9500 26 220 139.4 1.0563 26 220 124.58 0.9438 27 220 140.3 1.0625 27 220 122.75 0.9375 28 220 141.1 1.0688 28 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 118.80 0.9000	24	220	137.8	1.0438	24	220	126.23	0.9563
26 220 139.4 1.0563 26 220 124.58 0.9438 27 220 140.3 1.0625 27 220 123.75 0.9375 28 220 141.1 1.0688 28 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	25	220	138.6	1.0500	25	220	125.40	0.9500
27 220 140.3 1.0625 27 220 123.75 0.9375 28 220 141.1 1.0688 28 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	26	220	139.4	1.0563	26	220	124.58	0.9438
28 220 141.1 1.0688 28 220 122.93 0.9313 29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	27	220	140.3	1.0625	27	220	123.75	0.9375
29 220 141.9 1.0750 29 220 122.10 0.9250 30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	28	220	141.1	1.0688	28	220	122.93	0.9313
30 220 142.7 1.0813 30 220 121.28 0.9188 31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	29	220	141.9	1.0750	29	220	122.10	0.9250
31 220 143.6 1.0875 31 220 120.45 0.9125 32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	30	220	142.7	1.0813	30	220	121.28	0.9188
32 220 144.4 1.0938 32 220 119.63 0.9063 33 220 145.2 1.1000 33 220 118.80 0.9000	31	220	143.6	1.0875	31	220	120.45	0.9125
33 220 145.2 1.1000 33 220 118.80 0.9000	32	220	144.4	1.0938	32	220	119.63	0.9063
	33	220	145.2	1.1000	33	220	118.80	0.9000

MERAMUNDALI 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

MENDASAL 2 X 315 MVA 400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1000
2	220	435	1.0875
3	220	430	1.0750
4	220	425	1.0625
5	220	420	1.0500
6	220	415	1.0375
7	220	410	1.0250
8	220	405	1.0125
9	220	400	1.0000
10	220	395	0.9875
11	220	390	0.9750
12	220	385	0.9625
13	220	380	0.9500
14	220	375	0.9375
15	220	370	0.9250
16	220	365	0.9125
17	220	360	0.9000

MERAMUNDALI 2X100 MVA 220/132 KV ATR

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	143.55	220	1.0875
3	141.90	220	1.0750
4	140.25	220	1.0625
5	138.60	220	1.0500
6	136.95	220	1.0375
7	135.30	220	1.0250
8	133.65	220	1.0125
9	132.00	220	1.0000
10	130.35	220	0.9875
11	128.70	220	0.9750
12	127.05	220	0.9625
13	125.40	220	0.9500
14	123.75	220	0.9375
15	122.10	220	0.9250
16	120.45	220	0.9125
17	118.80	220	0.9000

GT / ICT TAP DETAILS IN JSEB SYSTEM

<u>PTPS GT 1 & 2</u>

2X60 MVA, 132/10.5 KV				
TAP	PRI	SEC	PU	
1	10.5	142.56	1.080	
2	10.5	139.92	1.060	
3	10.5	137.28	1.040	
4	10.5	134.64	1.020	
5	10.5	132.00	1.000	
6	10.5	129.36	0.980	
7	10.5	126.72	0.960	
8	10.5	124.08	0.940	
9	10.5	121.44	0.920	

PTPS GT 7 MAKE : BHEL				
125 N	125 MVA, 242/11 KV			
TAP	PRI	SEC		
1	11	248.050		
2	11	242.000		
3	11	235.950		
4	11	229.900		
5	11	223.850		

PTPS GT 8 & 10 MAKE : BHEL 137.5 MVA, 242/11 KA

137.5 IVIVA, 242/11 KA			
TAP	PRI	SEC	
1	11	248.050	
2	11	242.000	
3	11	235.950	
4	11	229.900	
5	11	223.850	

PTPS GT 9 MAKE : RUSSIAN

125 MVA, 242/10.5 KV			
TAP	PRI	SEC	
1	10.5	254.100	
2	10.5	248.050	
3	10.5	242.000	
4	10.5	235.950	
5	10.5	229.900	

<u>PTPS GT 3 & 4</u>				
2X60 MVA, 132/10.5 KV				
TAP	PRI	SEC	PU	
1	10.5	138.60	1.050	
2	10.5	135.30	1.025	
3	10.5	132.00	1.000	
4	10.5	128.70	0.975	
5	10.5	125.40	0.950	

HATIA 2X150 MVA 220/132 KV ATR

TAP	132KV	220 KV	PU	
1	132	242.00	1.100	
2	132	239.25	1.088	
3	132	236.50	1.075	
4	132	233.75	1.063	
5	132	231.00	1.050	
6	132	238.25	1.038	
7	132	225.50	1.025	
8	132	222.75	1.013	
9	132	220.00	1.000	
10	132	217.25	0.988	
11	132	214.50	0.975	
12	132	211.75	0.963	
13	132	209.00	0.950	
14	132	206.25	0.938	
15	132	203.50	0.925	
16	132	200.75	0.913	
17	132	198.00	0.900	

PTPS GT 5 & 6 2 X 120MV/A 220/11 KV					
TAP 220 KV 132 KV PU					
1	11	264	1.2000		
2	11	258	1.1727		
3	11	252	1.1455		

11

11

11

11

11

11

246

240

234

228

222

216

4

5

6

7

8

9

1.1182

1.0909

1.0636

1.0364

1.0091

0.9818

LALMATIA 1X100 MVA, 220/132 KV

ATR MAKE : CANADIAN W.HOUSE				
TAP	132 KV	220 KV	PU	
1	132	231.000	1.050	
2	132	228.250	1.038	
3	132	225.500	1.025	
4	132	222.750	1.013	
5	132	220.000	1.000	
6	132	217.250	0.988	
7	132	214.500	0.975	
8	132	211.750	0.963	
9A	132	209.000	0.950	
9B	132	209.000	0.950	
9C	132	209.000	0.950	
10	132	206.250	0.938	
11	132	203.500	0.925	
12	132	200.750	0.913	
13	132	198.000	0.900	
14	132	195.250	0.888	
15	132	192.500	0.875	
16	132	189.750	0.863	
17	132	187.000	0.850	

GT / ICT TAP DETAILS IN JSEB SYSTEM

RAMCHANDRAPUR 2X150 MVA

220/132 KV ATR			
TAP	132KV	220 KV	PU
1	132	242.00	1.100
2	132	239.25	1.088
3	132	236.50	1.075
4	132	233.75	1.063
5	132	231.00	1.050
6	132	238.25	1.038
7	132	225.50	1.025
8	132	222.75	1.013
9	132	220.00	1.000
10	132	217.25	0.988
11	132	214.50	0.975
12	132	211.75	0.963
13	132	209.00	0.950
14	132	206.25	0.938
15	132	203.50	0.925
16	132	200.75	0.913
17	132	198.00	0.900

PATRATU 2X150 MVA			
	220/132	2 KV ATR	
TAP	132KV	220 KV	PU
1	132	242.00	1.100
2	132	239.25	1.088
3	132	236.50	1.075
4	132	233.75	1.063
5	132	231.00	1.050
6	132	238.25	1.038
7	132	225.50	1.025
8	132	222.75	1.013
9	132	220.00	1.000
10	132	217.25	0.988
11	132	214.50	0.975
12	132	211.75	0.963
13	132	209.00	0.950
14	132	206.25	0.938
15	132	203.50	0.925
16	132	200.75	0.913
17	132	198.00	0.900

CHANDIL 3X100 MVA, 220/132 KV				
ATR MAKE : CANADIAN W.HOUS				
TAP	132 KV	220 KV	PU	
1	132	231.000	1.050	
2	132	228.250	1.038	
3	132	225.500	1.025	
4	132	222.750	1.013	
5	132	220.000	1.000	
6	132	217.250	0.988	
7	132	214.500	0.975	
8	132	211.750	0.963	
9A	132	209.000	0.950	
9B	132	209.000	0.950	
9C	132	209.000	0.950	
10	132	206.250	0.938	
11	132	203.500	0.925	
12	132	200.750	0.913	
13	132	198.000	0.900	
14	132	195.250	0.888	
15	132	192.500	0.875	
16	132	189.750	0.863	
17	132	187.000	0.850	

SHPS 2X80 MVA

11/132 KV GT					
TAP	PRI	SEC	PU		
1	11	141.9	1.075		
2	11	138.6	1.050		
3	11	135.3	1.025		
4	11	132	1.000		
5	11	128.7	0.975		

TTPS 2 X 250 MVA

15.75/220 KV				
TAP	PRI	SEC	PU	
1	15.75	231	1.050	
2	15.75	225.5	1.025	
3	15.75	220	1.000	
4	15.75	214.5	0.975	
5	15.75	209	0.950	

ICT/GT TAP DETAILS OF BSEB SYSTEM

ICT/GT TAP DETAILS OF WBSETCL/WBPDCL SYSTEM

SAGARDIGHI 1X315 MVA

STATION : HAZIPUR 1X100 MVA 220/132 KV

STATION :

400/132 KV ATR

KRISHNANAGAR 2X160 STATION : MVA 220/132 KV ATR

TAP 132KV 220KV PU 132 242.00 1.100 1 2 239.25 132 1.088 236.50 3 132 1.075 4 233.75 132 1.063 5 132 231.00 1.050 6 228.25 1.038 132 7 225.50 132 1.025 8 132 222.75 1.013 220.00 9 132 1.000 10 132 217.25 0.988 11 132 214.5 0.975 12 132 211.75 0.963 13 132 209.00 0.950 206.25 0.938 14 132

203.50

200.75

198.00

0.925

0.913

0.900

TAP	220KV	400KV	PU
1	220	440	1.100
2	220	435	1.088
3	220	430	1.075
4	220	425	1.063
5	220	420	1.050
6	220	415	1.038
7	220	410	1.025
8	220	405	1.013
9	220	400	1.000
10	220	395	0.988
11	220	390	0.975
12	220	385	0.963
13	220	380	0.950
14	220	375	0.938
15	220	370	0.925
16	220	365	0.913
17	220	360	0.900

TAP	220KV	132KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	122.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

STATION : DOMJUR 2X160 MVA 220/132 KV ATR

132

132

132

15

16

17

TAP	220KV	132KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	122.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

RISHRA 2X160 MVA STATION : 220/132 KV ATR

TAP	220KV	132KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	122.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

DHARMA 2X160 MVA STATION : 220/132 KV ATR

TAP	220KV	132KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.90	1.075
4	220	140.25	1.063
5	220	138.60	1.050
6	220	136.95	1.038
7	220	135.30	1.025
8	220	133.65	1.013
9	220	122.00	1.000
10	220	130.35	0.988
11	220	128.70	0.975
12	220	127.05	0.963
13	220	125.40	0.950
14	220	123.75	0.938
15	220	122.10	0.925
16	220	120.45	0.913
17	220	118.80	0.900

STATION :	KV ATR			ST
TAP	220KV	132KV	PU	
1	220	145.20	1.10	
2	220	143.55	1.09	
3	220	141.90	1.08	
4	220	140.25	1.06	
5	220	138.60	1.05	
6	220	136.95	1.04	
7	220	135.30	1.03	
8	220	133.65	1.01	
9	220	122.00	1.00	
10	220	130.35	0.99	
11	220	128.70	0.98	
12	220	127.05	0.96	
13	220	125.40	0.95	
14	220	123.75	0.94	
15	220	122.10	0.93	
16	220	120.45	0.91	
17	220	118.80	0.90	

JEERAT 3X160 220/132

TATION :	220/132 KV ATR				
TAP	220KV	132KV	PU		
1	220	145.20	1.100		
2	220	143.55	1.088		
3	220	141.90	1.075		
4	220	140.25	1.063		
5	220	138.60	1.050		
6	220	136.95	1.038		
7	220	135.30	1.025		
8	220	133.65	1.013		
9	220	122.00	1.000		
10	220	130.35	0.988		
11	220	128.70	0.975		
12	220	127.05	0.963		
13	220	125.40	0.950		
14	220	123.75	0.938		
15	220	122.10	0.925		
16	220	120.45	0.913		
17	220	118.80	0.900		

SANTALDIH 1X100MVA

TAP	220 KV	132 KV	PU
1	220	145.20	1.1000
2	220	143.55	1.0875
3	220	141.90	1.0750
4	220	140.25	1.0625
5	220	138.60	1.0500
6	220	136.95	1.0375
7	220	135.30	1.0250
8	220	133.65	1.0125
9	220	122.00	1.0000
10	220	130.35	0.9875
11	220	128.70	0.9750
12	220	127.05	0.9625
13	220	125.40	0.9500
14	220	123.75	0.9375
15	220	122.10	0.9250
16	220	120.45	0.9125
17	220	118.80	0.9000

STATION :

HOWRAH 3X 150 MVA

220/132 KV ATR

STATUS OF RGMO IN ER

ANNEXURE-V (Pg 1 of 3)

LIST OF GENERATING UNITS PARTICIPATING IN RGMO

CONSTITUENT	STATION	UNIT	CAPACITY	STATUS OF RGMO AS INFORMED BY STATIONS	ERLDC Obeservation
		1	200	Running under RGMO mode	Intermittent response observed
	FARAKKA	2	200	Running under RGMO mode	
		3	200	Running under RGMO mode	
		4	500	Kept in RGMo at 12:09hrs of 01.08.10	
		5	500	Taken in at 11:30hrs of 04.08.10	
		1	210	Taken in at 00:00hrs of 01.08.10	
		2	210	Taken in at 00:00hrs of 01.08.10	Intermittent response observed
		3	210	Running under RGMO mode	
NTPC	KAHALGAON	4	210	Running under RGMO mode	
		5	500	Running under RGMO mode	1
		6	500	Taken in at 00:00hrs of 01.08.10	
		7	500	Running under RGMO mode	
	TALCHER	1	500		
		2	500		
		3	500		Intermittent response observed
		4	500	All units are running under RGMO mode	
		5	500		
		6	500		
	TEESTA	1	170		
TEESTA		2	170	Taken in RGMO mode at 00:00hrs of 01.08.10	Response satisfactory
		3	210		
DVC	MEJIA	5	250	Implemented(56Th OCC meeting)	Response not satisfactory
		6	250	Implemented(69Th OCC meeting)	
		1	210		
		2	210		
	BAKRESWAR	3	210	RGMO implemented & in Service(56th OCC meeting)	Response observed on 31.01.12
WBPDCL		4	210		
		5	210		
	SANTALDIH	6	250	RGMO implemented & in Service(72nd OCC meeting)	Under Obsevation
		1	250	· • •	
CESC	BUDGE BUDGE	2	250	Unit # 1,2 in FGMO & 3 in RGMO	Response satisfactory
		3	250		
Storlito	Storlito	1	600	PGMO implemented 8 in Service/72nd OCC meeting)	Under Observation
Sternite	Sterlite	2	600	Romo implemented & in Service(72nd OCC meeting)	Under Obsevation
MPI	MPI	1	525	RGMO implemented & in Service(73rd OCC meeting)	Linder Observation
		1	12535		Under Obsevation

STATUS OF RGMO IN ER

CONSTITUENT	STATION	UNIT	CAPACITY	STATUS OF RGMO AS INFORMED BY STATIONS
FSTPP	FARAKKA	6	500	Not Implemented
	CHANDRAPURA TPS	7	250	RCMO detail is alt susilable
	CHANDRAPURA TPS	8	250	RGMO detail is int available
		1	210	Difficulties in implementing RGMO & exemption not applied/56th
	BOKARO 'B'	2	210	OCC meeting)
		3	210	
		1	210	
DVC	MEJIA	2	210	Not implemented & exemption not applied(56th OCC meeting)
DVC		3	210	
		7	500	Not Implemented & exemption not applied
	WEJIA-D	8	500	Could not put in to RGMO (82nd OCC meeting)
	DSTPS	1	500	PGMO dotail is n't available
		2	500	
	WARIA	4	210	Difficulties in implementing RGMO & exemption not applied(56th
ISEB	TENUGHAT	1	210	Difficulties in implementing RGMO & exemption not applied(56th
UGEB	TENOOHIAT	2	210	OCC meeting)
OPGC	IBTPS	1	210	Not adequate response in RGMO(56th OCC meeting)
		2	210	
		1	210	
		2	210	Old Unite difficulties in implementing DOMO and exemption
	KOLAGHAT	3	210	Old Units, difficulties in implementing RGMO and exemption
		4	210	applied(out) OCC method)
		6	210	
WBPDCL	BANDEL	5	210	Exemption applied from CERC
	SANTALDIH	5	250	RGMO detail is n't available
	DPL	7	300	Implemented but not yet tested(56Th OCC meeting)
		1	300	
		2	300	
TOT	AL CAPACITY		7930	

LIST OF THERMAL GENERATING UNITS NOT PARTICIPATING IN RGMO

STATUS OF RGMO IN ER LIST OF HYDRO GENERATING UNITS NOT PARTICIPATING IN RGMO

ANNEXURE-V (Pg 3 of 3)

CONSTITUENT	STATION	UNIT	CAPACITY	STATUS OF RGMO AS INFORMED BY STATIONS	ERLDC Obeservation
NHPC	RANGIT	1 2 3	20 20 20	Pondage capacity is to generate power upto 3 hours only.Hence not under the perview of RGMO	
DVC	MAITHON HPS	1 2 3	20 20 20	RGMO detail is n't available	No response
	PANCHET HPS	1 2	40 40	RGMO detail is n't available	No response
JSEB	SUBARNREKHA	1 2	65 65	RGMO in place,But due to less availability of water ,RGMO could not tested	
	BURLA	1 2 3 4 5 6 7	49.5 49.5 24 24 37.5 37.5 37.5	Applied for exemption(56th OCC meeting)	
CHIPLIMA 1 24 2 24 3 24	Applied for exemption(56th OCC meeting)				
онрс	BALIMELA	1 2 3 4 5 6 7 8	60 60 60 60 60 60 75 75	Applied for exemption(56th OCC meeting)	
	UPPER KOLAB	1 2 3 4	80 80 80 80 80	Applied for exemption(56th OCC meeting)	
	RENGALI	1 2 3 4 5	50 50 50 50 50 50	Applied for exemption(56th OCC meeting)	
	INDRAVATI	1 2 3 4	150 150 150 150	Applied for exemption(56th OCC meeting)	
WBSEDCL	1 12.5 2 12.5 3 12.5 4 12.5		RGMO detail is n't available	No response	
	PPSP	1,2,3,4	900	Not yet implemenetd & exemption not applied(56th OCC meeting)	
то/			3232		

Report on Mock Black Start exercise carried out at Teesta HEP(Stage-V) on 24/02/13

Mock Black Start exercise was carried out at Teesta HEP of NHPC, wherein, the running Unit#1 of Teesta was first isolated with Bus segregation at Binaguri 400/220kV and NJP(WB) 220kV substation and formation of an island comprising of North Bengal loads at 220kV NJP(WB). After sinking the island so formed, Teesta Unit#1 was then Black-started and the island was revived once again. After running the island for around 35 minutes with Teesta unit#1 in FGMO and with AVR in auto mode, the island was synchronized with the main grid.

Throughout the sequence of operations AVR of Teesta was in auto mode and Teesta Unit#1 was in lagging power factor mode (generating MVARs) with Teesta/Binaguri Bus voltages close to 400kV.

Part-A: Formation of an island with Teesta Unit#1 and loads WBSEDCL loads in North Bengal

The following were the sequence of operations carried out for formation of the island: <u>Step1) Starting of one unit at Teesta and synchronization to the Grid</u>

As a step towards initiation of the Black-start exercise, at Teesta, one unit was started at 09:23 Hrs and synchronized to the Grid vide 400kV Teesta-Binaguri-I. The 63MVAR line reactor(re-configured with NGR Bypass) of 400kV Tala-Binaguri-IV (under shut down for maintenance works by Tala) at Binaguri end, was then dis-connected from the Tala-Binaguri-IV line and connected to 400kV Bus-I as Bus reactor.

Step2) Formation of island with North Bengal loads of WBSEDCL

An island was formed comprising of loads being fed from NJP (WB). For formation of the island the following switching actions were done:

- Switching off 132kV NJP(WB) to TCF-1 from NJP(WB) end
- Switching off 132kV NJP(WB)- T point of Siliguri(PG)& NBU from NJP(WB) end
- Switching off 66kV Banarhat-Birpara
- Switching off 66kV Kalimpong-Chalsa
- 132kV Moinaguri-Birpara D/C is normally kept open with Moinaguri load being fed from NJP (WB).

This above switching actions led to formation of an island comprising of Siliguri(local), Moinaguri, Chalsa, Nagrakata, Odlabari, Banarhat alongwith Jaldhaka-I / II HEP. There was no generation at Jaldhaka-I /II at that time.

The total load of this island was about 90MW after formation of the island.

Step3) Splitting of 220kV bus at NJP (WB) with 2 x 160MVA ICTs in one Bus

This was done by ensuring that both 160MVA ICTs at NJP (WB) were on Bus -I. The bus coupler was then opened. NJP (WB) Bus-I & II are extensions of 220kV Binaguri (PG) main bus I & II and have Bus extension breakers at Binaguri (PG). Thus the bus extension breaker for 220kV Bus-II was switched off at Binaguri (PG) end and 220kV Bus-II at NJP (WB) became dead.

Step4) Reconfiguration by 220kV Bus Splitting at Binaguri(PG)

This following reconfiguration of incoming/outgoing feeders was done by Bus splitting at Binaguri 220kV:

SI.	220 kV BUS-I	220 kV BUS-II
No.		
1	315 MVA 400/220kV ICT-1	315 MVA 400/220kV ICT-2
2	220kV NJP(W)-I (bus-to-bus	220kV Birpara(PG) I & II
	connection)	
3		220kV Siliguri(PG) I & II
4		220kV NJP(W)-II

Step5) Reconfiguration by 400kV Bus splitting at Binaguri(PG) and islanded mode of operation

The following reconfiguration of incoming/outgoing feeders was to be done at 400kV Binaguri(PG)by 400kV Bus splitting:

SI.	400 kV BUS-I	400 kV BUS-II
No.		
1	315 MVA 400/220kV ICT-1	315 MVA 400/220kV ICT-2
2	400kV Teesta-I and Teesta-II	400 kV Purnea-I to IV
	(both in off condition)	
3	63MVAR Line Reactor of	400 kV Tala I to IV
	400kV Tala-Binaguri-IV	
4		400 kV Bongaigaon I & II
5		125 MVAR Reactors I & II

For completion of the above reconfiguration the following switching operations were carried out sequentially:

- Open the following Tie CBs :: 400/220kV ICT-I, Teesta-I, Teesta-II, Purnea-II(Tala-Binaguri-IV Tie-CB already opened and line isolated in view of connection of its Line reactor to Bus-I)
- Open the following Main CBs:: 400/220kV ICT-II, Purnea-I, Purnea-III, Purnea-IV
- After opening all main/tie CBs except the last one, power flow through the last remaining Tie CB between 400/220kVICT-I and 400kV Tala-Binaguri-I at Binaguri was

to be made Nil before opening to ensure minimum jerk to the small island to be formed. This would be ensured by keeping Teesta generation at matching levels to the total load being fed via 2 x160MVA ICTs at NJP (WB).

- Teesta generation was reduced to match the islanded load of 90MW(approx.) at NJP (WB).
- The above tie CB was opened at 11:10 hrs resulting in running unit of Teesta-V getting islanded with the N. Bengal load fed from NJP (WB). The island thus developed however collapsed within a time span of about 30secs. The reasons for same are detailed below.
- It appears that after formation of the island Teesta generation was reduced leading to decline of the island frequency to around 45Hz. However, sudden load reduction at NJP(WB) was observed after formation of the island which resulted in frequency of the island shooting up to more than 51.40 Hz(As data got frozen at 51.40Hz no further observations could be made). It was reported by WBSETCL that such load reduction occurred due to tripping of 33kV feeders. It is felt that such sudden load reduction at NJP (WB) resulted in a step input for load reduction to governor system resulting in governor hunting and collapse of the islanded grid within around 30secs. The MVAR absorbed by Teesta Unit#1 also shows MVAR generation fluctuating from 43MVAR to around 93 MVAR showing AVR response due to such hunting.
- The HV side breaker of 400/220kV ICT-I at Binaguri was then opened to enable Black start and energization of 400kV Teesta/Binaguri buses.

Part-B Mock Black start of unit#1 of Teesta HEP and revival of the island previously formed

Step1)Black start of Teesta Unit#1and charging of Binaguri 400kV Bus-I

- Teesta unit#1 was Black-started using DG set available (as is to be normally done in case of actual blackout). The unit remained on FGMO with AVRs in auto mode. At Teesta 400kV Teesta Bianguri Tie & main breakers were opened to isolated Bus-I to enable voltage build up at Bus-I. Voltage was gradually built up by increasing excitation and the GT HV side breaker closed to charged 400kV Bus-I. The unit excitation was controlled to deliberately maintain the voltage at Bus-I to around 320kV. Though 400kV Teesta-Binaguri-I(115Kms- twin Moose) was approximately fully compensated with the 63MVAR Line Reactor, it was felt prudent to keep voltages at lower levels to start with and gradually raise the Bus voltages by increasing excitation at Teesta depending upon system conditions.
- At 11:45 Hrs, breakers of Teesta-Binaguri-I at Teesta end were closed resulting in charging of the line(with 63 MVAR Line Reactor) and charging of 400kV Binaguri Bus-I (with Bus voltage around 320kV).

Step2) Extension and charging of 220kV Bus-I at NJP (WB)

- At 11:52 hrs, the HV side breaker of ICT-I was closed resulting in charging of 220kV Bus-I at Binaguri and 220kV NJP (WB) Bus-I. 220kV Bus voltages at Binaguri and NJP (WB) were at around 203kV and 197kV respectively.
- With both 2 x 160MVA ICTs charged, the 132kV Bus at NJP (WB) was now ready to take up loads of the segregated island.
- Teesta was intimated for readiness to take up load and necessary clearance was given to NJP (WB) (through Binaguri) for re-connecting loads. NJP (WB) was advised to gradually ramp up loads at the rate of 10-20MW/min.
- Teesta had raised the issue of difficulty in maintaining generation in the range where cavitation conditions could exist, but it was impressed upon Teesta that such loads would be required to be maintained for a short time span only.
- The Bus voltages at Binaguri(400kV/220kV) and NJP were raised gradually upto around 370kV / 210kV and 207kV as the loads picked up.

Step3) Load pickup at NJP(WB) and island formation

• The following were the sequence of switching on the feeders and gradual addition of load at NJP(WB):

132kV NJP(WB)-Siliguri(WB)-I at 12:04 Hrs 132kV NJP(WB)-Siliguri(WB)-II at 12:07 Hrs 132kV NJP(WB)-Moinaguri at 12:08 Hrs 132kV NJP(WB)-Chalsa at 12:11 hrs

- Teesta started feeding loads from around 11:54 Hrs and the loads at NJP (WB) were gradually built up to a level of 60MW and the island continued running in isolated successfully.
- Frequency of the island was maintained around 50.50 Hz, as loads were being picked up.
- However, at 12:20 hrs (as per report received from WBSETCL)132kV NJP (WB) to Siliguri(WB) D/C tripped on E/F resulting in sudden reduction of load at NJP(WB) to 29 MW. At this time frequency of the island was around 50.45Hz.
- This step reduction reduction of load at NJP (WB) resulted in governor hunting at Teesta and wild fluctuations of frequency of the island were observed. Specifically frequency varied from 52.87Hz to 47.67 Hz.
- AVR at Teesta unit#1 also responded and MVAR generated by Unit#1 fluctuated varying from 45MVAR to 71MVAR.
- As oscillations were of damped nature in this case, sufficient time was available for operators at Teesta to take suitable action. On observation of hunting action in governor, Teesta immediately resorted to enforcement of load limiter at their end. This resulted in damping of the fluctuations and frequency of the island stabilized at around 50.00Hz.

Step4) synchronization of the island at Binaguri

- After stable run of the islanded system for around 35 minutes, the Tie breaker of 400/220kV ICT-I and 400kV Tala-Binaguri-I was closed at 12:29 hrs resulting in synchronization of the islanded system with the main Grid.
- The 220kV bus coupler at NJP (WB) was taken into service and thus both Buses at NJP (WB) were now charged.
- 220kV Bus-II extension breaker at Binaguri was taken into service and thus the entire NJP (WB) S/s was now normalized.
- Teesta unit#1 was desynchronized at 12:46 Hrs
- 132kV NJP (WB)-NBU and 132kV NJP (WB)-TCF-1 were taken into service at 12:51 hrs and 12:55 hrs respectively.
- Detailed report from WBSETCL is awaited for corroborating the trippings at NJP(WB) in North Bengal system.

-----XXX------



Switching Diagram of 400/220kV Binaguri S/Stn



Network Diagram for Teesta-V Mock Black start Exercise:

Annexure-VII

Third Party Protection Audit Observations of Powergrid Sub-stations in Eastern Region

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Subhashgram 400 kV-	18-12-2012	1. PLCC channel-II (BPL-9505 property of WBPDCL) of 400 kV Subhashgram-	Panel belongs to WBPDCL, rectification to be done by WBPDCL
	Powergrid		Sagardighi line is not working	
	_		2. PLCC of 220 kV Subhashgram(PG)-Subhashgram (WBSETCL) for protection is not	Panel belongs to WBSETCL, commissioning to be done by WBSETCL
			commissioned. (Property of WBSETCL)	
			3. Static relays of Subhashgram-Sagardighi 50 MVAR line reactor protection are	Relay delivered at Site. To be commissioned by Mar'13
			expected to be replaced with numerical relays by January 2013.	
2	Durgapur 400 kV -	19-12-2012	1. Static relays may be replaced with numerical relays	Procurement under progress. Replacement by May'12
	Powergrid			
3	Malda 400 kV -	29-12-2012	1. Event Logger is under repair	Received at site after repair, shall be commissioned within 15 days
	Powergrid		2. Static relays may be replaced with numerical relays	Procurement under progress. Replacement by May 12
			3. Some numerical relays are not synchronized with GPS clock	LOA for IDR placed. To be done by Mar'13
			4. BPL made PLCC panels are being replaced with ABB made PLCC panels	Equipment delivery under progress. To be commissioned by Mar'13
			5. 50 MVA ICI-I and II are being replaced with 160 MVA for capacity enhancement	Work in Progress. Expected completion by Feb'12
4	Gaya 765 kV - Powergrid	28-12-2012	1. Auto reclosing and carrier aided tripping features for 220 kV lines are not in	There is no problem at Powergrid Gaya end.
			service due to problem at remote end (BSPTCL).	
			2. PLCC panels for channel-II are not available. Order has been placed.	Award has already been placed for PLCC panels for channel -II and to be
				commissioned by March'13.
			3. Voice communication to RLDC is not available	Will be made available by April'13
5	Patna 400 kV -	29-12-2012	1. Auto reclosing feature for 220 kV lines is not in service due to problem at remote	There is no problem at Powergrid Patna end.
	Powergrid		end (BSPTCL).	
			2. PLCC for 220 kV lines not in service due to problem at remote end (BSPTCL).	
			3. Voice communication to RLDC is not available	Will be made available by April'13
6	Biharsharif 400 kV -	30-12-2012	1. Static relays may be replaced with numerical relays	Main-I is having numerical relay. Main-II where static relay are installed ,
	Powergrid			replacement action has already been taken and replacement is scheduled to
				completed by March'13.
7	Muzaffarpur 400 kV - Powergrid	30-12-2012	1. Voice communication to RLDC is not available	Will be made available by April'13
8	Jamshedpur 400 kV-	29-01-2013	1. Main-I Static relays available for line protection may be replaced with numerical	Order already placed for replacement of static relays with Numerical type relays.
	Powergrid		relays	
			2. PLCC speech channels of Rourkela line-1 and Durgapur line are not working	Rectification is in process. To be done by Feb'13.
			3. Remote Oil Temperature Indicators of 315 MVA, 400/138/34.5 kV ICTs and 50	As per the scheme, there is no provision of remote OTI for ICTS and reactors in the
			MVAR bus reactors are not available in control room	control room. Remote WTI is available in the control room.
9	Ranchi 400 kV-	30-01-2013	1. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs are not available	Implemented at Ranchi Substation.
	Powergrid			
10	Maithon 400 kV -	21-01-2013	1. Static relays may be replaced with numerical relays	
	Powergrid			
11	Bolangir 400 kV -	31-01-2013	1. Directional IDMT type earth fault protection is not activated in numerical relays	
	Powergrid		of line protection.	
12	Jaypore 400 kV -	28-01-2013	1. Static relays may be replaced with numerical relays	
	Powergrid		2. PLCC of 220 kV lines is not working	
13	Indravati 400 kV -	30-01-2013	1. Static relays may be replaced with numerical relays	
	Powergrid			

14	Rengali 400 kV -	1/2/2013	1. Static relays may be replaced with numerical relays	
	Powergrid	,,	2. PLCC for 220 kV lines is not available	
	Ű		3. Auto reclosing feature not available in 220 kV lines	
			4. Disturbance recorder and fault locator not available for 220 kV lines	
			5. Overload alarm for 315 MVA ICTs is not available	
15	Rourkela 400 kV -	22-01-2013	1. Static relays may be replaced with numerical relays	
	Powergrid		2. Only one PLCC channel is available for 220 kV line protection	
16	Baripada 440 kV -	23-01-2013	1. Static relays may be replaced with numerical relays	
	Powergrid			
17	Banka 400 kV-Powergrid	6/2/2013	1. Overload alarm for 2x200 MVA, 400/138/34.5 kV ICT-I & II are not available	Not provided as per scheme.
			2. Voice communication to RLDC is not available	
18	New Purnea 400 kV - Powergrid	7/2/2013	1. Overload alarm for 315 MVA, 400/138/34.5 kV ICTs is not available	Available as per report. For 220Kv system it is not provided as per scheme.
			 Directional IDMT type earth fault protection is not activated in numerical relays of line protection. 	Available as per report.
			3. Old bus bar protection (obsolete) is available in 220 kV Sub-station	
			4. Static relays of main protection in 220 kV Sub-station may be replaced with	Main-I is having numerical relay. Main-II where static relay are installed ,
			numerical relays	replacement action has already been taken and replacement is scheduled to
				completed by March'13.
19	Binaguri 400 kV - Powergrid	30-01-2013	1. Static relays of main protection may be replaced with numerical relays	
			2. SCADA system is not time synchronized with GPS	
20	Pusauli 765 kV HVDC -	30-01-2013	1. Overload alarm not available for 1500 MVA, 765/400 kV Transformers	
	Powergrid		2. All details of thyristor rating (PIV), KA rating, no of thyristors in each arm, make	
			of the thyristor and converter transformer rating should be furnished.	
			3. All control features of HVDC have to submitted along with control block diagram.	
			4. PSB details are to be furnished.	
21	Talcher HVDC - Powergrid	29-12-2012	Nil	
22	Birpara 220 kV -	28-01-2013	1. PLCC panels are not available for protection of 132 kV lines	
	Powergrid		2. SCADA & Automation system is not time synchronized with GPS	
			3. Static relays of main protection may be replaced with numerical relays	
			4. Overload alarm for 100 MVA ICT is not available	
			5. Event Logger is not available	
			6. Busbar protection is not available for 132 kV level	
23	Dalkhola 220 kV -	22-01-2013	1. Event Logger is not available	
	Powergrid		2. Static relays of main protection may be replaced with numerical relays	
24	Ara 220 kV - Powergrid	19-03-2013	1. Voice communication to RLDC is not available	

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Farakka STPP 400 kV -	28-12-2012	1. Static relays may be replaced with numerical relays	Purchase Indent prepared on 28-01-13. The same is under approval process
	NTPC			of the competent authority.
			2. Time synchronizing equipment is not available	Available for 400KV FKK-Kahalgaon Line -3 & 4. For rest of the lines,
				incomplete budgetary offer received from the party. The issue is being
				followed up. Purchase Indent expected to be raised by April-2013.
			3. Replacement of PLCC panels by PGCIL is in progress	400 kV FKK-Durgapur line-I PLCC panel at FKK end replaced by PGCIL.
				Equipment delivery under progress for rest of the panels and it will be
				commissioned by Mar'13
			4. Voice communication to RLDC is not available	Voice communication available and already in service. Point may please be
				deleted from the list.
			5. Farakka-Durgapur 400 kV line-II and Farakka-Kahalgaon 400 kV	M/s Hathaway make EL restored and put into service. Point may please be
			line-I and II are not connected to Event Logger	deleted from the list.
2	TSTPS, Kaniha 400 kV	29-12-2012	1. PLCC facility for protection is not available for 220 kV lines	a) OPTCL is the owner of the associated PLCC system for 220 kV lines.
	NTPC			Presently the protection coupler is not available in the existing PLCC system.
				b) The scheme for PLCC aided tripping for 220 kV lines is in place at Kaniha
				but this is non functional due absence of protection coupler in associated
				PLCC system.
				c) If protection coupler is provided in the PLCC system, The PLCC aided
				tripping can be put in service at Kaniha end.
				d) Feature of PLCC aided tripping at remote end sub-station may be
				confirmed from respective remote end station.
			2. Auto reclosing feature not available in all 220 kV lines	a) The scheme of Auto reclosing function for 220 kV lines is in place at Kaniha
				end. This feature is non-functional due to absence of protection coupler in
				the associated PLCC system.
				b) If protection coupler is provided in the PLCC system, Auto Reclosing
				function can be made functional at Kaniha end.
				c) Auto Reclosing feature at remote end may be confirmed from respective
				remote end sub-station.
			3. Static relays may be replaced with numerical relays	a) Main-I & II distance protection relay of 400 kV Meramundali D/C are of
				numerical type.
				b) The Main-I distance protection relays of 400 kV Rourkela D/C & 400 kV
				Rengali D/C are of numerical type.
				c) The Main-II distance protection relays of 400 kV Rourkela D/C & 400 kV
				Rengali D/C are planned for replacement. Purchase order already placed and
				in phase wise manner, the same shall be replaced before 31.10.2013.

Third Party Protection Audit Observations of NTPC Sub-stations in Eastern Region

			4. Earth switches are provided for Talcher-Rourkela 400 kV line I & II and Talcher-Rengali 400 kV line I & II to facilitate earthling during maintenance	The provisions of line earth switches in the mentioned circuits are not envisaged during engineering. However, if the line is required to be earthed, the same can be achieved through the corresponding Tie Bay Isolators.
3	Kahalgaon 400 kV - NTPC	6/2/2013	1. Some numerical relays and Event Logger are not time synchronized with GPS due to interfacing problem	All are time synchronised except ABB Make Main-2 relays (REL 316) for 400 kV Kh-Barh line-1 & 2 and Event Logger of Stage-I units (210 MW*4). Matter has already taken up with ABB and procurement of new GPS is under process. Expected completion date is end of July 2013.
			2. PLCC equipment for line protection of 132 kV lines is not available	PLCC protection channel is not envisaged in 132 kV lines.
4	Barh 400 kV - NTPC	5/2/2013	 Time Synchronizing Equipment is installed and it is under commissioning. 	Work completed
			2. Main-I & II distance relays for line protection are of same	Main-I & II distance relays for line protection are of same make but of
			make.	different series. It is approved by NTPC corporate office. Hence point is
				closed
			3. Overload alarm for 2x200 MVA, 400/132/33 kV ICT is not	The alarm is made available for over current for 110% of full load. Hence
			available	point is closed.
			4. Reactor backup protection is not available for 80 MVAR Bus	Backup protection is available in AREVA P141. Hence point is closed.
			Reactor	
			5. Data and Voice communication to ERLDC is not available	Data communication made available & working properly. For voice
				communication optical fiber cable laying and commissioning to be done by
				PGCIL. Matter has taken up with PGCIL.

Third Party Protection Audit Observations of DVC Sub-stations in Eastern Region

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Mejia TPS 400 kV - DVC	20-12-2012	1. Deviation in R-ph CVT voltage of Mejia-	Procurement action was initiated by MTPS, DVC as no spare 400 kV CVT was
			Maithon 400 kV line-I . R-N 228 kV, Y-N 245 kV	available. Simultaneous action for shifting of 1 (one) Number 400 kV CVT from
			and B-N 245 kV (Primary values)	other installation of DVC is being taken care.
2	Durgapur STPS 400 kV -	20-12-2012	1. PSB unblocking time needs to be reviewed	Due to non availability of interconnected 400 kV system profile, review of the
	DVC			400 kV line (Instant case) relay setting took time, reason why it is delayed.
				However, the same will be implemented shortly.
3	Koderma 400 kV -DVC	31-01-2013	1. Data and Voice communication to RLDC is	
			not available	
			2. Directional IDMT type earth fault protection	
			is not activated in numerical relays of line	
			protection.	
			3. Remote Winding and Oil Temperature	
			Indicators of 315 MVA, 400/138/34.5 kV ICTs	
			and 50 MVAR bus reactors are not available	
			4. Overload alarm for 315 MVA, 400/138/34.5	
			kV ICTs is not available	
4	Raghunathpur 400 kV -	22-01-2013	1. ABB REL 670 installed as a main protection	
	DVC		for Ranchi 400 kV line is not in service	
5	Tisco (BPRS) 400 kV -	28-01-2013	1. Voice and Data communication to RLDC is	
	DVC		not available	
			2. Event Logger is commissioned but not in	
			service due interfacing problem	
			3. Overload alarm for 315 MVA, 400/138/34.5	
			kV ICTs are not available	
Third Party Protection Audit Observations of WBSETCL/WBPDCL Sub-stations

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Kharagpur 400 kV-	19-12-2012	1. Time Synchronizing Equipment is installed, yet to be commissioned.	Will be commissioned shortly.
	WBSETCL		2. Stand alone Event Logger is installed, but not commissioned.	Will be commissioned shortly.
			3. Zone reach and trip delay settings of Main-I and Main-II Distance relays of line	Will be rectified shortly, if required.
			protection are different.	
			Directional IDMT type earth fault protection is not activated in numerical relays of line protection.	We do not recommend such protection for 400 kV feeders.
2	Kolaghat 400 kV-	19-12-2012	1. Event Logger is not synchronized with GPS clock.	Event Logger is already connected with GPS clock. Interactions going on with
	WBPDCL			vendor to eliminate the time drift.
			2. Bus Bar protection is not available for all voltage levels	a) 400 kV: Order has been placed for new Bus Bar Protection. Expected delivery in
				July, 2013.
				b) 220 kV: Shortly going to be put in service.
				c) 132 kV: It is a single main bus & double transfer bus system
			3. Static relays may be replaced with numerical relays	Static relays of 400 kV feeders are going to be replaced in phases. Replacement in
				KTPS-Jeerat Feeder expected within 2 months
			4. Available numerical relays are not synchronized with GPS clock	Order placed for new Time server for this purpose. All numerical relays in 400 kV &
				200 kV systems & most in 132 kV system are expected to be synchronized with GPS
				clock within 3 months.
			5. Directional IDMT type earth fault protection is not activated in numerical relays	We are exploring
			of line protection.	
			 Over fluxing protection for all 150 MVA, 220/132 kV transformers is not installed 	We are exploring
3	Jeerat 400 kV -WBSETCL	20-12-2012	1. Event Logger is not available.	Stand alone event logger is absent. But event logger is present in individual
				numerical relays.
			2. Synchronizing trolley is under repair	Under process
			3. Two sets of batteries not available for 220 kV and 132 kV protection system	As per our convention
			4. Bus Bar protection not available at 200 kV and 132 kV levels	Under consideration
			5. Static relays may be replaced with numerical relays	May be taken up
			6. Time synchronizing equipment is not available	Under consideration
			7. Local Breaker Backup protection is not available at 220 kV and 132 kV levels	Under process
4	Bidhannagar 400 kV -	19-12-2012	1. RTU is not available	Under process
	WBSETCL		2. Directional IDMT type earth fault protection is not activated in numerical relays	We do not recommend such protection for 400 kV feeders.
			of line protection.	
			3. Auto reclosing not in service	Auto reclosing is ready for use at local end, but not in service due to problem in other end.
			4. Time Synchronizing Equipment is installed, yet to be commissioned.	Will be commissioned shortly.
5	Bakreswar 400 kV -	27-12-2012	1. Directional IDMT type earth fault protection is not activated in numerical relays	
	WBPDCL		of line protection.	
6	Sagardighi 400 kV - WBPDCL	28-12-2012	1. Main-I and II distance relays for line protection are of same make and model	
			2. Voice communication to RLDC is not available	
			3. PLCC channel-I of Sagardighi-Subashgram 400 kV line not working	
			4. PLCC of Sagardighi-Farakka 400 kV line not working	
			5. PLCC channel-II of Sagardighi-Gokarna 220 kV line not working	

7	Arambagh 400 kV -	24-01-2013	1. Event Logger is not available	Stand alone event logger is absent. But event logger is present in individual
	WBSETCL			numerical relays.
			2. DG set is not available	Under consideration
			3. Static relays may be replaced with numerical relays	Under process
			4. Single set of 220 V DC battery supply is available and relays are not segregated	As per our convention
			into two groups for 220 kV line protection	
			5. Bus bar protection is not available for 220 kV level	Relay panel is available. Commissioning activity is going on.
			6. Auto reclosing feature is disabled	Auto reclosing is ready for operation. However, the matter will be taken up with
				remote ends.
			7. Time Synchronizing Equipment is not available.	One GPS clock is available, which stopped working recently. Rectification process
				will be taken up.
			8. Directional IDMT type earth fault protection is not activated in numerical relays	Normally, this protection is not incorporated in our 400kV system
			of line protection.	
			9. Only one PLCC protection coupler is provided for 220 kV lines	This is as per our normal practice.
			10. LBB is not provided for 132 kV level	Under process
			11. Overload alarm for 315 MVA, 400/138/34.5 kV ICT-I and 160 MVA,	Will be provided
			220/132/33 kV ICT-I and II are not available	
8	Bidhannagar 220 kV -	21-01-2013	1. Event Logger is not available	Stand alone event logger is absent. But event logger is present in individual
	WBSETCL		-	numerical relays.
			2. Bus Bar protection is not in service for 220 kV level	Will be put into service shortly.
			3. DG set not available	Under consideration
			4. Synchronizing facility is not available	Under process
			5. Only single set of 220 V DC source is available and protection relays are not	As per our convention
			segregated into two groups	
			6. Static relays may be replaced with numerical relays	Under process
			7. LBB not available	Under process
			8. Auto reclosing feature not in service	Under consideration
			9. PLCC equipment for line protection is not available	Under consideration
			10. Time synchronizing equipment is not available	Under consideration
			11. Only one numerical relay is available, no backup relay is available for	
			Santaidin, wana and Bakieswar 220 kV line protection	
			12. Over huxing relay and Overload alarm are not available for 160 kivA,	
0	Santaldih 220 kV	22 01 2012	220/132/33 KV Transformer-Lanu II	
9		23-01-2015	2. Auto reclosing feature not available in all 220 kV lines	
	(WBPDCL)		2. Auto reciosing reactive not available in an 220 kV lines	
			3 Synchronizing facility is not available	
			4. Voice and data communication to SLDC is not available	
			5. Single set of 220 V DC battery supply is available	
			6 Static relay of 100 MVA 220/132 kV ICT may be replaced with numerical relays	
			o. State relay of 100 MVA, 220, 152 kV for may be replaced with numerical relays	
			7 Time Synchronizing Equipment is not available	
			8. Overload alarm not available for 130 MVA and 100 MVA ICTs	
			9. LBB is not provided for 132 kV level	
10	Howrah 220 kV -	26-03-2013	1. LBB not available	
	(WBSETCL)		2. Busbar protection not available	
	()		2. Event Logger is not available	
			3. Synchronizing facility is not available	
			4. DG set not available	
			5. Single set of 220 V DC battery supply is available.	
			6. Auto reclosing feature not available	
			7. Time Synchronizing Equipment is not available.	
			8. Overfluxing protection is not available for 160 MVA, 220/132kV Transformers.	

Third Party Protection Audit Observations of JSEB Sub-stations

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Ramchandrapur 220 kV - JSEB	29-01-2013	1. Local Breaker Backup is not available	
			2. Event Logger is not available	
			3. Synchronizing facility is available, but not in service	
			4. Voice and data communication to SLDC is not available	
			5. Bus Bar protection is not available	
			6. Earthling switches are not provided to facilitate earthling of	
			outgoing transmission lines for maintenance	
			7. Auto reclosing feature is not available.	
			8. PLCC panels are not in service	
			9. Static relays may be replaced with numerical relays	
			10. Only single set of 220 V DC source is available and protection	
			relays are not segregated into two groups	
			11. Only one numerical relay is available for Chandil 220 kV line	
			protection, No backup.	
			12. Remote indicators of Winding and Oil temperature for all	
			three ICTs of 150 MVA, 220/132/33 kV are not available	
			13. Low oil level alarm and over load alarm are not available for all	
			three 150 MVA, 220/132/33 kV ICTs	
			14. Time Synchronizing Equipment is not installed.	
			15. High voltage (238 kV to 248 kV) observed from August 2012	
			reported by Sub-station representative	
2	Chandil 220 kV - JSEB	29-01-2013	1. Local Breaker Backup is not available	
			2. Event Logger is not available	
			3. Synchronizing facility is not available	
			4. Voice and data communication to SLDC is not available	
			5. Bus Bar protection is not available	
			6. Earthling switches are not provided to facilitate earthling of	
			outgoing transmission lines for maintenance	
			7. Auto reclosing feature is not available.	
			8. PLCC panels are not available	
			9. Static relays may be replaced with numerical relays	
			10. Only single set of 220 V DC source is available and protection	
			relays are not segregated into two groups	
			11. Remote indicators of Winding and Oil temperature for all	
			three ICTs of 100 MVA, 220/132/33 kV are not available	
			12. Low oil level alarm and over load alarm are not available for all	
			three 100 MVA, 220/132/33 kV ICTs	
			13. Oil leakage observed in ICT-I and II; oil level indicator for ICT-I	
			is not working	
			14. Time Synchronizing Equipment is not installed.	
			15. No line protection is available for Chandil-Ramchandrapur 220	
			kV line	
			16. Restricted earth fault and over fluxing relays for are not	
			available all three 100 MVA, 220/132/33 kV ICTs	

Third Party Protection Audit Observations of OPTCL/OHPC Sub-stations

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Meeramundali 400	30-12-2012	1. Event Logger is not available for 220 kV lines	
	kV - OPTCL		2. Event Logger for 400 kV lines is not synchronized with GPS clock	
			3. Static relays may be replaced with numerical relays	
			4. Auto reclosing feature is not enabled for all 220 kV lines	
			5. PLCC channel-II is not available for all 220 kV lines	
2	Mendhasal 400 kV -	28-12-2012	1. Event Logger is not available	
	OPTCL		2. Bus Bar protection is not in service for 220 kV level	
			3. Mendhasal-Baripada 400 kV line-I & II relays are not synchronized with GPS clock	
			and carrier aided inter tripping feature is disabled.	
			4. Operation aspects of Mendhasal-Baripada 400 kV line-I & II are not being looked	
			after by OPTCL. During tripping of the line, line charging is being delayed as Powergrid	
			staff coming from Bhubaneswar for charging the line	
			5. PLCC facility is not available for all 220 kV lines	
3	Indravati 400 kV -	30-01-2013	1. Static relays may be replaced with numerical relays	Numerical relay (Make-ALSTOM) is available for distance protection of 400
5	OHPC	00 01 2010		kV feeder (Main-I)
			2. Main-II of Indravati(PG) line is not in service	Action is being taken for installing numerical relay in Main-II to bring Main-
				II of Indravati (PG) line into service.
			3. Event logger is installed but not working	Procurement action has been initiated for a new event logger
			4. Auto reclosing feature is not in service	Auto reclosing feature is not kept in service to safe guard generating units
				in the event of multiple reclosures
			5. Overload alarm for 315 MVA ICT is not available	Through over load alarm is not available, over current trip facility for 315
				MVA ICT is available. IDMT type overurrent relay has been used fro 315
				MVA ICT. The output of this relay is fed to trip circuit.
4	Theruvali 220 kV -	29-01-2013	1. Auto reclosing feature is not in service	
	OPTCL		2. Static relays may be replaced with numerical relays	
			3. Restricted earth fault and over fluxing relays are not available for all 100 MVA,	
			220/132/33 kV ICTs	
			4. Pressure Relieve Device, Low Oil level alarm, Overload alarm are not available for all	
			100 MVA, 220/132/33 kV ICTs	
			5. Event Logger is not available	
-			6. Synchronizing facility is not available	
5	Jaynagar 220 kV -	28-01-2013	1. Event Logger is not available	
	OPTCL		2. LBB not available	
			3. Static relays may be replaced with numerical relays	
			4. Auto reclosing feature is not available	
			5. PLCC facility for protection is not available	
			6. Synchronizing facility is not available	
			7. Over fluxing relay and overload alarm are not available for 100 MVA, 220/132/33	
	T 1 200101		kV ICTs	
6	Tarkera 220 kV -	21-01-2013	1. Local Breaker Backup is not available	
	OPTCL		2. Event Logger is not available	
			3. Synchronizing facility is not available	
			Static relays may be replaced with numerical relays	

			5. Bus Bar protection is not available	
			6. Circuit breakers are not suitable auto reclosing.	
			7. PLCC equipment for line protection is not available	
			8. Over fluxing relay and Restricted earth fault relay are not available for 100 MVA,	
			220/132 kV Transformer I and III	
			9. Pressure relieve device and Overload alarm are not available for all 100 MVA,	
			220/132 kV Transformers	
			10. Time synchronizing equipment is available but relays are not time synchronized	
7	Joda 220 kV - OPTCL	22-01-2013	1. Local Breaker Backup is not available	
			2. Event Logger is not available	
			3. Synchronizing facility is not available	
			4. DG set not available	
			5. Earthling switches are not provided to facilitate earthling of outgoing transmission	
			lines for maintenance	
			6. Static relays may be replaced with numerical relays	
			7. Bus Bar protection is not available	
			8. Over fluxing relay, Restricted earth fault relay, Low oil level alarm, Pressure relieve	
			device and Overload alarm are not available for 100 MVA, 220/132 kV Transformers	
			9. Auto reclosing feature is not available.	
			10. Time synchronizing equipment is available but relays are not time synchronized	
			11. PLCC equipment is not available	

Third Party Protection Audit Observations of NHPC Sub-stations in Eastern Region

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Teesta-V 400 kV -			
	NHPC	25-02-2013	1. Voice communication to ERLDC is not available	

Third Party Protection Audit Observations of BSEB Sub-station

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	Bodhgaya 220 kV -	28-12-2012	1. Local Breaker Backup is not available	
	BSPTCL		2. Event Logger is not available	
			3. Synchronizing facility is not available	
			4. Voice and data communication to RLDC is not available	
			5. Bus Bar protection is not available	
			6. Earthling switches are not provided to facilitate earthling of	
			outgoing transmission lines for maintenance	
			7. Auto reclosing feature is not available.	
			8. PLCC is not installed.	
			9. Time Synchronizing Equipment is not installed.	
2	Biharshariff 220 kV -	21-03-2013	1. Static relay are to be replaced with numerical relays	
	BSPTCL		2. Auto reclosing feature is not available.	
			3. Synchronizing facility is not available	
			4. Time Synchronizing Equipment is not installed.	
			5. Bus Bar protection is not available for 132 kV level	
			6. Overfluxing protection is not available for 150 MVA, 220/132kV	
			Transformers.	
			7. PLCC panels are available but not working.	

Third Party Protection Audit Observations of IPP Sub-stations in Eastern Region

SI. No.	Name of Sub-station	Date of Audit	Observations/Remarks	Compliance/Action plan
1	GMR 400 kV - GMR	29-12-2012	1. Voice communication to RLDC is not available	
2	Maithon RB 400 kV -	22-01-2013	1. PLCC channel-II of protection is not working	
	MPL			
3	Sterlite 400 kV - Sterlite	27-02-2013	1 Directional IDMT type earth fault protection is not activated in	
			numerical relays of line protection.	
			2. Overfluxing, Backup overcurrent and earth fault relays are not	
			available for 80 MVA station transformers.	
			3. Remote OTI and WTI for all transformers are not available in	
			control room	

Annexure-VIII

Anticipated Power Supply Position for the month of Apr-13

· · · · ·		P A R T I C U LA R S	PEAK DEMAND	ENERGY		
SL.NO			MW	MU		
1		BIHAR				
	i)	NET MAX DEMAND	2700	1265		
	ii)	NET POWER AVAILABILITY- Own Source	156	105		
		- Central Sector	1367	752		
	iii)	SURPLUS(+)/DEFICIT(-)	-1177	-408		
2	.,		1120	700		
	1)		1130	700		
	11)	NET POWER AVAILABILITY- OWN Source	418	200		
	iii)		-171	-182		
	,		-171	-102		
3		DVC				
-	i)	NET MAX DEMAND (OWN)	2575	1545		
	ii)	NET POWER AVAILABILITY- Own Source	4031	2198		
		- Central Sector	432	295		
		Long term Bi-lateral (Export)	1400	1008		
	iii)	SURPLUS(+)/DEFICIT(-)	488	-60		
4		ORISSA				
	i)	NET MAX DEMAND	3450	2140		
	ii)	NET POWER AVAILABILITY- Own Source	3200	1596		
	2215	- Central Sector	998	576		
	111)	SUKPLUS(+)/DEFICIT(-)	/48	32		
Ē		WEST RENGAL				
5	1					
3.1	j)	NET MAX DEMAND (OWN)	5250	3015		
	ii)	CESC'S DRAWAL	712	196		
	iii)	TOTAL WBSEDCL'S DEMAND	5962	3211		
	iv)	NET POWER AVAILABILITY- Own Source	3910	2307		
	,	- Import from DPL	0	22		
		- Central Sector	2035	1230		
	V)	SURPLUS(+)/DEFICIT(-)	-17	347		
5.2		DPL				
	i)	NET MAX DEMAND	380	194		
	ii)	NET POWER AVAILABILITY	380	216		
	iii)	SURPLUS(+)/DEFICIT(-)	0	22		
5.5	-		1790	012		
	1) ;;)		1782	912		
	11)		712	196		
	iii)		1782	912		
	iv)	SURPLUS(+)/DEFICIT(-)	0	0		
	.,		-			
6		WEST BENGAL (WBSEDCL+DPL+CESC)				
		(excluding DVC's supply to WBSEDCL's command area)				
		· · · · · · · · · · · · · · · · · · ·				
	i)	NET MAX DEMAND	7412	4121		
	ii)	NET POWER AVAILABILITY- Own Source	5360	3238		
		- Central Sector	2035	1230		
	iii)	SURPLUS(+)/DEFICIT(-)	-17	347		
_	1	cuzzun				
7	-		80	24		
	1) ji)	NET POWER AVAILABILITY- Own Source	00 0	54 0		
	,	- Central Sector	106	59		
	jji)	SURPLUS(+)/DEFICIT(-)	26	25		
	,		_0			
8		EASTERN REGION				
	1	At 1.03 AS DIVERSITY FACTOR				
	i)	NET MAX DEMAND	16842	9806		
		Long term Bi-lateral	1400	1008		
	ii)	NET TOTAL POWER AVAILABILITY OF ER	16741	9559		
		(INCLUDING C/S ALLOCATION)				
	iii)	PEAK SURPLUS(+)/DEFICIT(-) OF ER	-100	-247		
		(11)-(1)				

Tentative Programme of Maintenance Of Transmission Lines and Generating Units for April'13

(A) GENERATING UNITS :									
Agency	Station	Unit no.	Capacity (MW)	Proposed programme (As per LGBR)	Reason of S/d	Remarks			
BSEB	BTPS	6	105	01.04.2013 to 30.09.2013	Under R & M				
BSEB	MTPS	2	110	01.04.2013 to 31.01.2014	Under R & M				
JSEB	PTPS	1	40	01.04.2013 to 31.03.2014	Annual Maintenance				
JSEB	PTPS	2	40	01.04.2013 to 31.03.2014	Annual Maintenance				
JSEB	PTPS	3	40	01.04.2013 to 31.03.2014	Annual Maintenance				
JSEB	PTPS	5	90	01.04.2013 to 31.03.2014	Annual Maintenance				
JSEB	PTPS	8	105	01.04.2013 to 31.03.2014	Annual Maintenance				
JSEB	PTPS	9	110	01.04.2013 to 30.09.2013	Annual Maintenance				
DVC	DTPS	3	140	01.04.2013 to 26.04.2013	Annual Overhauling				
DVC	Mejia TPS	6	250	02.04.2013 to 22.04.2013	Annual Overhauling				
DPL	DPL	4	75	01.04.2013 to 31.10.2013	As a standby				
DPL	DPL	5	75	01.04.2013 to 31.10.2013	As a standby				
TTPS (NTPC)	TTPS	5	110	07.04.2013 to 26.04.2013	Boiler Overhauling				
NTPC	FSTPS	6	500	01.04.2013 to 25.04.2013	Boiler Maint.				
NTPC	KhSTPP Stg-I	4	210	03.04.2013 to 22.04.2013	Boiler & Gen Maint.				
SEL	SEL	3	600	01.04.2013 to 30.04.2013	Annual Overhauling				
OHPC	HHEP	4			Annual Maintenance	22.03.2013 to 22.04.2013			
OHPC	CHEP	1			Annual Maint. & replacement of GT cable	2.04.2013 to 20.04.2013			
OHPC	Upper Indravati	1			Shear pin failure Annual Maintenance	2.04.2013 to 26.04.2013			

EASTERN REGIONAL LOAD DESPATCH CENTRE KOLKATA

SHUTDOWN PROGRAM OF TRANSMISSION ELEMENTS IN 83rd OCC MEETING OF ERPC

F

	S/D APPROV	ED IN OCC							
Sr. No	NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS	S/D availed BY	Reason	Condition
1	125 MVAR BUS REACTOR – I AT NEW PURNEA	3/26/2013	10:00	3/26/2013	18:00	ODB	POWERGRID	FOR CONSTN. WORK OF 400KV BSF – PRN AT NPRN . (82nd OCC APPROVED S/D FOR 12.03.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
2	400 KV MAITHON - DURGAPUR - II	3/26/2013	10:00	3/26/2013	14:00	ODB	POWERGRID	Completion of balance construction work under ERSS-I head	
3	400 kV Meramundali-Bolangir S/C	3/26/2013	10:00	3/26/2013	14:00	ODB	POWERGRID	For making line LILO at Anugul substation	SUBJECT TO NLDC CONSENT
4	400 kV Bourkela-Baigarh - III	3/26/2013	8.00	3/26/2013	18:00	OCB	POWERGRID	For making line LILO at Sundergarb substation	SUBJECT TO NLDC APPROVAL
5	400 kV Farakka-Jeerat S/C	3/26/2013	9:00	3/31/2013	17:00	OCB	POWERGRID	For making LLO of line at Berhampore (WB) under Indo-	SUBJECT TO WESETCL APPROVAL
6	400 kV Meramundali-Bolangir S/C	3/28/2013	9:00	3/30/2013	17:00	OCB	POWERGRID	Bangladesh Grid Interconnectivity For making line LILO at Anugul substation	SUBJECT TO NLDC CONSENT
7	400 kV Rourkela-Raigarh - III	3/28/2013	9.00	3/30/2013	17:00	OCB	POWERGRID	For making line LILO at Sundergarh substation	SUBJECT TO NLDC APPROVAL
,		2/20/2012	10.00	2/20/2012	10.00	000	POWERCRID		SOBJECT TO NEDE ATTROVAL
0	400 KV BUS - II AT NEKN	3/23/2013	10.00	3/23/2013	18.00	008	POWERGRID	FOR CONSTN. WORK OF 400KV BSF - FRIN AT INFRIN .	
9	100WVX ICT - I Barlpaua	3/29/2013	9:00	3/29/2013	17:00	UDB	POWERGRID	Retrontting numerical differential relay	LOAD Shall be taken care by 160 WIVA ICT-II during S/D
10	125 MVAR BUS REACTOR – II AT NEW PURNEA	3/30/2013	10:00	3/30/2013	18:00	ODB	POWERGRID	FOR CONSTN. WORK OF 400KV BSF – PRN AT NPRN . (82nd OCC APPROVED S/D FOR 12.03.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
11	765 KV GAYA - FATEHPUR	3/30/2013	7:00	3/30/2013	17:00	ODB	POWERGRID	REQUEST MADE BY NR – I FOR STRINGING WORK OF 765 KV	SUBJECT TO NLDC APPROVAL
12	220 KV DALKHOLA/PG) - DALKHOLA/WB)	2/20/2012	6.00	4/1/2013	16:00	OCB	WRSETCI	PANEL CHECKING WORK AT WRSETCI	
13	765 KV GAYA - FATEHPUR	3/31/2013	7:00	3/31/2013	17:00	ODB	POWERGRID	REQUEST MADE BY NR - I FOR STRINGING WORK OF 765 KV	SUBJECT TO NLDC APPROVAL
		-,,		-,,				SSRM – FATEHPUR LINE. (ALREADY APPROVED BY NRPC)	
14	400 kV Binaguri-Malbase	3/31/2013	9:00	3/31/2013	18:00	ODB	POWERGRID	For restoration of OPGW cable between tower no:316 to 317 of Binaguri -Malbase transmission line damaged by miscreants	
15	400 KV SSRM - ALLAHBAD	4/1/2013	8:00	4/1/2013	18:00	ODB	POWERGRID	FOR CONST. WORK RELATED TO 765 KV SSRM – FATEHPUR	SUBJECT TO NLDC APPROVAL
16	220kV Birpara-New Siliguri-I	4/1/2013	8:00	4/7/2013	17:00	ODB	POWERGRID	LINE AT SSRM END Insulator replacement damaged by miscreants	SUBJECT TO WBSETCL APPROVAL & WBSETCL TO RESTRICT
17	400 kV Binaguri-Purnea -II	4/1/2013	18:00	4/30/2013	18:00	осв	POWERGRID	This is in continuation to earlier shut down for re-conductoring work with GTACSR conductor in 400 kV Binaguri-Purnea -II	
								88	
18	FSC Gajuwak-I FSC Jeypore	4/1/2013	9:00	4/1/2013	17:00	ODB	POWERGRID	AMP works	No power interruption
19	132 KV Main bus BIRPARA	4/2/2013	10:00	4/2/2013	12:00	ODB	POWERGRID	For balance ERSS-IV works	ICT-I & II shall be out of service / SUBJECT WBSETCL
20	400 KV BSF – BALIA - II	4/2/2013	10:00	4/2/2013	14:00	ODB	POWERGRID	AMP (82 nd OCC APPROVED S/D FOR 26.02.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	SUBJECT TO NLDC APPROVAL
21	FSC Gajuwak-II FSC Jeypore	4/2/2013	9:00	4/2/2013	17:00	ODB	POWERGRID	AMP works	No power interruption
22	400 KV Kahalgaon - Biharsariff - I	4/2/2013	9:00	4/4/2013	17:30	OCB	NTPC/KHG	LINE CT & CVT REPLACEMENT WORK	
23	400 kV Rengali-Talcher I	4/2/2013	9:00	4/2/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	
								FOR RELAY RETROEITTING WORK WITH NUMERICAL RELAY AT	
24	400 KV Kahalgaon - Biharsariff - I	4/2/2013	9:00	4/2/2013	17:00	ODB	POWERGRID	BSF END	SUBJECT TO NLDC APPROVAL
25	400 KV Purnea - Muzaffarpur - D/C	4/3/2013	9:00	4/3/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
								REPLACEMENT OF B – PH LINE CT AND ISOLATOR BLADE	
26	400 KV JSR – MEJIA	4/3/2013	9:30	4/3/2013	17:30	ODB	POWERGRID	REPLACEMENT (82 nd OCC APPROVED S/D FOR 04 03 13 NOT	SUBJECT TO NLDC APPROVAL
		7.7		7.4		-		AVAILED DUE TO SYSTEM CONSTRAINTS)	
27	132 KV SSRM – DEHRI	4/3/2013	10:00	4/3/2013	16:00	ODB	POWERGRID	AMP OF LINE & BAY EQUIPMENTS AT BOTH END . (82 nd OCC APPROVED S/D FOR 05.03.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.).	SUBJECT TO BIHAR APPROVAL
28	FSC Bolangir Jeypore	4/3/2013	9:00	4/3/2013	17:00	ODB	POWERGRID	AMP works	No power interruption
29	400 KV Purnea - Muzaffarpur - D/C	4/4/2013	9:00	4/4/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
30	400 KV BSF – MUZ - I	4/5/2013	10:00	4/5/2013	14:00	ODB	POWERGRID	AMP (82 nd OCC APPROVED S/D FOR 20.02.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
31	400 KV SSRM - ALLAHBAD	4/5/2013	8:00	4/5/2013	18:00	ODB	POWERGRID	FOR CONST. WORK RELATED TO 765 KV SSRM – FATEHPUR LINE AT SSRM END	SUBJECT TO NLDC APPROVAL
32	220 KV SUBHASGRAM - WBSETCI # 1	4/5/2013	7:00	4/5/2013	15:00	ODB	POWERGRID	Tan Delta of CT and Isolator maintenance	SUBJECT TO WESETCL APPROVAL
33	400 kV Rengali-Talcher II	4/5/2013	9.00	4/5/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	
24	400 KV/ Pinaguri Now Purpos IV	4/5/2012	8.00	4/25/2012	16:00	ODR	DOWERLINK	INSULATOR CHANGE AT VARIOUS LOCATION	
34	HOU NY DINAGUIT - NEW PUTTER - TV	4/5/2013	0.00	4/25/2013	10.00	008	NUDSETCI	ANC ANC AN ANALY AND A REAL AND A	+
35	313 IVIVA ICI - I AT AKAMIBAG	4/5/2013	0:00	4/5/2013	10:00	ODR	WBSEICL	AIVIL	
36	400 KV JSR – MAITHON	4/6/2013	9:30	4/6/2013	17:30	ODB	POWERGRID	03 NOS. CT REPLACEMENT WORK IN LINE AND MAIN BAY(82 nd OCC APPROVED S/D FOR 12.03.13 ,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
37	400 KV BSF – MUZ - II	4/6/2013	10:00	4/6/2013	14:00	ODB	POWERGRID	AMP (82 nd OCC APPROVED S/D FOR 23.02.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
38	400 KV SSRM - SARANATH	4/6/2013	8:00	4/6/2013	18:00	ODB	POWERGRID	FOR CONST. WORK RELATED TO 765 KV SSRM – FATEHPUR LINE AT SSRM END	SUBJECT TO NLDC APPROVAL

39	400 Ky Armabag - BaKreswar	4/6/2013	6:00	4/6/2013	16:00	ODB	WRSETCI	AMC	
35	400 W Minubug Bulleshul		0.00		10.00	000	Westree	FOR CONST. WORK RELATED TO 765 KV SSRM – FATEHPUR	
40	400 KV SSRM - SARANATH	4/7/2013	8:00	4/7/2013	18:00	ODB	POWERGRID	LINE AT SSRM END	SUBJECT TO NLDC CONSENT.
41	400 KV Biharsariff - Banka - D/C	4/7/2013	9:00	4/7/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
42	400 KV KOLGHAT - JERAT	4/7/2013	6:00	4/12/2013	16:00	OCB	WBSETCL	EMERGENCY TOWER ERECTION WORK	
43	315 MVA ICT – II AT JSR	4/8/2013	10:30	4/8/2013	18:30	ODB	POWERGRID	14 NOS. ISOLATOR BLADE REPLACEMENT WORK. (82 nd OCC APPROVED S/D FOR 13.03.13, NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	SUBJECT TO JSEB CONSENT.
44	400 KV SSRM – BSF - III	4/8/2013	8:00	4/8/2013	18:00	ODB	POWERGRID	400 KV SSRM – DALTANGANJ BAY CONST. WORK AT SSRM . (82 nd OCC APPROVED S/D FOR 27.02.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	SUBJECT TO NLDC APPROVAL
45	132 KV SSRM - MOHANIA	4/8/2013	10:00	4/8/2013	13:00	ODB	POWERGRID	AMP OF LINE & BAY EQUIPMENTS AT BOTH END .*(MAY BE CLUBBED WITH 765 KV SSRM – FATEHPUR LINE CROSSING S/D TAKEN RY NR – I)	SUBJECT TO BIHAR APPROVAL
46	132 KV MOHANIA - KARAMNASA	4/8/2013	14:00	4/8/2013	17:00	ODB	POWERGRID	AMP OF LINE & BAY EQUIPMENTS AT BOTH END	SUBJECT TO BIHAR APPROVAL
47	220kV Birpara-New Siliguri-II	4/8/2013	8:00	4/14/2013	17:00	ODB	POWERGRID	Insulator replacement damaged by miscreants	SUBJECT TO WBSETCL APPROVAL & WBSETCL TO RESTRICT LOAD AT BIRPARA.
48	400 KV Biharsariff - Banka - D/C	4/8/2013	9:00	4/8/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
49	400 KV Durgapur- B'nagar	4/9/2013	10:00	4/9/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	
50	400 KV SSRM - BALIA	4/9/2013	8:00	4/9/2013	18:00	ODB	POWERGRID	400 KV SSRM – DALTANGANJ BAY CONSTRUCTION WORK AT SSRM . (82 nd OCC APPROVED S/D FOR 28.02.13,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	SUBJECT TO NLDC APPROVAL
51	132 kV Rangit-Kurseong -I & 132 kv Rangit - Gangtok	4/9/2013	7:30	4/9/2013	17:30	ODB	POWERGRID	S/d is required for right sagging of conductor and earthwire for safety measures in the village area	132 kv Silliguri - Melli - Gangtok must remailn in service and possible arrangement of siliguri - NBU D/C by POWERGROD. Subject to WBSEB & Sikkim consent.
52	315 MVA ICT-III Malda	4/9/2013	9:00	4/9/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	SUBJECT TO WBSETCL APPROVAL
53	400 KV Kahalgaon - Biharsariff - II	4/9/2013	9:00	4/11/2013	17:30	OCB	NTPC/KHG	LINE CT & CVT REPLACEMENT WORK	
54	315 MVA ICT-I Rengali	4/9/2013	9:00	4/9/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	SUBJECT TO OPTCL APPROVAL
55	400/220 kv ICT - I AT KANIHA	4/9/2013	9:00	4/11/2013	18:00	OCB	NTPC/KANIHA	AMC	
56	160MVA ICT-I Maida	4/10/2013	9:00	5/10/2013	17:00	OCB	POWERGRID	Left over work of construction.	SUBJECT TO WESETCL APPROVAL
57	50 MVAR BUS REACTOR – II AT JSR	4/10/2013	9:30	4/10/2013	17:30	ODB	POWERGRID	12 NOS. ISOLATOR BLADE REPLACEMENT WORK(82 OCC APPROVED S/D FOR 20.03.13 ,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
58	125 MVAR BUS REACTOR – I AT SSRM	4/10/2013	9:00	4/10/2013	13:00	ODB	POWERGRID	FOR BAY CONSTN. WORK RELATED TO 400 KV SSRM – DALTANGANJ LINE AT SSRM	
59	400 KV Kahalgaon - Biharsariff - II	4/10/2013	9:00	4/10/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT BSF END	SUBJECT TO NLDC APPROVAL
60	400 KV Purnea - Muzaffarpur - D/C	4/10/2013	9:00	4/10/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
61	400 KV BUS – II AT JSR	4/11/2013	9:30	4/11/2013	17:30	ODB	POWERGRID	02 NOS. ISOLATOR BLADE REPLACEMENT WORK (82 nd OCC APPROVED S/D FOR 18.03.13, NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
62	125 MVAR BUS REACTOR – II AT SSRM	4/11/2013	9:00	4/11/2013	13:00	ODB	POWERGRID	FOR BAY CONSTN. WORK RELATED TO 400 KV SSRM – DALTANGANJ LINE AT SSRM	
63	400 KV BSF – SSRM - I	4/11/2013	9:00	4/11/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT BSF END	SUBJECT TO NLDC APPROVAL
64	400 KV Purnea - Muzaffarpur - D/C	4/11/2013	9:00	4/11/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
65	220 KV DURGAPUR - PARULIA (DVC) # 1	4/12/2013	10:00	4/12/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	SUBJECT TO DVC CONSENT
66	400 KV BSF – SSRM - II	4/12/2013	9:00	4/12/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO NLDC APPROVAL
67	220 KV SUBHASCRAMA WRSETCI # 2	4/12/2012	7:00	4/12/2012	15:00	ODR	DOWERCRID	BSF END Tap Dolta of CT and Isolator maintenance	SUBJECT TO WRSETCI ADDROVAL
68	400 KV Biharsariff - Banka - D/C	4/12/2013	9:00	4/12/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
69	315 MVA ICT-II Rengali	4/12/2013	9:00	4/12/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	
70	400 KV Biharsariff - Banka - D/C	4/13/2013	9:00	4/11/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
71	400 KV JSR – ANDAL - I	4/13/2013	9:30	4/13/2013	17:30	ODB	POWERGRID	AMP WORKS .	SUBJECT TO DVC APPROVAL
72	400 KV BARH - KAHALGAON - II, BAY - 22	4/15/2013	9:00	4/10/2013	17:00	ODB	NTPC/BARH	PM JOB OF CTs, CVTs, LINE ISOLATOR, CB, LONE OUTAGE REQUIRED	400 KV BARH - KHG - II WILL BE OUT
73	400 KV EAST BUS-II AT SSRM	4/15/2013	8:00	4/15/2013	18:00	ODB	POWERGRID	FOR BAY CONST. WORK OF 400 KV SSRM – DALTONGANJ LINE AT PSL	
74	400 KV JSR – RKL -I	4/15/2013	9:00	4/15/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT JSR END	
75	400 kV Binaguri-Bongaigaon -I	4/15/2013	9:00	4/30/2013	18:00	ODB	POWERGRID	For replacement of damaged insulator strings detected during patrolling	SUBJECT TO NLDC APPROVAL
76	400 KV Barh - Kahalgaon - D/C	4/15/2013	9:00	4/15/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
77	400 KV BARH - KAHALGAON - II, BAY - 23	4/16/2013	9:00	4/16/2013	17:00	ODB	NTPC/BARH	PM JOB OF CTs, CVTs, LINE ISOLATOR, CB, LONE OUTAGE REQUIRED	400 KV BARH - KHG - II WILL BE OUT

78	220 KV DURGAPUR - PARULIA (DVC) # 2	4/16/2013	10:00	4/16/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	SUBJECT TO DVC CONSENT
79	400 KV Barh - Kahalgaon - D/C	4/16/2013	9:00	4/16/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO AVAILABILITY OF 400 KV MAITHON - KODERMA - BIHARSARIFF D/C & ER - NR TTC MAY BE REVISED
80	400 KV PURNEA – MALDA - I	4/17/2013	10:00	4/19/2013	18:00	ОСВ	POWERGRID	FOR CONSTN. WORK OF 400KV BSF – PRN AT NPRN .	Shutdown may be be allowed during MAY as BHUTAN & NER hydro availability will improve & Shutdown may be be allowed during MAIY as BHUTAN & NER hydro availability will improve.
81	400 KV MAITHON - DURGAPUR - II	4/17/2013	10:00	4/17/2013	14:00	ODB	POWERGRID	Completion of balance construction work under ERSS-I head	
82	400 KV JSR - MTN	4/17/2013	9:00	4/17/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO DVC APPROVAL
83	400 KV JSR - MEJIA	4/18/2013	9:00	4/18/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO DVC APPROVAL
84	220 KV DURGAPUR - PARULIA (WB) # 2	4/19/2013	10:00	4/19/2013	17:00	ODB	POWERGRID	Retrofitting numerical Distance relay	SUBJECT TO WBSETCL APPROVAL
85	400 KV JSR - DURGAPUR	4/20/2013	9:00	4/20/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT JSR END	
86	400KV ICT#1 Durgapur	4/23/2013	10:00	4/23/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	SUBJECT TO WBSETCL APPROVAL
87	315 MVA ICT – II AT JSR	4/23/2013	10:30	4/23/2013	18:30	ODB	POWERGRID	14 NOS. ISOLATOR BLADE REPLACEMENT WORK. (82 nd OCC APPROVED S/D FOR 13.03.13, NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
88	400 KV BSF – SSRM - I	4/23/2013	9:00	4/23/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO NLDC APPROVAL
89	400 kv Farakka - Kahalgaon - II	4/24/2013	9:30	4/24/2013	16:30	ODB	NTPC/FARAKKA	Relay testing work	
90	400 KV Koderma - Biharsriff - D/C	4/25/2013	9:00	4/25/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO NLDC CONSENT
91	50 MVAR BUS REACTOR – II AT JSR	4/25/2013	9:30	4/25/2013	17:30	ODB	POWERGRID	12 NOS. ISOLATOR BLADE REPLACEMENT WORK(82 ^{no} OCC APPROVED S/D FOR 20.03.13 ,NOT AVAILED DUE TO SYSTEM CONSTRAINTS.)	
92	132 KV MAIN BUS AT PURNEA	4/25/2013	10:00	4/25/2013	18:00	ODB	POWERGRID	FOR AMP WORK & CHECKING OF ELECTRICAL OPERATION , ALIGNMENT OF 05 NOS. BIMCO MAKE ISOLATORS AND EARTH SWITCH	SUBJECT TO BIHAR APPROVAL
93	400 KV BSF – SSRM - II	4/25/2013	9:00	4/25/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT SSRM END	SUBJECT TO NLDC APPROVAL
94	400 KV Koderma - Biharsriff - D/C	4/26/2013	9:00	4/26/2013	18:00	ODB	ENICL	Construction of Purnea - Biharsariff D/C	SUBJECT TO NLDC CONSENT
95	400KV ICT#2 Durgapur	4/26/2013	10:00	4/26/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	
96	400 KV SASARAM - ALLAHABAD	4/26/2013	9:00	4/26/2013	17:00	ODB	POWERGRID	SSRM END	SUBJECT TO NLDC APPROVAL
97	315 MVA ICT-V Malda	4/26/2013	9:00	4/26/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	SUBJECT TO WBSTCL CONSENT.
98	400 kv Bus Reactor Rourkela	4/26/2013	9:00	4/26/2013	17:00	ODB	POWERGRID	AMP & LA Replacement	
100	400 KV SASARAM - SARNATH	4/27/2013	9:00	4/27/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO NLDC APPROVAL
101	220 GAYA (PG) – DEHRI – I&II	4/27/2013	8:00	4/27/2013	18:00	ODB	POWERGRID	FOR CROSSING OF 400 KV GAYA – KODERMA TL & 400 KV MAITHON – GAYA TI	SUBJECT TO BIHAR APPROVAL
102	220 GAYA (PG) – DEHRI – 1&II	4/28/2013	8:00	4/28/2013	18:00	ODB	POWERGRID	FOR CROSSING OF 400 KV GAYA – KODERMA TL & 400 KV MAITHON – GAYA TL	SUBJECT TO BIHAR APPROVAL
103	220 KV SASARAM - DEHRI	4/29/2013	9:00	4/29/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT	SUBJECT TO BIHAR APPROVAL
104	400 KV Bus Reactor Durgapur	4/30/2013	10:00	4/30/2013	17:00	ODB	POWERGRID	Retrofitting numerical differential relay	
105	220 KV SASARAM - SAHUPURI	4/30/2013	9:00	4/30/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT SSRM END	SUBJECT TO NLDC APPROVAL
106	220 KV SASARAM – ARA - I	5/1/2013	9:00	5/1/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT SSRM END	
107	220 KV SASARAM – ARA - II	5/2/2013	9:00	5/2/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT SSRM END	
108	220 KV SASARAM – ARA - I	5/4/2013	9:00	5/4/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT ARA END	
109	220 KV SASARAM – ARA - II	5/6/2013	9:00	5/6/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT ARA END	
110	220 KV ARA – KHAGAUL – I	5/7/2013	9:00	5/7/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT ARA END	SUBJECT TO BIHAR APPROVAL
111	220 KV ARA – KHAGAUL - II	5/8/2013	9:00	5/8/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT ARA END	SUBJECT TO BIHAR APPROVAL
112	220 KV ARA – KHAGAUL – I	5/10/2013	9:00	5/10/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT KHAGAUL END	SUBJECT TO BIHAR APPROVAL
113	220 KV ARA – KHAGAUL - II	5/11/2013	9:00	5/11/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT KHAGAUL END	SUBJECT TO BIHAR APPROVAL
114	220 KV PURNEA – DALKHOLA - I	5/14/2013	9:00	5/14/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT PURNEA END	
115	220 KV PURNEA – DALKHOLA - II	5/15/2013	9:00	5/15/2013	17:00	ODB	POWERGRID	FOR RELAY RETROFITTING WORK WITH NUMERICAL RELAY AT PURNEA END	

SHUTDOWN DEFFERED IN 83rd OCC MEETING OF ERPC

	S/D PROPOSED IN OCC								
Sr. No	NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS	S/D availed BY	Reason	Condition
1	400 KV ANDAL-MEJIA	4/2/2013	9:00	4/2/2013	17:00	ODB	POWERGRID	TO ATTAIN PUNCH POINTS BY M/s KEC	AFTER 400 Kv andal - jamshedpur permanent arragement
2	400KV FARAKKA - MALDA - 1	4/8/2013	9:00	4/8/2013	17:00	ODB	POWERGRID	Relay testing and bay AMP.	Shutdown may be be allowed during MAY as BHUTAN & NER hydro availability will improve & Shutdown may be be allowed during MAY as BHUTAN & NER hydro availability will improve.
3	400KV FARAKKA - MALDA - 2	4/23/2013	9:00	4/24/2013	17:00	ODB	POWERGRID	Relay testing,bay equipment AMP at Malda and Farakka end(23.04.2013 for AMP at Farakka end and 24.04.2013 for Malda end.).	Shutdown may be be allowed during MAY as BHUTAN & NER hydro availability will improve & Shutdown may be be allowed during MAY as BHUTAN & NER hydro availability will improve.

List of Reliability coordinators:-

- 1. Sri. Gautam Kumar Choubey, Electrical Executive Engineer SLDC; BSEB.
- 2. Sri. JitendraPratap Singh, Electrical Executive Engineer Transmission (Project & Planning) BSEB.
- 3. Sri. S. P. Singh, E.S.E, SLDC, Ranchi, JSEB.
- 4. Sri. N. K. Ojha, E.E.E Transmission Board Headquarter; JSEB.
- 5. Sri. MonoranjanSahoo, Sr. Divn. Engineer, CLD; Maithon.
- 6. Sri. SamitMondal, Executive Engineer, DVC Tower, Kolkata.
- 7. Sri. S.K. Mishra, Dy. Manager, SLDC, OPTCL
- 8. Sri. S.K Behera, Asst. Manager, Corporate Planning, OPTCL
- 9. Sri. AmitavaBiswas, Addl. Chief Engineer, SLDC, WBSETCL.
- 10. Sri. AsitKarmakar, SE(E), Central Planning Deptt., WBSETCL.
- 11. Sri. Rakesh Kumar, DGM (OS); NTPC ER -I, Patna.
- 12. Sri. S.J. Lahiri CM (OS) ER-II, PGCIL Kolkata.
- 13. Sri. Jiten Das CM (OS), ER-I, PGCIL Patna.

Nominations are also required for Reliability coordinators from IPP

ERPC: Kolkata

UFR Inspection Report of OPTCL substations on 12.02.13 & 13.02.13

The UFR inspection group comprising of the following members visited Balasore, Bhadrak substation on 12.02.2013 and Kendpara, Chandikhol and Khurda substation on 13.02.2013 of OPTCL system for UFR Audit.

- 1. Shri A. Sengupta, Manager, CESC Ltd.
- 2. Shri S. Maity, DGM, WBPDCL
- 3. Shri A.K. Nayak, Engineer, Powergrid
- 4. Shri S. Roy, SE, WBSETCL
- 5. Shri M.R. Mohanty, General Manager, OPTCL
- 6. Shri T.R. Mahapatra, Sr. Engineer, ERLDC (only on 12.02.13)
- 7. Shri B. Sarkhel, SE, ERPC

The team physically inspected the feeders which are connected with UFRs at the above substations. The report of the inspection is furnished below :

S1.	Name of the	Feeder	Voltage	Adopted	Tested	Load at the	UFR	
No.	substations	connected	rating	UFR	initiated	time	make	
		with UFR		setting	frequency	inspection		
			(Kv)	(Hz)	(Hz)	MW		
1	220/132/33 kv	Srijanj	22	48.8, Inst.	48.80,	5.9	Siemens	
1	Balasore		33		0.147 sec		7SJ62	
2	220/132/33kv	Dhansnagar	22	48.8, Inst.	48.80,	8.0	AREVA	
Ζ	Bhadrak		33		0.147 sec		MFVUM	
2	-Do-	Chandbali	22	48.2, Inst.	48.20,	11	Siemens	
5			33		0.16 sec		7SJ62	
4	132/33kv	Luna	22	48.6, Inst.	48.60,	9	Siemens	
4	Kendpara		55		0.06 sec		7SJ62	
5	-Do-	Pattamundai	33	33	48.2, Inst.	48.20,	12	Siemens
5			55		0.05 sec	12	7SJ62	
	132/33kv	Kabata		48.6, Inst.	Set at below		Siemens	
	Chandikhol				51.0Hz and		7SJ62	
6			33		actuated at	5		
					running Grid			
					freq. 50.0Hz			
7	132/33kv	Banki	22	48.8, Inst.	48.80,	4	Siemens	
/	Khurda		33		0.01 sec		7SJ62	
0	-Do-	Delanga	22	48.6, Inst.	48.60,	6	Siemens	
0			33	0.01 sec 0	0	7SJ62		

The above UFR setting were tested with help of Secondary injection Kit (OMICRON-CMC-256 and Meggar MPRT-8430; - owned by OPTCL). Only at Chandikhol substation, the Kit was found nonfunctional and testing was carried out as per (ii) of the office order. The UFR are provided with direct trip wiring and D/R are in-built at Numerical relays with GPS in the feeders.

Submitted for information to OCC meeting.

(B.Sarkhel) Superintending Engineer (PS), ERPC

Annexure-XII

Ea

Pollution mapping for Eastern Region

The external insulation in the EHV/UHV range AC transmission system is designed on the basis of switching over voltage level. The insulation would also be sufficient for power frequency over voltages under clean and wet conditions. Insulator flashovers have been reported in the transmission system of eastern region in the wet weather conditions when the insulators are polluted due to prevailing environmental conditions.

There is a relationship between the specific creepage distances to the degree of pollution. IEC 60815 specifies different creepage distances for different site pollution severity. The transmission lines are spread all over the region and pass through different pollution site severities. In order to have economical and reliable transmission lines it is essential have knowledge of the pollution severities and insulators for transmission lines are designed to suit the pollution severity encountered along the line.

Background

ţ

Inquiry Committee on Grid Disturbance in Northern Region on 2nd Jan' 2010, recommended POWERGRID to complete pollution mapping in association with CPRI (Page 81, Annexure I)

"19. Pollution Mapping

POWERGRID has taken up with CPRI for getting the pollution mapping done for the entire country. In the 15th NRPC meeting held on 24th December, 2009 it was informed that CPRI had submitted the proposal for the approval to MoP. The committee recommends that the pollution mapping may be completed by POWERGRID in association with CPRI after getting the requisite approval. "

(Action-POWERGRID)

NRPC in its 18th meeting on 26th & 27th Nov 2010, recommended POWERGRID to effect the pollution mapping of region, in consultation with CPRI (Page 48, MOM attached at Annexure II). Initially pollution mapping of Northern region was taken up. Northern region Pollution mapping program is currently under progress wherein pollution measurements are being carried out at identified sites (around 200 locations) covering whole region.

The expenditure involved for pollution mapping for Northern Region was INR 2.25 Crore. (Annexure III)

A. The Pollution Problem

- 1.0 The performance of insulators used on overhead transmission lines and overhead distribution lines, and in outdoor substations is a key factor in determining the reliability of power delivery systems. The insulators not only must withstand normal operating voltage, but also must withstand over voltages that may cause disturbances, flashovers and line outages.
- 2.0 The reduction in the performance of outdoor insulators occurs mainly by the pollution of the insulating surfaces from air-borne deposits that may form a conducting or partially conducting surface layer when wet. The presence of a conducting or partially conducting layer of pollution on the insulator surface will dictate flashover performance.
- 3.0 Power lines pass through the following major pollution environments: marine, industrial, desert & agricultural. These pollution deposits accumulate on insulator surfaces & form a conductive electrolyte when the insulator surface is wetted by rain or fog. This allows the flow and increase of leakage currents over the insulator surface, which in turn results in the decrease of the electrical withstand of the insulator and finally leads to a flashover.
- 4.0 Translating the environment into parameters that can be used to design the insulation, therefore, presents one of the fundamental problems in designing external insulation with respect to polluted conditions. This is due to the vast range of possible conditions such as those found in coastal, industrial, agricultural and desert areas; also in areas with ice and snow or at high altitude.
- 5.0 Pollution Flashover process has been discussed in CIGRE report on Polluted insulators: a review of current knowledge prepared by Task Force 33.13.01 (formerly 33.04.01) of CIGRE Working Group 33.13 (Annexure IV).

B. Relevance of IEC 815 (1986)

The present edition of IEC Publication 815 (1986) is based on knowledge obtained mainly from experience with conventional porcelain and glass insulators on a.c. systems. It applies only to these insulators, and only when they are used in a.c. applications. Minimum specific creepage distances are specified in this document for different pollution severity levels. These pollution severity levels do not consider all aspects of the environment that can affect the performance of various insulator profiles. Apart from some restrictions on insulator profile and corrections for diameter, IEC 815 thereby implies that no other factors need to be considered when designing insulators for use in polluted conditions. It is now recognised that a broader approach for insulator design and selection is required to address the optimised design of porcelain and glass insulators as well as polymeric insulators for a.c. and d.c. systems world-wide.

C. Need for Pollution mapping of Eastern Region

Transmission corridors of Eastern region are adversely affected due to heavy pollutants emitted by Industries (mainly steel Industries) in the region. Pollutants from thermal power plants situated in coal rich areas of Eastern region deteriorate the air quality of surrounding region. Proper mapping is necessary to develop a pollution profile of the region.

D. Approach adopted in Pollution mapping of Northern region:

- CPRI, after reviewing the work done on Pollution Mapping in other countries suggested the methodology emphasising;
 - o procedure for selection & installation of dummy insulators
 - o collection & handling of samples
 - o measurement/testing procedures for pollutants
 - o frequency of measurements
 - o Analysis
- Based above Guidelines, Number of sites & their locations were finalised.
- POWERGRID was appointed as nodal agency to co-ordinate mapping activity with constituents (State Utilities).
- CPRI provided training (including hands on training) to the associated engineers of POWERGRID & constituents (State Utilities) at suitable locations in the region.
- Insulator samples were arranged & installed by POWERGRID on transmission line of POWERGRID and/or NR constituent.
- Measurements shall be carried out for three (03) times representing three seasons per year and shall repeat the same for next year also. (i.e. total 6 samples for two years)
- Initial samples shall be installed & measurement of Equivalent Salt Deposited Density (ESDD) to be done under the supervision of CPRI.

ŋ

- Subsequent measurements shall be carried out by officials of constituents.
- All results shall be analysed by CPRI.
- Non Soluble Deposited Density (NSDD) measurements & Chemical Analysis of selected samples shall be carried out by CPRI. Number of samples & locations required for NSDD & Chemical Analysis shall be suggested by CPRI.

• The CPRI shall analyze the measurements / results of test carried out at site & laboratory and determine the pollution levels. Pollution map shall be produced on geographical map of Northern region

E. Funding:

 Expenditure on pollution mapping is to be reimbursed to POWERGRID directly from the beneficiaries as one time reimbursement, in line with the decision taken in 22nd NRPC & 66th OCC meeting (refer Flag C).

Pollution Mapping Program is proposed for Eastern Region; using methodology & funding mechanism similar to the one used in Pollution mapping of Northern region. Expected expenditure for the program is INR 3 Crores.

1