

Eastern Regional Power Committee

Kolkata-33

Salient Decisions taken in the 80th OCC meeting held on 12.12.12

1. OCC proposed to constitute a sub-committee with representative from each transmission utility of Eastern Region, ERLDC and ERPC Secretariat and referred this ensuing TCC for ratification for monitoring of ongoing transmission project.
2. It was agreed that the sub-committee for third party protection audit would be carrying out site audit at critical substations and onsite protection audit at first phase would be completed by end of December 2012.
3. 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.
4. OCC requested all utilities to submit the information on GT and ICT tap coordination as given in agenda item B5 latest by next OCC.
5. It was decided that transmission utilities (viz. Powergrid, Powerlink, OPTCL, DVC, WBSETCL etc) would send their outage plan for the year 2013-14 by next week.
6. It was agreed that all utilities should submit their proposal on automatic demand management measures to ERPC Secretariat by next OCC, otherwise same would be communicated accordingly.

Minutes of 80th OCC Meeting held on 12.12.12 at ERPC, Kolkata

Sh. A. K. Bandyopadhyaya, Member Secretary, I/c, ERPC welcomed the participants to the 80th OCC meeting. He shared that Sh. D. Chakraborty, Chief Engineer, SLDC, WBSETCL, who was one of valuable members of OCC, would superannuate this month. He, on behalf of the participants, requested Sh. Chakraborty to chair the meeting.

Sh Chakraborty thanked participants and chaired the meeting. He shared his path of journey and memories with the participants.

Before taking up any formal agenda, OCC deeply acknowledged the contribution made by Sh. D Chakraborty in different forums of ERPC.

Thereafter agenda items were taken by Member Secretary I/c, ERPC.

Item no. A.1: Confirmation of minutes of 79th OCC meeting of ERPC held on 23.11.12

The minutes were circulated vide letter dated 27.11.12 to all the constituents and also uploaded in ERPC website. No comment was received from the constituents.

Members may confirm the minutes.

Deliberation in the meeting

Members confirmed the minutes.

PART B :: NEW ISSUES

Item no. B1: Less generation of TEESTA HEP compared to Declared Availability- ERLDC

It was observed that TEESTA HEP (NHPC) was generating less compared to its declare availability for the day since last one month. Due to which it was very difficult to do negative adjustment in its declare availability for the running day (due to less generation in D-4 day), which leads to less schedule in TEESTA during peak hours.

NHPC may respond.

Deliberation in the meeting

Detailed deliberation took place. It was understood that wide fluctuation in hydro generation occurs during seasonal changes, which may cause huge negative/positive adjustment. NHPC submitted that one such huge negative adjustment in last month was getting carried forward in the daily energy schedule. Besides, system frequency hovering around 50 Hz also added dimension to the issue.

NHPC and ERLDC confirmed that the issue had been resolved off-late.

Item no. B2: Status of construction of 220/132 kV S/s at Bolangir by OPTCL

In the 76th OCC meeting, it was understood that 220/132 kV OPTCL substation at Bolangir for availing power from 400/220 kV PGCIL Bolangir s/s was not yet ready. OCC also observed that connecting load at Bolangir along with anchoring of 400 kV Jeypore- Meeramundali line at Bolangir OPTCL s/s would increase the stability of South Orissa grid.

In the 22nd TCC meeting, OPTCL informed that 220/132 kV s/s at Bolangir was ready but connectivity of this OPTCL substation with 400/220 kV substation of Powergrid was not yet ready. OPTCL further added that this connectivity would be completed by February 2013.

Meanwhile, following elements were already charged at Bolangir:

- i. 400 KV bus of Bolangir(Powergrid) Substation first time charged at 23:44 hrs of 31.08.12 by LILoing 400 KV Jeypore-Meraramundali S/C at Bolangir
- ii. 80 MVAR Bus Reactor of Bolangir first time test charged on 30/09/12 at 23:40 hrs.
- iii. 315 MVA, 400/220 KV ICT-I of Bolangir first time charged on no load on 28/10/12 at 15:42 hrs.

OPTCL may submit status of completion of connectivity of its 220/132 s/s with 400/220 kV Bolangir s/s of PGCIL.

Deliberation in the meeting

OPTCL informed that 4 bays at 220 kV side of 400/220 kV ICT at Bolangir (PGCIL) was earmarked for them. 2 bays would be utilized for LILo of 220kV Katapalli-Bolangir-II at 220 kV side of Bolangir ICT, whereas other two bays would be utilized for LILo of one circuit of 220 kV Bolangir-Kesinga D/c. OPTCL informed that LILo of 220kV Katapalli-Bolangir-II would be completed by January 2014, whereas LILo of one ckt of 220 kV Bolangir-Kesinga D/c would be completed by January'15.

ERLDC pointed out that in the past, it was observed that transmission elements coming in the ISTS network could not be utilized due to non-availability of matching transmission network in the intra-state network. Besides, there were instances when there was a huge time gap between transmission planning and execution and thus creating bottlenecks in the system.

In light of above, members felt that need for monitoring the status of upcoming transmission elements in ISTS as well as in intra-state network in a coordinated manner. This would facilitate better co-ordination between various utilities and also optimize transmission asset utilization.

Accordingly, OCC proposed to constitute a sub-committee with representative from each transmission utility of Eastern Region, ERLDC and ERPC Secretariat and referred this ensuing TCC for ratification.

Item no. B3: Tripping at Baripada on 06.12.12 --- ERLDC

On 06.12.12 at 00:28 hrs, 400 KV Rengali-Baripada S/C and Kharagpur-Baripada S/C tripped reportedly due to overvoltage stg-I operation. Due to incomplete diameter Bus-II of Baripada s/stn, the substation became dead leading to no power flow in 400 KV Baripada-

Jamshedpur(TISCO)-I. Again at 02:36 hrs, 400 KV Kharagpur-Baripada S/C and Baripada-Jamshedpur(TISCO)-I tripped reportedly due to over voltage.

While analyzing the tripping from SCADA data, following reasons could be attributed for such tripping

- i. Load reduction in OPTCL system
- ii. Fluctuation of load in 400 KV Baripada-Jamshedpur(Tisco)-I due to connection of industrial load leading to major change in both active and reactive power.

Tripping report is yet to be received.

ERLDC may further explain and OPTCL may respond.

Deliberation in the meeting

It was noted that tripping report received from Powergrid was not as per requisite format. Member Secretary I/c, ERPC again impressed upon all utilities including Powergrid to submit the grid incidence report as per specified format, otherwise it would be treated as non-compliance of section 5.2 (r) of IEGC.

ERLDC informed that in both the cases, over-voltage might have caused due to sudden injection of VAR at Baripada as well as sudden reduction in OPTCL drawal. During deliberation, it appeared that hostile load like Bhushan Steel and TISCO might have caused the problems. ERLDC felt that load characteristic at Baripada should be looked into by Bhushan Steel and TISCO. Accordingly, OPTCL was requested to take up the matter with Bhushan Steel and DVC was requested to take up the matter with TISCO.

ERLDC also submitted that they were meanwhile instructing to open one circuit of 400 kV Baripada-Mendhasal D/c line during night hours to contain over voltage at Baripada. However, it was observed that whenever there is need for switching off circuit, lot of time is taken for carrying out the switching at Mendhasal. It was gathered that OPTCL people in the Mendhasal s/s do not attend switching operation of the line and PGCIL people from nearby s/s has to come and do the switching operation leading to delay in switching operation.

The issue was discussed in the 73rd OCC meeting. In that meeting, OPTCL informed that they had requested PGCIL to hand over the control panel and related schematic diagram of their 400 kV Baripada-Mendhasal D/c. The handing over process was under progress and after completion of the same, OPTCL people in the Mendhasal S/s would attend the switching operation of the line.

In this OCC meeting, Powergrid pointed out that two bays Mendhasal substation belongs to Powergrid. As per normal practice, Powergrid had submitted a draft MOU to OPTCL in the month of September 2011 for maintenance of these two bays. However, in the pretext of one or another, the MOU is not getting signed by OPTCL. As MOU is not signed, OPTCL is not attending switching operation for these bays at Mendhasal s/s.

Members took note of the matter, and consequential delay in switching operation of Baripada-Mendhasal line at Mendhasal and referred the matter to TCC.

Item no. B4: Tripping of Farakka-Kahalgaon-IV without any indication --- ERLDC

400 KV Kahalgaon-Farakka-IV tripped at Farakka end only on 27/10/12 at 18:07 hrs without any indication as reported. Again same incident happened for 400 KV Kahalgaon-Farakka-IV on 22/11/12 at 17:09 hrs.

Unwanted tripping of such important lines has serious impact on secure operation of NEW grid. Reason for such tripping needs identification and elimination of fault.

NTPC may respond.

Deliberation in the meeting

The issue of such tripping without any indication was also discussed in the 14th Protection sub-committee meeting. In that meeting, NTPC informed that Farakka end tripped upon DT receipt, whereas there was no PLCC counter movement at Kahalgaon end. NTPC was requested to take up the issue of PLCC mal-operation.

In this meeting, NTPC informed that the issue was taken up with manufacturer (ABB) on 04.12.12 during their site visit and ABB were looking into the issue. (ABB had swapped the PLCC card G4AC of channel 1 and channel 2 at Kahalgaon end).

In this regard, Member Secretary I/c, ERPC reminded that 14th December 2012 was the last date for submission of information on ownership of PLCC equipment; however, till date, the information was submitted only by NHPC. He requested rest of ER utilities to send the same within the deadline.

Item no. B5: 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 are at **Annexure-I**.

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 tap (in % of the transformer rating)	Reactance and Resistance at nominal tap (in % of the transformer rating)

Deliberation in the meeting

ERLDC emphasized the need for tap-coordination among all utilities and requested all utilities to check the Annexure and submit the information as desired above.

OCC requested all utilities to submit the information latest by next OCC.

Item no. B6: Frequent emergency shutdown availed by Barh --- ERLDC

It is observed that Barh is availing frequent emergency shut down for maintenance work causing major constraint in evacuation of power to BSEB and Northern Region and TTC revision. The details of outage taken by Barh are enclosed in **Annexure-II**.

The issue of multiple equipment outage at Barh was discussed in the 78th OCC meeting. In the meeting, NTPC informed that multiple outages were occurring due to technical problems in BHEL make breakers and the same was taken up with BHEL. Besides, there were spare constraints.

NTPC may respond.

Deliberation in the meeting

NTPC informed that all failed equipment were rectified except one tie bay breaker in 400 kV Barh-Balia line and the same would be replaced within 4 months.

Item no. B7: Annual Outage plan of transmission element--- ERLDC

Section 5.7.1 © of IEGC 2010 mandates preparation of annual outage plan of transmission element and generating unit as per process elaborated in section 5.7.4 of IEGC 2010.

Eastern Region does not have annual outage plan of transmission element at present and in absence of the same, it is becoming difficult to assess Total Transfer Capability (TTC) in inter-regional link to be declared three months in advance for the purpose of approval of STOA.

All transmission utilities including Powergrid are requested to submit the annual outage plan of transmission element for the year 2013-14 for preparation of LGBR.

Deliberation in the meeting

ERPC Secretariat informed that section 5.7.4 mandates preparation of annual outage plan for both generating stations and transmission elements and all concerned utilities are mandated to submit their outage plan to RPC Secretariat by 30th November each year. However, transmission utilities never send their outage plans.

It was decided that transmission utilities (viz. Powergrid, Powerlink, OPTCL, DVC, WBSETCL etc) would send their outage plan for the year 2013-14 by next week.

Item no. B8: Issue raised by DVC

ERLDC vide its letter dated 27th November 2012 circulated a copy of CMD, Powergrid letter regarding measures to be taken for grid safety and security.

In this regard, DVC vide its letter dated 6th December 2012 requested for discussion on the following points:

- i. Broad guide lines for issue of Overdrawal message (A, B, C) – few points contradicts existing CERC regulation
- ii. Downward revision of Schedule not being implemented uniformly by ERLDC for different beneficiaries from the same unit causing commercial implication
- iii. Downward revision of schedule be implemented duly agreed by the drawee and without waiting for the concurrence from the drawee RLDC for better UI control. Other RLDCs are taking very high time of processing and sending the same to ERLDC
- iv. Implement the revised schedule (duly agreed by the beneficiary) from the time of “Agreeing the schedule” without adding further six time blocks etc.

DVC may explain and members may discuss.

Deliberation in the meeting

On the issue of broad guidelines for Over-drawal message, DVC pointed that the guidelines were subjective, not quantifiable. WBSETCL also expressed their observation in regard to issue of over-drawal message when frequency is above 50 Hz.

ERLDC commented that because of grid disturbance, RLDCs used to exercise such control over each control area as an extra precautionary measure. However, ERLDC assured constituents that their concerns would be appropriately taken care of within the framework of various CERC regulation, Act etc. ERLDC further added that Present Operating Procedure would be reviewed by May'13 to take care of changed circumstances.

On the issue of downward revision of schedule not being implemented uniformly by ERLDC, ERLDC assured to look into the specific cases.

On the third issue, DVC pointed out that processing time by NRLDC was too high. ERLDC agreed to take up the issue with NRLDC.

On the fourth issue, it was decided to convene a special meeting with all stakeholders after ensuing TCC meeting to discuss various scheduling issues.

Item no. B9: Damage of 63 MVAR shunt reactor bay at Tala end – DGPC

On November 15, 2012, the oil reservoir tank of Y phase gas circuit breaker at 400 kV, 63 MVAR shunt reactor bay got damaged while carrying out the maintenance on off line. Subsequently, the matter has been referred to supplier and accordingly the experts from M/s Hitachi, Marubeni Corporation, Japan had arrived at site and inspected the damaged equipment on November 25, 2012. The expert had informed THP management that M/s Hitachi shall depute experts for replacement, testing and commissioning the oil reservoir part by middle of January 2013 and work is expected to take about two weeks. Till then, we would

request to ERLDC to issue the necessary instruction to concerned officials at 400/220 kV Binaguri substation, Siliguri to keep their shunt reactor connected with the respective 400 kV Binaguri-Tala feeders and this facility would avoid tripping of these feeders on over voltage.

ERLDC may opine.

Deliberation in the meeting

DGPC informed that without the 63 MVAR reactor, voltage level at Tala was to the tune of 420 kV and as a result, some high voltage alarm signal is getting activated. ERLDC opined that 420 kV voltage is not so high at 400 kV (nominal) level, and many a generator in Eastern Region were living with this sort of condition. Further, opening one circuit of Tala-Binaguri to contain over-voltage would deplete the system, which is not at all desirable.

Accordingly, DGPC was requested to review the settings of high voltage alarm signal and also expedite restoration of the reactor.

PART C :: ISSUES REFERRED FROM LAST OCC

Item no. C1: Drawal of power for commissioning activities under UI mechanism by Barh TPS, NTPC

Hon'ble CERC, in its order dated 02/11/12 on Petition no. 117/MP/2012 had observed that UI is not a mechanism to draw power for testing and commissioning of any new generating station/unit. Accordingly, the last OCC decided that Barh TPS, NTPC should not draw commissioning power in UI mechanism after 2nd December 2012, other wise ERLDC is empowered to take punitive measures as per relevant CERC order.

NTPC may inform the house/apprise the latest status.

Deliberation in the meeting

NTPC informed that CERC in its order dated 07.12.12 had directed that all concerned RLDCs shall permit new generators to draw power from grid for testing and commissioning activities, subject to fulfillment of the requirements of grid security and compliance of the direction of RLDC, till further order.

In view of above CERC order, ERLDC was empowered to allow Barh STPS, NTPC to draw power for testing and commissioning activities. Meanwhile, NTPC was requested to firm up power supply agreement with BSEB as a back up arrangement.

Item no. C2: Increase in load relief under various stages of UFR

As per decision taken in 77th OCC meeting, quantum of load relief agreed vis-à-vis implemented by the state utilities in different stages of UFRS are given 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	42	115	0
JSEB	50	54	50	56	70	74
DVC	110	132.4	110	142.7	155	166.1

Odisha	150	168	150	172.5	208	161
WB (including CESC)	285	313	285	285	397	430
Total	675	747.4	675	698.2	945	831

Scheme for Emergency setting at 47.6 Hz will remain unchanged. The feeder wise details of UFR in various States are given in **Annexure-III**.

In light of above,

- Bihar may intimate status of implementation of revised load relief in Stage-II & Stage-III.
- Odisha may inform the status for shifting load from Stage-II to Stage-III.
- All states may inform the feeder wise UFR operation, whenever operates.

Deliberation in the meeting

Bihar representative assured that they were taking steps to connect additional feeders under Stage-II and Stage-III to achieve target load relief by next OCC.

Odisha representative informed that they had done necessary modification and load reliefs at various stages are as under:

Stage I---160.5 MW

Stage II---158.5 MW

Stage III---209.5 MW

Item no. C3: 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 voltage of units at the following generating stations were monitored for following sample dates in the month of November'12:

Plant	Dates
Farakka STPS	3, 6, and 7 Nov 2012
Kahalgaon STPS	3, 6, and 7 Nov 2012
Talcher STPS	3 and 4 Nov 2012
Sterlite	1 Nov to 30 Nov 2012
Sagardighi STPS	3, 6, and 7 Nov 2012
Mejia-B	1 Nov to 30 Nov 2012
MPL	1 Nov to 30 Nov 2012

Performance analysis:

- Farakka : Though there was absorption of reactive power by the machines, it was observed that many a times the units shared VAR unequally.
- Kahalgaon : There was absorption of reactive power by the machines. Further, the sharing of VARs among the units is unequal. VAR data of U#6 is reporting erroneously since long.

iii Talcher :- Though there was absorption of reactive power by the machine. The substation voltage did not exceed 420KV and only one 500MW unit of st-I was in service. The unit absorbed reactive power.

iv. Sterlite: The unit of SEL was continuously generating VAR even in high voltage condition during the entire month. SEL representative is once again requested to kindly send data recorded at their end for verifying the correctness of ERLDC SCADA data.

v. Sagardighi : Performance of unit at sagardighi is unsatisfactory as it was continuously generating VAR even in high voltage condition.

vi. Mejia-B : Performance of unit at Mejia-B is unsatisfactory as it was continuously generating VAR even in high voltage condition during the entire month.

vii. MW and MVAR data was not available from MPL for verifying the reactive capability performance of their units.

Defaulting generators may respond.

Deliberation in the meeting

ERLDC exhibited the reactive performance of the generators. Station wise responses of defaulting generators were given below:

- i. Regarding NTPC generating stations, it was observed that generators were absorbing reactive power but there were scope for further absorption of VAR. NTPC in-principle agreed to absorb VAR as per Capability Curve.*
- ii. Sterlite agreed that generator should not inject VAR during high voltage condition. However, Sterlite Energy pointed out that as per their data, Sterlite was absorbing VAR. ERLDC requested SEL to submit log book data with voltage and MVAR, so that the same could be checked at ERLDC end. SEL agreed.*
- iii. WBPDCCL informed that they would change the tap position of GT of Sagardighi TPS during next maintenance programme. In between, necessary steps would be taken to increase VAR absorption by Sagardighi units.*
- iv. DVC assured to look into the issue of VAR injection by Mejia-B units during high voltage condition.*

Regarding non-availability of U#3 MVAR data from Farakka STPS, NTPC informed that transducer was found defective and would be rectified in next opportune shutdown.

b) Schedule for reactive capability tests

In the last OCC, WBPDCCL informed that reactive capability test for Santaldih U#5 would be carried out during 1st week of December 2012, whereas one unit of Kolaghat (U#1) would be tested in December 2012. DVC informed that they would be testing one unit of DSTPS in

December 2012. NTPC pointed out the coal problem being faced by Farakka and informed that the test for Farakka would be done after coal stock becomes stable.

WBPDC, DVC and NTPC may update.

Deliberation in the meeting

WBPDC informed that the test for Santaldih U#5 could not be carried out in December 2012. WBPDC added that test for both U#5 and U#6 would be taken up after annual overhauling of unit#6.

Due to low coal stock position, DVC expressed their inability to carry out the test for DSTPS.

Item no. C4: 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:

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

DGPC may update the status.

Deliberation in the meeting

DGPC informed that they would be carrying out study for enabling single phase auto reclosure. Members requested DGPC not to open up the issue again and to enable the single phase auto reclosure in the Tala feeders by next OCC.

Item no. C5: Automatic demand management measures

The issue of Automatic Demand Management was discussed in the 77th OCC meeting. The issue is also elaborately covered under section 5.4.2 of IEGC. Section 5.4.2 (e) of IEGC is reproduced below:

“In order to maintain the frequency within the stipulated band and maintaining the network security, the interruptible loads shall be arranged in four groups of loads, for scheduled power cuts/load shedding, loads for unscheduled load shedding, loads to be shed through under frequency relays/ df/dt relays and loads to be shed under any System Protection Scheme identified at the RPC level. These loads shall be grouped in such a manner that there is no overlapping between different Groups of loads. In case of certain contingencies and/or threat to system security, the RLDC may direct any SLDC/ SEB/distribution licensee or bulk consumer

connected to the ISTS to decrease drawal of its control area by a certain quantum. Such directions shall immediately be acted upon. SLDC shall send compliance report immediately after compliance of these directions to RLDC.”

In view of recent grid disturbances, the issue of demand management has assumed greater significance and needs attention from all stakeholders. In this regard, loads for scheduled power cuts/load shedding will be decided by each SLDCs and need not be identified in advance. Loads to be shed under UFR mechanism has already been identified and implemented by all the states in Eastern Region. Apart from above, loads to be shed under SPS will be taken care, as and when, ERPC decides so. The only category of load, which remains to be identified from your side, is the feeders/loads for unscheduled load shedding, which can be controlled for demand management purposes. Identification of these feeders will help you to manage your drawal from the central grid in more meaningful manner and thus avoid any unwarranted action, like demand disconnection, by RLDC.

Accordingly, ERPC Secretariat vide FAX message dated 10.10.2012 and 19.11.2012 requested all SLDCs to submit a draft proposal identifying various feeders/loads, which can be controlled from demand management purposes for further deliberation. However, the responses of SLDCs are still awaited.

Members may discuss.

Deliberation in the meeting

Member Secretary I/c, ERPC informed that apart from CESC, no other utilities had given response to ERPC letter on the subject. CESC had expressed their inability to identify additional feeders for automatic demand management measures.

Member secretary I/c, ERPC impressed upon the utilities to submit their proposal on automatic demand management measures to ERPC Secretariat by next OCC, otherwise same would be communicated accordingly. Utilities agreed.

Item no. C6: 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.

Powergrid may inform the status of the following spare elements:

- a. 2 numbers of 150/160 MVA, 220/132 kV ICTs

- b. 1 number of 50 MVA, 132/66 kV ICT

Deliberation in the meeting

Powergrid informed that 2 numbers of 150/160 MVA transformers at Baripada & Siliguri would be installed by March 2013 and 50 MVA transformer at Gangtok would be installed by February 2013.

Item No. C7: Permanent connectivity of Dalkhola (WB)-Dalkhola(PG) and dismantling of ERS in Dalkhola(WB)-Dalkhola(PG) section

In the 22nd ERPC, Powergrid informed that permanent connectivity of Dalkhola (WB) with Dalkhola(PG) would be completed by December 2012.

In the last OCC, Powergrid informed that XLPE cable would be dispatched from Korea by 30th November 2012 and permanent connectivity of Dalkhola(PG)-Dalkhola(WB) would be completed by January 2013.

Powergrid may update the status.

Deliberation in the meeting

Powergrid informed that XLPE cable was dispatched in first week of December 2012 and permanent connectivity of Dalkhola(PG)-Dalkhola(WB) would be completed by January 2013.

Item no. C8: 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 at Siliguri was already supplied in November 2012 and unloaded in plinth. The transformer would be commissioned by 31st January 2013.
- ii. 160 MVA transformer at Birpara was also supplied and would be commissioned by December 2012.
- iii. One 160 MVA transformer at Malda was dispatched and would reach the site by December 2012. The commissioning target would be communicated in next OCC.

Powergrid may update the status.

Deliberation in the meeting

Powergrid updated that

- iv. 160 MVA transformer at Siliguri would be commissioned by 31st January 2013.
- v. 160 MVA transformer at Birpara was already uploaded in plinth and would be commissioned by 7th January 2013.
- vi. One 160 MVA transformer at Malda was dispatched and had reached Dhanbad. It would be installed by February 2013.

Item no. C9: 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. In the last OCC, Powergrid informed that material manufacturing for the PLCC channel was completed and would be dispatched by November 2012. The new PLCC panels would be commissioned by February 2013.

It was also understood that PLCC at 400 kV Farakka-Sagardighi is also not working since long time. Powergrid assured to look into it and would revert back in next OCC.

Powergrid may update the status.

Deliberation in the meeting

Powergrid informed that order for new PLCC in both lines had been placed and would be commissioned by February 2013.

Item no. C10: Restricted Governor Mode of Operation --- ERLDC

In the last OCC, DVC informed that BHEL representative would reach Mejia site within 2 weeks and the units would be put into RGMO by December 2012. 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.

Therefore,

- DVC and MPL may inform the status of implementation of RGMO in Mejia#8 and MPL#2.
- All concerned are requested to update the status of RGMO to ERLDC and ERPC.

Deliberation in the meeting

DVC informed that BHEL representative did not turn up and the issue could not be sorted out. DVC, however, assured to take it up further and hoped that Mejia#8 would be put into RGMO by 1st week of January 2013.

MPL was not present.

Item no. C11: UFR inspection during the month of November 2012

As directed by 22nd ERPC, the sub-group for UFR inspection started UFR inspection from the month of September 2012 and had carried out following UFR inspection :

Sl No	Date	Substation/feeder inspected by the sub-group
1	12.09.12	132 kV Salt-lake s/s of WBSETCL
2	28.09.12	132 kV Jadavpur s/s of CESC
3	08.10.12	132 kV Liluah s/s of WBSETCL
4	26.10.12	132 kV Majherat s/s of CESC
5	09.11.12	132 kV Burdwan s/s of DVC
6	09.11.12	132 kV Kalipahari s/s of DVC
7	10.11.12	132 kV Kumardubi S/s of DVC
8	07.12.12	132 kV Giridi s/s of DVC
9	08.12.12	132 kV Putki s/s of DVC
10	08.12.12	132 kV Patherdih s/s of DVC

Suptd. Engineer (PS), ERPC and Convener of the sub-group may inform the inspection status.

Deliberation in the meeting

Superintending Engineer (PS), ERPC briefed the members on UFR inspection in DVC system and informed that all UFRs were found in working condition.

It was noted that the sub-group constituted for UFR inspection had already inspected 10 substations out of around 60 substations. The sub-group had also carried out testing of UFR with secondary injection test kit. ERLDC cited the Report of the Enquiry Committee set up to look into grid disturbance on 30th and 31st July 2012, wherein it was recommended to immediately complete the UFR inspection. In view of man power constraints in the ERPC/ERLDC/States, completing the UFR inspection by the sub-group in Eastern Region within next one month was not found feasible.

In this regard, Powergrid submitted that in Northern Region, Powergrid personnel had gone to each substation, inspected and collected the UFR data and submitted to NRPC within a short span. If constituents and ERPC agrees, then the same exercise could also be carried out in Eastern Region. Member Secretary I/C, ERPC informed that the 22nd ERPC had specifically constituted the sub-group for UFR inspection and it would be prudent to refer Powergrid's proposal to ensuing TCC/ERPC. Members agreed with his suggestion.

Member Secretary I/c, ERPC also raised the issue of Third party Protection Audit. It was noted that self-certification Protection Audit data had been received from most 400 kV stations and pending data is expected to be received within a week. Powergrid informed that they had carried out internal auditing of protection systems with representative from PGCIL (other region) and ERLDC in six number of 400 kV substations in ER-I and two number of 400 kV substations in ER-II. It was agreed that the sub-committee for third party protection audit would be carrying out site audit at critical substations and onsite protection audit at first phase would be completed by end of December 2012. The list of critical substation would be prepared by ERLDC and it would be placed in the special meeting scheduled to be held on 17.12.12. The issue is placed in ensuing TCC/ERPC meeting.

Item no. C12: Mock Black start exercises in Eastern Region --- ERLDC

- i. As per clause no 5.8(b) of IEGC, mock exercise for Blackstart facilities is required to be carried out in every six months. In the last OCC, following schedule was adopted for mock black start exercise

SI No	Name of Generating Station	Date of Mock drill
1.	Teesta-V HEP	Scheduled on 22.11.12, but test could not be conducted. Now planned on 10.12.12

Upper Kolab HEP, OHPC may also suggest date for conducting the test.

Deliberation in the meeting

Mock start for Teesta HEP could not be carried out on 10.12.12. It was agreed to carry out the test after restoration of Birpara ICT (most probably after 7th Jan'13).

Regarding Upper Kolab, OHPC would intimate later.

- 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 run reports for the month of November'2012 were yet to be received from any utilities.

Members may note.

Deliberation in the meeting

Members noted.

Item no. C13: Inadequate coal stock position of Eastern Regional thermal Generators

As decided in the last OCC, a separate meeting with coal companies, railways and thermal generating companies of ER was convened on 7th December 2012 at ERPC Secretariat. The minutes of the above meeting would be circulated.

Members may note.

Deliberation in the meeting

Members noted.

Item no. C15: Non- availability of SCADA data --- ERLDC

As decided in the last OCC, the SCADA meeting was held on 18.10.2012. ERLDC explained the problem being faced in day to day real time grid operation. Further, it was also impressed upon that provision of RTU and integration of the same should also be taken up in parallel with the substation commissioning and it must be ensured. Details of data and voice non-

availability were discussed for each constituent separately and all constituents except Sikkim agreed to furnish the schedule for rectification of the same by 31st Oct 2012. ERLDC is yet to receive the same.

Latest status of data and voice restoration are given below:

Priority data

- i. Purnea 400 KV: ICT-2, OLTC not available.
- ii. Patna 400 Kv: No voice facility has been provided
- iii. Poor SCADA data Visibility; JSEB: only Chandil, Hatia, Subrreakha, Lalmatia (JH) SCADA data normally reports to ERLDC (No action from JSEB end)

New IPP

- i. Sterlite Enegy Limited:- Gateway at SEL end yet to be configured for dual reporting. SOE signals, OLTC tap, VEL -1 (220 KV) line MW/MVAR not available
- ii. Maithon Right Bank Power Ltd. :- Data is not properly updating at ERLDC. Generation voltage, SOE, OLTC tap potion, protection signals yet to be made available to ERLDC Kolkata also gateway at SEL end yet to be configured for dual reporting.
- iii. Mejia 'B' TPS:- 400 KV Bus -1 KV, HZ and MW/MVAR before GT not available.
- iv. DSTPS (Andal):- MW/MVAR before GT not available
- v. NTPC Barh:- No Real time data and voice facilities are available .
- vi. Raghunathpur (DVC): No data available

Pending issue

- i. Baripada:- Voice communication not ok.
- ii. Gaya 765 KV: OLTC of all ICTs not available. Voice communication not provided.
- iii. PPSP Generation: After GT, generation are yet to be provided by M/s PPSP. PPSP- Arambag line#2 MW and MVAR not correct.
- iv. Bidhanagar 400 Kv (W.B) : No real time data is available.
- v. Koderma TPS: Data started reporting. TISCO -400 KV (DVC): Line test charged on 28/04/12. No real time data available from DVC.
- vi. TISCO -400 KV (DVC): Line test charged on 28/04/12. No real time data available from DVC.
- vii. Kharagpur - 400 KV (WBSETCL) .Baripada -Kharagpur-Kolaghat charged on 28/04/12. No real time data is available from Kharagpur.
- viii. Farakka NTPC: Alstom attended the site jointly with NTPC on 03rd Dec 12 and rectified the CB points. Following SOE point are yet to rectified: Sagardighi line ,GT-2 & 3 CB, Station Transformer-III CB , Tie CB of Unit- IV status.220 KV Lalmatia line CB, ICT 400/220 KV LV site CB.
- ix. Kahalgaon NTPC : (Alstom & Ms NTPC are on the job)
 - a. Following CB SOE point are not coming to ERLDC 400 KV: ICT-1 , Gen-1 & ICT-Tie , Gen-1 ,Bsf-1 Main,Tie of Gen-2 & Reactor-1,Gen-3 Main,Gen-4 Main ,Gen-5 Main ,Gen-5 Tie, Patna (Barh)-2 Main , Gen-6 Main , Gen-6 Tie, Gen-7 Main & Gen-7 Tie, Patna (Barh) -1 Main . MW/MVAR of ICTs (400/132) data made available to ERLDC.
 - b. Following analog points are not coming to ERLDC: MW/MVAR of 132 KV :Stn Xformer -3,4 &5, Colony Xformer 1 & 2

- x. Talcher NTPC :
 - 1. LV side generation of all six unit. OLTC tap position of 400/220 KV ICT-2. 400/11 KV Stn Xfmr -1 , 2 MW /MVAR and OLTC Tap position, 220/11 KV Stn Xfmr -1 MW /MVAR and OLTC Tap position not available.
- xi. Lalmatia NTPC :
 - 1. OLTC tap position of 220/132 KV ICT and 132 /11 KV Stn Xfmr -1 & 2 not available .
- xii. Melli (132 and 66 Kv): No Real time data and voice facilities are available from Sikkim's critical Sub-station since 2008.
- xiii. Jeypore: 400/220 KV ICT 1 & 2 MW and MVAR incorrect.
- xiv. Maithon : OLTC tap position of 400/220 KV ICT-2 not available .
- xv. Mendhasal : 400 KV Baripda 1 & 2 line and Reactors. Tap position of both 400 ICT not available
- xvi. Meeramundali: Tap position of both 400 ICT not available. Meramundali – Mendhasal ckt #1 MW and MVAR value is not correct.
- xvii. Jeerat : Tap position of all three 400/220 KV ICT , not available.
- xviii. Kolaghat: Tap position of both 400/220 KV ICT not available
- xix. Indravati HPS: Indrvati PG line flow incorrect. Main CB of ICT-I, II & Indrvati PG line not correct. ICT-I & II OLTC Tap positions not available.

PMU Data Integration: (Target Date 31st Dec 2012 as informed to MOP)

- I. **Jamshepur** : PMU has commissioned with Maithon & Rourkela-I feeders.
- II. **NTPC Talcher:** CT/PT of Meeramundali & Rengali-I feeder has to done at NTPC end for PMU integration. Communication is yet to be made ready from NTPC to ERLDC.
- III. **NTPC Farakka:** CT/PT of Durgapur-I & Malda-I Feeder has to done at NTPC end for PMU integration. Schedule given to NTPC / POWERGRID from 08th Dec 2012 onwards.
- IV. **Ranchi:** Work is under progress for CT/PT of Sipat-I & Maithon line. Necessary Coordination from NTPC/ POWEGRID is required for CT/PT of above said feeders.

ERLDC may update the discrepancies/shortcoming persisting in telemetry system of Eastern Region.

Deliberation in the meeting

Powergrid informed that battery bank for Chandil, Ramchandrapur and Kendposi (JSEB) system would be installed by December 2012.

ERLDC pointed out that voice communication form 132 kV Rangit-Siliguri which was made LILO at Kurseong was not coming. NHPC was requested to look into it.

ERLDC highlighted the improvement in respect of data availability from Talcher STPS.

All utilities were requested to take note of the aforesaid SCADA deficiencies and take early measures to rectify the same.

PART D:: OPERATIONAL PLANNING

Item no. D 1: Prolonged outage of power system elements in Eastern Region

Name	Agency	Date of Outage	Reason	Restoration Status	
				<i>Original</i>	<i>Latest</i>
400 kV Sagardighi-Parulia -1	WBPDC	25.04.12	11 no tower collapse	March'13	March'13
315MVA, 400/220 kV ICT –IV at Arambag	WBSETCL	14.06.12	Fire Hazard	March'13	March'13
132 kV CT i.r.o. 132 kV NBU (WBSETCL)-Siliguri (PG)#1 at Siliguri end	Powergrid	10.12.10	Old relay needs to be replaced	February'12	CT already replaced. Old relay scheduled to be replaced by Feb'13.

Concerned utilities may share the latest status.

Deliberation in the meeting

Updated status in respect of other elements is given in the table.

In the regard to repairing of 400 kV Sagardighi –Parulia line-1, Powergrid informed that around 25 km of the line spanning mid sections of the line was still not covered under any antitheft charging and conductors were getting stolen. It was noted that this section could be kept under anti theft charging by extending power supply from nearby WBSETCL lines.

The issue was discussed in last OCC and it was decided to refer the issue to ensuing TCC/ERPC.

Item no. D 2: Information regarding commissioning of new transmission element -- ERLDC

As per information available with ERLDC, the following Generating station and transmission elements are expected to be connected shortly to ER grid.

New generating units:

S.No.	Power Plant	Unit size	Expected date
1	Adhunik Power	2x270MW	1 st unit already synchronized
2	GMR	1x350MW	15 th Dec'12
3	Koderma	2x500MW	Dec'12
4	Corporate Power	1x257MW	
5	Teesta-III	1x200MW	
6	Raghunathpur	1x600MW	Feb'13

New transmission elements

SL No.	Transmission Line	Expected date
1	400 kV Maithon-Gaya D/C	Held up due to Forest clearance. Expected by Jan'13
2	400 kV Gaya Koderma D/C	

3	400 kV DSTPS – Raghunathpur D/C	Dec'12
4	400 kV Raghunathpur-Ranchi D/C	
5	400 kV Meramandali-Dubri D/C	Held up due to legal issues
6	400 kV Corporate-Ranchi D/C	
7	220 kV Begusari-Purnea D/C	
8	220 kV Purnea(pg) Madhepura D/C	Dec'12
9	220 kV Dalkhola-Dalkhola (WB) D/C	Dec'12
10	220 kV Dhanbad-Girdih D/C	Forest clearance obtained. Expected by Mar'13
11	220 kV Girdih-Koderma D/C	
12	220 kV Patna(pg) - Sipara D/C	Dec'12
13	LILO of 400KV Biharshariff-Kahalgaoon at Banka	Oct'12
14	LILO of 400KV Baripada-Rengali at Keonjhar	Dec'12

Concerned utilities may update the likely date of synchronization.

Deliberation in the meeting

Utilities present in the meeting updated the status.

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

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of January-13 were prepared by ERPC Secretariat on the basis of finalized LGBR for 2012-13, 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 January'13 after incorporating constituents' observation is given at **Annexure-IV**.*

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

Shutdown proposals of the generating stations and transmission elements for the month of January'13 are placed for discussion.

Members may finalize the programme.

Deliberation in the meeting

*Approved maintenance programme of generating stations and transmission elements during the month of January'13 is at **Annexure-V**. Besides, ERLDC informed that they would be required short shutdown of some transmission elements for installation of PMU. Members approved.*

PART E:: OTHER ISSUES

Item no. E1: UFR operation during the month of November'12

Since system frequency did not touch 48.8 Hz in November'12, UFR did not operate.

Members may note.

Deliberation in the meeting

Members noted.

Item no. E2: Commissioning of new generating units/transmission element during the month of November 2012

1. Unit#1(270 MW) of Adhunik (APNRL) first time synchronized on 13/11/12 at 10:02 hrs.
2. 400 KV Barh-Patna-III first time charged on 30/11/12 at 15:30 hrs.
3. 400 KV Barh-Patna-IV first time charged on 30/11/12 at 19:30 hrs.
4. 400 KV Balia-Patna-IV first time charged on 30/11/12 at 22:55 hrs.
5. 400 KV Balia-Patna-III first time charged on 30/11/12 at 20:29 hrs
6. 400/132 KV, 200 MVA ICT-I at Banka first time test charged on 30/11/12 at 17:20 hrs.
7. 132 KV Main bus of Banka first time charged on 30/11/12 at 17:22 hrs.
8. 132 KV Bay of Banka(PG)-Banka(BSEB)-III at Banka(Powergrid) first time charged on 30/11/12 at 17:23 hrs
9. 132 KV Bay of Banka(PG)-Banka(BSEB)-IV at Banka(Powergrid) first time charged on 30/11/12 at 17:25 hrs
10. 220 KV Bay of Subhashgram(PG)-Nonadanga(CESC)-I at Subhashgram(Powergrid) first time charged on 30/11/12 at 16:32 hrs.
11. 220 KV Bay of Subhashgram(PG)-Nonadanga(CESC)-II at Subhashgram(Powergrid) first time charged on 30/11/12 at 18:22 hrs

Members may note.

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.

No report from any constituent received. Hence ERLDC consider 'Nil' report for all Constituent for November'12.

Members may note.

Deliberation in the meeting

Members noted.

Item no. E5: Grid incidences during the month of November'12

Disturbance Place	Date & Time of occurrence	Generation loss (MW)	Load loss (MW)	Remark	Category
Disturbance in CESC system	07/10/12 at 15:34 hrs.	120	275	Bus bar protection operated at Titagarh receiving S/s due to bursting of 132kV Bus coupler CT(Y-Ø). All the feeders were tripped along with Unit # 1 & 2 of Titagarh generating station. CESC got separated from Grid due to tripping of 132kV Southern-Majerhat-D/C on backup earth fault protection. 132kV Princep-East Kolkata feeder tripped on differential protection due to fault at the cable sealing end at East Kolkata S/s	GD-1
Disturbance in DVC system	18/10/12 at 20:36 hrs.	0	300	200kV Kalyaneswari-Mejia-III tripped on distance protection at both end. At the same time LBB protection operated at Kalyaneswari end due to which all the lines & Auto transformers connected to Kalyaneswari S/s tripped immediately. total power failure at Panchet HPS, Mithon HPS, Pathardihi & Kalipahari S/s	GD-1

Members may note.

Deliberation in the meeting

Members noted.

Item no. E6: Review of grid performance during the month of November'12

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

Deliberation in the meeting

*Presentation of ERLDC is given at **Annexure-VI**.*

Item no. E7: Any other points

Member Secretary I/c, ERPC informed that Powergrid (Corporate) had submitted some agenda for inclusion in 23rd TCC/ERPC. He pointed out that these agenda points were not discussed in earlier sub-committee meetings before placing to TCC/ERPC. Besides these agenda points have operation and commercial aspects. Therefore, these agenda points were not included in the final agenda for 23rd TCC and the same was also communicated to Powergrid (Corporate) office. However, he requested all utilities to study the following agenda points submitted by Powergrid for discussion in next OCC/CCM:

Agenda 1: Pollution mapping for Eastern Region ---Powergrid

In order to facilitate cost effective selection of insulators for transmission lines and minimising the trippings of transmission lines due to insulator flash over, it is essential to have knowledge of the pollution severities. Inquiry Committee on Grid Disturbance in Northern Region on 2nd Jan' 2010, recommended POWERGRID to complete pollution mapping in association with CPRI. Transmission corridors of region are adversely affected due to heavy pollutants emitted by Industries / Costal Pollutants in the region. Proper mapping is necessary to develop a pollution profile of the region.

Pollution mapping of the region is proposed to be executed in association with CPRI using approach similar to the one adopted in Northern region.

- CPRI & POWERGRID shall provide training (including hands on training) to the associated engineers of POWERGRID & constituents (State Utilities) at suitable locations in the region and suggest the Guidelines/Procedures.
- Dummy insulator to be arranged & installed by POWERGRID and STUs on their transmission lines. Measurements shall be carried out 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) & Non Soluble Deposited Density (NSDD) to be done under the supervision of CPRI. Subsequent measurements shall be carried out by officials of constituents.
- Chemical Analysis of selected samples shall be carried out 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 region.

Funding:

- Expenditure on pollution mapping is to be reimbursed to POWERGRID directly from the beneficiaries as one time reimbursement. **Expected expenditure for the program is INR 3 Crores**

The above methodology & funding mechanism for Pollution Mapping Program is similar to the one adopted for Northern Region and in line with the decision taken in 22nd NRPC & 66th OCC meeting.

2. Grid Security Expert System (GSES)

Consequent to the recent Grid Disturbance of 30th and 31st July 2012, a meeting was held on 06th August, 2012 between Union Power Minister of India with Chief Ministers and Power Ministers of States of Northern Region and a 12 point resolution was made to ensure that such types of incidents would not occur in future. The points pertaining to defense plans are as follows:-

Point No. 11 POSOCO would evolve a contingency load shedding protocol, especially when non frequency related load shedding is required.”

Accordingly POSOCO prepared a template for ten numbers of scenarios when the power system would be under stress along with the substation and feeder details. The same was communicated by POSOCO vide letter dated 11th September 2012 to CEA with a copy to POWERGRID/RPCs/CERC for automated defense plan for all five regions.

Based on the above inputs, POWERGRID has planned an Automated defense plan for all five regions named as Grid Security Expert System (GSES).

The implementation of the above scheme has been proposed through following projects:-

- **GSES system:** This would involve the installation of relays, PLCs etc at Substation/Generating station level and advance GSES Software at all SLDCs and RLDC. The list of feeders where the relays shall be put has been proposed by RLDC and is proposed to be monitored in the Centralized GSES system at SLDCs. The logics for operation of the above relays shall be finalized by RLDC/RPC in consultation with SLDCs. As per this plan, the automated feeder disconnection has been proposed at 287 No. Substations in Northern Region.
- **Communication System for GSES system:-** This would require dedicated and reliable communication system. Accordingly Fiber Optic based Communication from Substations to SLDCs/RLDC has been proposed.

The details for each state in **Eastern Region** including estimated cost have been indicated in Appendix-II.

The meeting ended with thanks to the Chair.

ICT TAP POSITION

TAP POSITION OF 765/400 kV & 400/220 kV ICTS IN EASTERN REGION AS ON 26.11.12

SUBSTATION	CAPACITY	TAP
BINAGURI	2X315	10
NEW PURNEA	2X315	11
MUZAFFARPUR	2X315	9B
MALDA	2X315	12
SASARAM	2X315	12
BIHARSHARIF	3X315	12
BIDHANNAGAR	1X315	14
PATNA	2X315	11
FARAKKA STPS	2X315	11
MAITHON	2X315	9
RANCHI	2X315	9B
JAMSHEDPUR	2X315	15
PARULIA	2X315	11
BAKRESWAR	2X315	11
ARAMBAGH	3X315	15
JEERAT	3X315	13
KHARAGPUR	2X315	7
SUBHASGRAM	2X315	11
KOLAGHAT	2X315	12
BARIPADA	2X315	9
RENGALI	2X315	12
ROURKELA	2X315	10
TALCHER STPS	2X315	13
MERAMUNDALI	2X315	10
UIHEP	2X315	9B
JEYPORE	2X315	16
MENDASAL	2X315	9
BOLANGIR	2X315	9B
GAYA 765/400 kV	2x1500	12
GAYA 400/220 kV	1X315 + 1x500	9

FOR 765/400 kV TAP 1:807/400, 12:765/400, 23: 723/400

FOR 400/220 KV ICT TAP 1: 440/220, 9:400/220, 17:360/220

TRANSFORMER TAP DETAILS IN C.SECTOR

**PARULIA 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

**ROURKELA 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

**JAMSHEDPUR 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

**MATHON 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

**JEYPORE 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

**TSTPP 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

**FSTPP 1X315 MVA
400/220 KV ONLOAD 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

**KHSTPP 2X200 MVA
400/132 ON LOAD ATR**

TAP	132 KV	400 KV	P.U.
1	132	440	1.1000
2	132	435	1.0875
3	132	430	1.0750
4	132	425	1.0625
5	132	420	1.0500
6	132	415	1.0375
7	132	410	1.0250
8	132	405	1.0125
9	132	400	1.0000
10	132	395	0.9875
11	132	390	0.9750
12	132	385	0.9625
13	132	380	0.9500
14	132	375	0.9375
15	132	370	0.9250
16	132	365	0.9125
17	132	360	0.9000

**FSTPP 400/15.75 KV
GT 1&3 (210 MW EACH)
OFF-LOAD**

TAP	PRI	SEC	P.U.
1	15.75	441	1.103
2	15.75	130.5	0.326
3	15.75	420	1.050
4	15.75	409.5	1.024
5	15.75	399	0.998

**FSTPP 400/15.75 KV
GT 2 (210 MW) ON LOAD**

TAP	PRI	SEC	P.U.
1	15.75	441	1.1025
2	15.75	435.8	1.0895
3	15.75	430.5	1.0763
4	15.75	425.3	1.0633
5	15.75	420	1.0500
6	15.75	414.8	1.0370
7	15.75	409.5	1.0238
8	15.75	404.3	1.0108
9	15.75	399	0.9975
10	15.75	393.8	0.9845
11	15.75	388.5	0.9713
12	15.75	383.3	0.9583
13	15.75	378	0.9450

**KHSTPP 400/15.75 KV
250 MVA U1-4**

TAP	PRI	SEC	P.U.
1	15.75	441	1.1025
2	15.75	435.8	1.0895
3	15.75	430.5	1.0763
4	15.75	425.3	1.0633
5	15.75	420	1.0500
6	15.75	414.8	1.0370
7	15.75	409.5	1.0238
8	15.75	404.3	1.0108
9	15.75	399	0.9975
10	15.75	393.8	0.9845
11	15.75	388.5	0.9713
12	15.75	383.3	0.9583
13	15.75	378	0.9450

**TSTPP 400/21 KV GT
600 MVA U 1&2**

TAP	PRI	SEC	P.U.
1	15.75	441	1.1025
2	15.75	435.8	1.0895
3	15.75	430.5	1.0763
4	15.75	425.3	1.0633
5	15.75	420	1.0500
6	15.75	414.8	1.0370
7	15.75	409.5	1.0238
8	15.75	404.3	1.0108
9	15.75	399	0.9975
10	15.75	393.8	0.9845
11	15.75	388.5	0.9713
12	15.75	383.3	0.9583
13	15.75	378	0.9450

BIHARSARIEFF 3X315 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

MALDA (PG) 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

MALDA 3X50 MVA
220/132 KV ATR

TAP	220 KV	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

RENGALI 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

BIRPARA 1X100+1X:
220/132 KV ATR

TAP	220 KV	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

GANGTOK 2X50 MVA
132/66 KV ATR

TAP	66KV	132 KV	P.U.
1	66	145.2	1.1
2	66	143.55	1.0875
3	66	141.9	1.075
4	66	140.25	1.0625
5	66	138.6	1.05
6	66	136.95	1.0375
7	66	135.3	1.025
8	66	133.65	1.0125
9A	66	132	1
9B	66	132	1
9	66	132	1
10	66	130.35	0.9875
11	66	128.7	0.975
12	66	127.05	0.9625
13	66	125.4	0.95
14	66	123.75	0.9375
15	66	122.1	0.925
16	66	120.45	0.9125
17	66	118.8	0.9

INDRAVATI X315 MVA ICT-II
400/220 KV ONLOAD 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
9A	220	400	1.0000
9B	220	400	1.0000
9C	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

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

FSTPP 400/21 KV
GT 4 & 5 (500 MW) ON LOAD

TAP	PRI	SEC	P.U.
1	21	441	1.103
2	21	435.8	1.090
3,3A	21	430.5	1.076
4	21	425.3	1.063
5,5A	21	420	1.050
6	21	414.8	1.037
7,A,B,C	21	409.5	1.024
8	21	404.3	1.011
9,9 A	21	399	0.998
10	21	393.8	0.985
1,11 A	21	388.5	0.971
12	21	383.3	0.958
13	21	378	0.945

TRANSFORMER TAP DETAILS IN C.SECTOR

SASARAM 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

BINAGURI 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

NEW PURNEA 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

MUZAFFARPUR 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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
9A	220	400	1.0000
9B	220	400	1.0000
9C	220	400	1.0000
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

SUBHASHGRAM 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

BARIPADA 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

NJP 1X100 MVA
220/132 KV ATR

TAP	220 KV	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

RANCHI 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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
9A	220	400	1.0000
9B	220	400	1.0000
9C	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

PATNA 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

ARRAH 2X100 MVA
220/132 KV ATR

TAP	220 KV	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

PURNEA 3X100 MVA
220/132 KV ATR

TAP	220 KV	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

Bolangir 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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
9A	220	400	1.0000
9B	220	400	1.0000
9C	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

GAYA 2 X 1500 MVA
765/400 KV ATR

TAP	400 KV	765 KV	P.U.
1	400	807	1.0549
2	400	803	1.0499
3	400	799	1.0449
4	400	796	1.0399
5	400	792	1.0349
6	400	788	1.0299
7	400	784	1.0250
8	400	780	1.0200
9	400	776	1.0150
10	400	773	1.0100
11	400	769	1.0050
12	400	765	1.0000
13	400	761	0.9950
14	400	757	0.9900
15	400	754	0.9850
16	400	750	0.9800
17	400	746	0.9750
18	400	742	0.9701
19	400	738	0.9651
20	400	734	0.9601
21	400	731	0.9551
22	400	727	0.9501
23	400	723	0.9451

NEW PURNEA 1X315 MVA + 500 MVA
400/220 KV ATR

TAP	220 KV	400 KV	P.U.
1	220	440	1.1075
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

FTSTPP 400/15.75 KV
GT 2 (210 MW) ON LOAD

TAP	PRI	SEC	P.U.
1	15.75	441	1.1025
2	15.75	435.8	1.0895
3	15.75	430.5	1.0763
4	15.75	425.3	1.0633
5	15.75	420	1.0500
6	15.75	414.8	1.0370
7	15.75	409.5	1.0238
8	15.75	404.3	1.0108
9	15.75	399	0.9975
10	15.75	393.8	0.9845
11	15.75	388.5	0.9713
12	15.75	383.3	0.9583
13	15.75	378	0.9450

FTSTPP 400/15.75 KV
GT 1&3 (210 MW EACH)
OFF-LOAD

TAP	PRI	SEC</
-----	-----	-------

ICT / GT TAP DETAILS OF BSEB SYSTEM

MTPS GT 1 & 2
140 MVA, 230/11 KV GT

TAP	PRI	SEC
1	11	247.25
2	11	241.5
3	11	235.75
4	11	230
5	11	224.25
6	11	218.5

BTPS GT 6 & 7
125 MVA, 139/11 KV

TAP	PRI	SEC
1	11	145.25
2	11	142.48
3	11	139.00
4	11	135.53
5	11	132.02

BTPS GT 4 & 5
70 MVA, 139/10.5 KV

TAP	PRI	SEC
1	10.5	145.95
2	10.5	142.48
3	10.5	139.00
4	10.5	135.53
5	10.5	132.05

FATUAH 2X100 MVA
220/132 KV ATR

TAP	132 KV	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	228.25	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

DARBHANGA 2X100 MVA
220/132 KV ATR

TAP	132 KV	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	228.25	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

BODHGAYA 220/132 KV
3X150 MVA ATR
MAKE : ITELK & CROMPTON

TAP	132KV	220 KV	PU
1	132	231.30	1.051
2	132	229.45	1.045
3	132	227.55	1.034
4	132	225.65	1.026
5	132	223.75	1.017
6	132	221.90	1.009
7	132	220.00	1.000
8	132	218.10	0.991
9	132	216.50	0.984
10	132	214.35	0.974
11	132	212.45	0.966
12	132	210.55	0.957
13A	132	208.70	0.949
13B	132	208.70	0.949
13C	132	208.50	0.948
14	132	206.80	0.940
15	132	204.90	0.931
16	132	203.05	0.923
17	132	201.15	0.914
18	132	199.25	0.906
19	132	197.35	0.897
20	132	195.50	0.889
21	132	193.70	0.880
22	132	191.70	0.871
23	132	189.85	0.863
24	132	187.95	0.854
25	132	186.05	0.846

Begusarai 2X160 MVA
220/132 KV ATR

TAP	132 KV	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	228.25	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

KHAGAUH 2X100 MVA
220/132 KV ATR

TAP	132 KV	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	228.25	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

GOPALGANJ 2X100 MVA
220/132 KV ATR

TAP	132 KV	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	228.25	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

ICT / GT TAP DETAILS OF BSEB SYSTEM

B'SHARIFF 2X150 MVA
220/132 KV ATR, MAKE : CROMPTON

TAP	132 KV	220 KV	PU
1	132	231.00	1.050
2	132	228.25	1.038
3	132	225.50	1.025
4	132	222.75	1.013
5	132	220.00	1.000
6	132	217.25	0.988
7	132	214.50	0.975
8	132	211.75	0.963
9A	132	209.00	0.950
9B	132	209.00	0.950
9C	132	209.00	0.950
10	132	206.25	0.938
11	132	203.50	0.925
12	132	200.75	0.913
13	132	198.00	0.900
14	132	195.25	0.888
15	132	192.50	0.875
16	132	190.00	0.863
17	132	187.00	0.850

HAZIPUR 1X100MVA 220/132KV

TAP	132 KV	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	228.25	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

DEHRI 2X100 MVA 220/132 KV ATR

TAP	132 KV	220 KV	PU
1	132	231.00	1.050
2	132	228.25	1.038
3	132	225.50	1.025
4	132	222.75	1.013
5	132	220.00	1.000
6	132	217.25	0.988
7	132	214.50	0.975
8	132	211.75	0.963
9A	132	209.00	0.950
9B	132	209.00	0.950
9C	132	209.00	0.950
10	132	206.25	0.938
11	132	203.50	0.925
12	132	200.75	0.913
13	132	198.00	0.900
14	132	195.25	0.888
15	132	192.50	0.875
16	132	189.75	0.860
17	132	187.00	0.850

MTPS 2X100 MVA

TAP	220 KV	132 KV	PU
1	220	145.20	1.100
2	220	143.55	1.088
3	220	141.50	1.072
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
9A	220	132.00	1.000
9B	220	132.00	1.000
9C	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

GT / ICT TAP DETAILS IN JSEB SYSTEM

PTPS GT 1 & 2
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 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

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

PTPS GT 3 & 4
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 120MVA, 220/11 KV

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
9	11	216	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 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.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

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

GT / ICT TAP DETAILS OF DVC SYSTEM

BTPS-B GT
(UI 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

CTPS -132 KV GT
(UI 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

CTPS 220 KV GT
(UI 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
(UI 7, 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

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

TAP	132 KV	220 KV	PU
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

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

TAP	132 KV	220 KV	PU
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	1.0625
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

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

TAP	132 KV	220 KV	PU
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

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

TAP	132 KV	220 KV	PU
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

KALYANESWARI 3x150 MVA
220/132 KV ATR
MAKE:CROMPTON

TAP	132 KV	220 KV	PU
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

GT / ICT TAP DETAILS OF DVC SYSTEM

WARIA 132 KV GT
(UI 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

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

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	0.950

JAMSHEDPUR 2X150 MVA
220/132 KV 1&2 MAKE : CROMPTON

TAP	132 KV	220 KV	PU
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	203.90	0.9250
16	132.00	200.75	0.9125
17	132.00	198.00	0.9000

CHANDRAPURA 1X150 MVA
220/132 KV

TAP	132 KV	220 KV	PU
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	203.90	0.9250
16	132.00	200.75	0.9125
17	132.00	198.00	0.9000

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

Mejia Phase -II 400 kV GT
(U # 1, 3 X 200 MVA)

TAP	PRI	SEC	PU
1	21	462.00	1.100
2	21	451.50	1.075
3	21	441.00	1.050
4	21	430.50	1.025
5	21	420.00	1.000
6	21	409.50	0.975
7	21	399.00	0.950
8	21	388.50	0.925
9	21	378.00	0.900

ICT / GT TAP DETAILS IN GRIDCO

JAYNAGAR 2X100 MVA
220/132 KV ATR
MAKE : CROMPTON

TAP	132 KV	220 KV	PU
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

BURLA GT U4 1-7
(U 1,2,5,6,7 EACH 37.5 MW)
U 3,4 EACH 24 MW)

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

THERUVALI 2X100 MVA
220/132 KV ATR
MAKE : AT1-GEC, AT2-BHEL

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	145.55	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

RENGALI GT U 1-5
(50 MW EACH)

TAP	PRI	SEC	P.U.
1	11	235	1.0682
2	11	230	1.0455
3	11	225	1.0227
4	11	220	1.0000
5	11	215	0.9773

BHANJANAGAR 1X100+1X160 MVA
220/132 KV ATR
MAKE : NGEF

TAP	132 KV	220 KV	PU
1	145.20	220	1.1000
2	145.55	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

BALIMELA GT U 1-6
(60 MW EACH)

TAP	PRI	SEC (PHASE)	P.U.
1	11	146.7	1.1550
2	11	143.21	1.1275
3	11	139.72	1.1000
4	11	136.23	1.0725
5	11	132.24	1.0411

NARENDRAPUR.
2X160 MVA, 220/132 KV ATR

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

BALIMELA GT U 7-8
(75 MW EACH)

TAP	PRI	SEC (PHASE)	P.U.
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

T.T.P.S. 150 MVA.
220/132 KV ATR 2
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
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
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

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

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

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

BALASORE 2X100 MVA
220/132 KV ATR

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

INDRAVATI 315 MVA
400/220 KV ATR-I

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
(110 MW EACH)

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
9	11	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

CHANDAKA 3X100 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	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

BUDIPADAR 2x160MVA
220/132 KV ATR

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

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

JODA 100 MVA
220/132 KV ATR 1
MAKE : NGEF

TAP	220 KV	132 KV	PU
1	220	118.8	0.9000
2	220	119.6	0.9063
3	220	120.5	0.9125
4	220	121.3	0.9188
5	220	122.1	0.9250
6	220	122.9	0.9313
7	220	123.8	0.9375
8	220	124.6	0.9438
9	220	125.4	0.9500
10	220	126.2	0.9563
11	220	127.1	0.9625
12	220	127.9	0.9688
13	220	128.7	0.9750
14	220	129.5	0.9813
15	220	130.4	0.9875
16	220	131.2	0.9938
17	220	132	1.0000
18	220	132.8	1.0063
19	220	133.7	1.0125
20	220	134.5	1.0188
21	220	135.3	1.0250
22	220	136.1	1.0313
23	220	137	1.0375
24	220	137.8	1.0438
25	220	138.6	1.0500
26	220	139.4	1.0563
27	220	140.3	1.0625
28	220	141.1	1.0688
29	220	141.9	1.0750
30	220	142.7	1.0813
31	220	143.6	1.0875
32	220	144.4	1.0938
33	220	145.2	1.1000

JODA 100 MVA
220/132 KV ATR 2
MAKE : GE

TAP	220 KV	132 KV	PU
1	220	145.20	1.1000
2	220	144.38	1.0938
3	220	143.55	1.0875
4	220	142.73	1.0813
5	220	141.90	1.0750
6	220	141.08	1.0688
7	220	140.25	1.0625
8	220	139.43	1.0563
9	220	138.60	1.0500
10	220	137.78	1.0438
11	220	136.95	1.0375
12	220	136.13	1.0313
13	220	135.30	1.0250
14	220	134.48	1.0188
15	220	133.65	1.0125
16	220	132.83	1.0063
17	220	132.00	1.0000
18	220	131.18	0.9938
19	220	130.35	0.9875
20	220	129.53	0.9813
21	220	128.70	0.9750
22	220	127.88	0.9688
23	220	127.05	0.9625
24	220	126.23	0.9563
25	220	125.40	0.9500
26	220	124.58	0.9438
27	220	123.75	0.9375
28	220	122.93	0.9313
29	220	122.10	0.9250
30	220	121.28	0.9188
31	220	120.45	0.9125
32	220	119.63	0.9063
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

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

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

GT / ICT TAP DETAILS IN WBSETCL / WBPDCCL SYSTEM

BTPS 100MVA 13.2/132 KV
GT 1-4

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

KTPS 3X235 MVA
15.75/220 KV GT 1-3

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

DPL 1X100+1X160 MVA
220/132 KV ATR

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

BTPS 235 MVA
15.75/138 KV GT 5

TAP	PRI	SEC
FIXED	15.75	138

KTPS 3X240 MVA
15.75/420 KV GT 4-6

TAP	PRI	SEC	PU
1	15.75	441	1.050
2	15.75	430.5	1.025
3	15.75	420	1.000
4	15.75	409.5	0.975
5	15.75	399	0.950

SANTALDIH 1X100 MVA
220/132 KV ATR

TAP	220 KV	132 KV	PU
1	220	145.20	1.100
2	220	143.60	1.088
3	220	141.90	1.075
4	220	140.30	1.063
5	220	138.60	1.050
6	220	137.00	1.038
7	220	135.30	1.025
8	220	133.70	1.013
9	220	132.00	1.000
10	220	130.40	0.988
11	220	128.70	0.975
12	220	127.10	0.963
13	220	125.40	0.950
14	220	123.60	0.938
15	220	122.10	0.925
16	220	120.50	0.913
17	220	118.80	0.900

HOWRAH 3X150 MVA
220/132 KV ATR

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	135.20	1.0250
8	220	133.65	1.0125
9	220	132.00	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

DPL 1X125 MVA
220/11KV GT

TAP	PRI	SEC	PU
1	11	242.00	1.100
2	11	239.25	1.088
3	11	236.50	1.075
4	11	233.75	1.063
5	11	231.00	1.050
6	11	228.25	1.038
7	11	225.50	1.025
8	11	222.75	1.013
9	11	220.00	1.000
10	11	217.25	0.988
11	11	214.50	0.975
12	11	211.75	0.963
13	11	209.00	0.950
14	11	206.25	0.938
15	11	203.50	0.925
16	11	200.75	0.913
17	11	198.00	0.900

DPL 3X85 MVA
132/11 KV GT

TAP	PRI	SEC	PU
1	11	145.21	1.1001
2	11	143.33	1.0858
3	11	141.44	1.0715
4	11	139.55	1.0572
5	11	137.66	1.0429
6	11	135.78	1.0286
7	11	135.89	1.0143
8	11	132	1.0000
9	11	130.11	0.9857
10	11	128.22	0.9714
11	11	126.34	0.9571
12	11	124.45	0.9428
13	11	122.56	0.9285
14	11	120.67	0.9142
15	11	118.79	0.8999

JEERAT 3x160
220/132 KV ATR

TAP	220 KV	132 KV	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	132.00	1.00
10	220	130.35	0.98
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

GT / ICT TAP DETAILS IN WBSETCL / WBPDC SYSTEM

STPS 4X140 MVA
13.8/220 KV GT 1-4

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

KTPP 2X315 MVA
400/220 KV ATR

TAP	220 KV	132 KV	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

DPL 2X37.5 MVA
132/11 KV GT

TAP	PRI	SEC	PU
1	11	138.5	1.050
2	11	135.3	1.025
3	11	132	1.000
4	11	128.7	0.975
5	11	125.4	0.950

DHARMA 2X160 MVA
220/132 KV ATR

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	135.50	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

RISHRA 2X160 MVA
220/132 KV ATR

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	135.50	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

DOMJUR 2X160 MVA
220/132 KV ATR

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	135.50	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

KRISHNANAGAR 2X160 MVA
220/132 KV ATR

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	135.50	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

ASANSOL 2X160 MVA
220/132 KV ATR

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	135.50	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

GT / ICT TAP DETAILS IN WBSETCL / WBPDCCL SYSTEM

JEERAT 3X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	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

SAGARDIGHI 1X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	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

BAKRESWAR 2X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	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

ARAMBAGH 3X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	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

BIDHANNAGAR 1X315 MVA
400/220 KV ATR

TAP	220 KV	400 KV	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

KASBA
2x150 +1x160 MVA
220/132 KV ATR

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

KTPP 2X150+1X160 MVA
220/132 KV ATR

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

ARAMBAGH 1X160+1X100 MVA
220/132 KV ATR

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

GOKARNA 2X160 MVA
220/132 KV ATR

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	135.50	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

DHALKHOLA 2X160 MVA
220/132 KV ATR

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	135.50	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

GT / ICT TAP DETAILS IN WBSETCL / WBPDC SYSTEM

SATGACHIA 2X160 MVA
220/132 KV ATR

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	135.50	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

LAXMIKANTAPUR 2X160 MVA
220/132 KV ATR

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	135.50	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

N. JALPAIGURI 2X160 MVA
220/132 KV ATR

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	135.50	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

BIDHANNAGAR 2X160 MVA
220/132 KV ATR

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	135.50	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

Power System Operation Corporation Of India Ltd



<i>Nameoftheelement</i>	<i>Availed</i>		<i>Restoration</i>		<i>SDAvailedBy</i>	<i>Reasonofsd</i>	<i>Remarks</i>
<i>Date</i>	<i>Time</i>	<i>Date</i>	<i>Time</i>				
400KV KhSTPP-BARH-I	02/06/12	20:53	09/06/12	21.07	NTPC	S/D TAKEN BY BARH FOR REPLACEMENT OF DAMAGED CT	EMERGENCY
400KV KhSTPP-BARH-I	04/08/12	13:40	04/08/12	16.50	NTPC	FOR CB WORK AT BARH	EMERGENCY
400KV KhSTPP-BARH-I	19/10/12	11:26	19/10/12	16.24	NTPC	FOR JUMPER CONNECTION WORK AT BARH	EMERGENCY
400KV KhSTPP-BARH-I	29/10/12	11:35	29/10/12	15.36	NTPC	OIL LEAKAGE FROM TIE BAY CB AT BARH	EMERGENCY
400KV KhSTPP-BARH-I	03/11/12	09:59	03/11/12	15.51	NTPC	RESTORATION WORK OF MAIN BAY	PLANNED
400KV KhSTPP-BARH-I	09/11/12	08:30	09/11/12	17.24	NTPC	PREVENTIVE MAINTENANCE WORK	PLANNED
400KV KhSTPP-BARH-I	19/11/12	07:00	22/11/12	19.04	NTPC	TO RECTIFY THE PROBLEM OF CB TRIPPING AT BARH	EMERGENCY
400KV KhSTPP-BARH-I	01/12/12	09:51	01/12/12	20.15	NTPC	OIL LEAKAGE FROM R & Y-PH TIE BAY CB AT BARH	EMERGENCY
400KV KhSTPP-BARH-I	03/12/12	09:08	03/12/12	18.13	NTPC	OIL LEAKAGE FROM R & Y-PH TIE BAY CB AT BARH	EMERGENCY

BIHAR STATE POWER TRANSMISSION COMPANY LTD., PATNA

OFFICE OF ESE/CRITL

Letter No. 51...../

Date 15/11/2012

From,

R. R. Ansari,
ESE/CRITL.

To,

Member Secretary,
ERPC, Kolkata.

Sub: Implementation of new setting of UFR.

List of 33 KV Feeder provided with UFR relays at different grids of Bihar State Power Trans. Co. Ltd. Patna.

SL. No.	NAME OF GRID	CONNECTED 33 KV FEEDER	LOAD IN MW	SETTING	TARGET in MW
1.	132/33 KV Gaighat grid	Saidpur	20	48.6	80
		City Feeder	22	48.6	
2.	132/33 KV Mithapur grid	PESU V	18	48.8	80
		PESU II & IV	32	48.8	
3.	220/132/33 KV Fatuha grid	Katra	15	48.8	
		Meena Bazar	22	48.8	

All UFR tested & elaborated.

Yours faithfully,


(R R Ansari)
ESE/CRITL

**FOLLOWING UNDER FREQUENCY RELAYS HAVE BEEN CHECKED, TESTED ALONG WITH ITS PERFORMANCE
UNDER SIMULATION CONDITION**

A. UFR setting in Hz.	Name of Sub-Stn.	Name of Feeder (MVA)	CD in MVA	Approx Load in MW	Time Delay	Test simulation performed on	
48.8 (1st Stage)	Putki	JSEB Godhor f1(14)+ Bhuli f2 (5.1)	19.1	17.2	Instant	14.09.12	
		JSEB Ganeshpur (f1&f2) (12)	12.0	10.8	Instant		
	Putki	BCCL Bastacola (12.5) BCCL Bhalgora(13.5) BCCL Katras(7.2)+ JSEB Katras(10)+ JSEB Katras Sijua(2.5)	45.7	41.1	Instant		
					Instant		
	Patherdih	JSEB Koyla Nagar (5.1)+Govindpur(19)+Mukunda(4)	28.1	25.3	Instant	03.09.12	
	Koderma	JSEB Koderma (30)	30.0	27.0	Instant	28.09.12	
		Balajee ElectroSteel Ltd (12.2)	12.2	11.0	Instant		
	Sub Total			147.1	132.4		
	48.6 (2nd Stage)	Burdwan	WBSEB Burdwan(48) + Shyam Ferro(16)	64	57.6	Instant	24.09.12
		Ramgarh	JSEB Ramgarh (One Fdr) (35)	35.0	31.5	Instant	13.09.12
CCL Giddi (16)			16.0	14.4	Instant		
CCL Sirka (6)			6.0	5.4	Instant		
Kalipahari		DPSCO Luchipur (37.5)	37.5	33.8	Instant	06.09.12	
Sub Total			158.5	142.7			
48.2 (3rd Stage)	Kumardhubi	DPSCO Dishergarh (32)	32.0	28.8	Instant	04.09.12	
		JSEB Mugma (17)	17.0	15.3	Instant		
	Kalipahari	WBSEB Kanyapur(29)+ ECL Satgram (Fdr 2) (3.5)	32.5	29.3	Instant	10.09.12	
		DPSCO Sheebpur (38)	38.0	34.2	Instant		
		DPSCO J.K.Nagar (20)	20.0	18.0	Instant		
	Giridih	JSEB, Giridih (45)	45.0	40.5	Instant	15.09.12	
Sub Total			184.5	166.1			
Grand Total upto 48 Hz			490.1	441.1			



JHARKHAND STATE ELECTRICITY BOARD

Office of the

Electrical Superintending Engineer (ULDC/SLDC) SLDC, Kusai Colony, Ranchi
Phone: 0651-2490090, Fax: 0651-2490486, Email: slsdranchi@gmail.com

Letter No. 512 / ULDC/SLDC, Ranchi, dated, the 24-11-12

From Er. Akshay Kumar
Elect. Supt. Engineer (ULDC/SLDC)
SLDC, Ranchi.

To Member Secretary
ERPC, 14 Golf Club Road,
Tollygunj, Kolkata 700033

Fax: 033-2422/802/24171358

General Manager
ERLDC, Kolkata

Fax: 033-24235809

Sub Regarding Increase in Load Relief under UFR based load shedding scheme.

Ref Your letter no. ERPC/SE(CPRN)/ Operation/2012-13 dt 29-10-12

Sir, With reference to the above I am hereby enclosing the revised feeder wise load relief under UFR based load shedding scheme for further needful action

Encl. As above

Yours faithfully

(Akshay Kumar)
E.S.E. (ULDC/SLDC), Ranchi



JHARKHAND STATE ELECTRICITY BOARD
Office of the Electrical Superintending Engineer (ULDC/SLDC)

SLDC, Kusai Colony, Ranchi

Phone: 0651-2490090, Fax: 0651-2490486, Email: slsdranchi@gmail.com

Sub. - Proposed UFR in 33KV Feeder of different G/S/S of JSEB dt. 08.11.12

Ref:- ERPC/SE (OPRN)/OPEFATION/2012-13/

Frequency Set for operation	Name of 1:12/33 KV G/S/S	Name of 33 KV Feeders	Load in MW	
			Max	Min
Stage I 48.8 Hz	Shaebganj	(1) 33 KV Shaebganj feeder	11	9
	Dumka	(2) 33 KV Saraihat	8	5
	Sahebganj	(3) 33 KV Tinpahar	11	8
	Garhwa	(4) 33 KV Ranka	12	7
	Garhwa	(5) 33 KV Bhawanathpur	12	6
Total			54	35
Stage II 48.6 Hz	Deoghar	(1) 33 KV Baidyanathpur	18	12
	Deoghar	(2) 33 KV Sarai	14	12
	Lalmatia	(3) 33 KV Godda	13	8
	Sahebganj	(4) 33 KV Sahebganj	11	9
Total			56	41
Stage III 48.2 Hz	Adityapur	(1) Adityapur -I	17	7
	Adityapur	(2) Adityapur -II	13	5
	Nankum	(3) Koker (R)	14	2
	Lalmatia	(4) Mahagama	12	6
	Deoghar	(5) Baidyanathpur	18	12
Total			74	32


 (Akshay Kumar)
 E.S.E.(ULDC/SLDC), Ranchi

Stage-I

	Earlier Setting	Changed Setting
Frequency	48.5 Hz	48.8 Hz

The name of the feeders of U/F relay in 1st Stage of W.B.S.E.T.C.L

Sl. No.	Name of Sub-Station	Load	Name of the feeders with load quantum to be tripped by U/F relay	
			Name of feeders	Load (MW)
01.	Liluah 132 KV	93 MW	a) 33 KV Kona	19
			b) 33 KV JNP	08
			c) 33 KV LLH	16
			d) 33 KV KTT	16
			e) 33 KV MKD	14
			f) 33 KV Baltikuri-1	10
			g) 33 KV Baltikuri-2	10
02.	NJP 220 KV	58 MW	a) 33 KV Radhabari	16
			b) 33 KV Raninagar	20
			c) 33 KV Debogram	18
			d) 33/11 KV 6.3 MVA Tr-I	02
			e) 33/11 KV 6.3 MVA Tr-II	02
03.	CESC	162 MW	-	-

Total: 313 MW

Proposed – 285 MW

Existing – 313 MW

Stage-II

	Earlier Setting	Changed Setting
Frequency	48.2 Hz	48.6 Hz

The name of the feeders of U/F relay in 2nd Stage of W.B.S.E.T.C.L

Sl. No.	Name of Sub-Station	Load	Name of the feeders with load quantum to be tripped by U/F relay	
			Name of the feeders	Load (MW)
01.	Siliguri 132 KV	65 MW	a) 33 KV Siliguri-I	11
			b) 33 KV Siliguri-II	18
			c) 33 KV Rabindranagar-I	10
			d) 33 KV Deshbandhunagar-I	16
			e) 33 KV Housing Board	10
02.	Darjeeling 132 KV	40 MW	a) 33 KV Lebong	17
			b) 33 KV Happy Valley	23
03.	CESC	180 MW	-	-

Total: 285 MW

Proposed – 285 MW

Existing – 285 MW

Stage-III

	Earlier Setting	Changed Setting
Frequency	48.0 Hz	48.2 Hz

The name of the feeders of U/F relay in 3rd Stage of W.B.S.E.T.C.L

Sl. No.	Name of Sub-Station	Load	Name of the feeders with load quantum to be tripped by U/F relay	
			Name of the feeders	Load (MW)
01.	N.B.U. 132 KV	69 MW	a) 33 KV TCF	07
			b) 33 KV Kharibari	12
			c) 33 KV Ujanu	16
			d) 11 KV Teesta	07
			e) 11 KV Bagdogra	16
			f) 11 KV Phansidewa	11
02.	Salt Lake 132 KV	131 MW	a) 33 KV M ₁ F ₁	19
			b) 33 KV M ₁ F ₂	19
			c) 33 KV M ₂ F ₁	21
			d) 33 KV M ₂ F ₂	08
			e) 33 KV M ₃ F ₁	16
			f) 33 KV M ₃ F ₂	14
			g) 33 KV M ₅ F ₁	18
			b) 33 KV M ₅ F ₂	16
03.	Jeerat 132 KV	110 MW	a) 132 KV Askn – Jeerat # 1	55
			b) 132 KV Askn – Jeerat # 2	55
04.	CESC	120 MW	-	-

Total: 430 MW

Proposed – 397 MW

Existing – 430 MW

**Revised Anticipated Power Supply Position for the month of
Jan-13**

SL.NO	PARTICULARS	PEAK DEMAND MW	ENERGY MU
1	BIHAR		
	i) NET MAX DEMAND	2305	1215
	ii) NET POWER AVAILABILITY- Own Source	157	68
	- Central Sector	1304	814
	iii) SURPLUS(+)/DEFICIT(-)	-843	-332
2	JHARKHAND		
	i) NET MAX DEMAND	1100	614
	ii) NET POWER AVAILABILITY- Own Source	500	242
	- Central Sector	357	209
	iii) SURPLUS(+)/DEFICIT(-)	-243	-163
3	DVC		
	i) NET MAX DEMAND (OWN)	2585	1600
	ii) NET POWER AVAILABILITY- Own Source	3615	2239
	- Central Sector	273	185
	Long term Bi-lateral (Export)	1030	766
	iii) SURPLUS(+)/DEFICIT(-)	273	57
4	ORISSA		
	i) NET MAX DEMAND	3680	2210
	ii) NET POWER AVAILABILITY- Own Source	2631	1339
	- Central Sector	953	614
	iii) SURPLUS(+)/DEFICIT(-)	-96	-257
5	WEST BENGAL		
5.1	WBSEDCL		
	i) NET MAX DEMAND (OWN)	4400	2304
	ii) CESC's DRAWAL	551	107
	iii) TOTAL WBSEDCL's DEMAND	4951	2411
	iv) NET POWER AVAILABILITY- Own Source	3908	2064
	- Import from DPL	0	-68
	- Central Sector	1076	670
	v) SURPLUS(+)/DEFICIT(-)	33	255
5.2	DPL		
	i) NET MAX DEMAND	315	227
	ii) NET POWER AVAILABILITY	315	159
	iii) SURPLUS(+)/DEFICIT(-)	0	-68
5.3	CESC		
	i) NET MAX DEMAND	1391	658
	ii) NET POWER AVAILABILITY - OWN SOURCE	840	551
	FROM WBSEDCL	551	107
	iii) TOTAL AVAILABILITY	1391	658
	iv) SURPLUS(+)/DEFICIT(-)	0	0
6	WEST BENGAL (WBSEDCL+DPL+CESC) (excluding DVC's supply to WBSEDCL's command area)		
	i) NET MAX DEMAND	6106	3189
	ii) NET POWER AVAILABILITY- Own Source	5063	2774
	- Central Sector	1076	670
	iii) SURPLUS(+)/DEFICIT(-)	33	255
7	SIKKIM		
	i) NET MAX DEMAND	115	48
	ii) NET POWER AVAILABILITY- Own Source	16	5
	- Central Sector	103	55
	iii) SURPLUS(+)/DEFICIT(-)	4	12
8	EASTERN REGION At 1.03 AS DIVERSITY FACTOR		
	i) NET MAX DEMAND	15428	8875
	Long term Bi-lateral	1030	766
	ii) NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)	14580	8448
	iii) PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)	-848	-427

ANNEXURE- V (A)**Tentative Programme of Maintenance of Generating Units for January'13****(A) GENERATING UNITS :**

Agency	Station	Unit no.	Capacity (MW)	Proposed programme (As per LGBR)	Reason of S/d	Remarks
DVC	DTPS	3	140	12.01.13-01.02.13	AOH	Agreed
CESC	Budge Budge TPS	2	250	06.01.13-20.01.13	Boiler inspection	Agreed
CESC	Budge Budge TPS	3	250	22.01.13-15.02.13	Boiler inspection	Agreed
CESC	Southern TPS	1	67.5	02.01.13-05.01.13	Statutory hydraulic test	Agreed
OPGC	Ib TPS	2	210	01.01.13-17.01.13	AOH	Not confirmed
NTPC	Kahalgaon	1	210	16.01.13-20.02.13	Boiler OH	Deferred
NHPC	Rangit HEP	2	20		Annual Maintenance	Proposed w.e.f. 06.01.13-02.02.13
Teesta HEP	Teesta HEP	3	170		Annual Maintenance	Proposed w.e.f. 10.12.12-25.12.12
Teesta HEP	Teesta HEP	2	170		Annual Maintenance	Proposed w.e.f. 29.12.12-12.01.13
Teesta HEP	Teesta HEP	1	170		Annual Maintenance	Proposed w.e.f. 16.01.13-31.01.13

B. Shutdown of Transmission elements approved in 80th OCC meeting

Annexure-V(B)

NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS		Reason
315 MVA ICT – I AT NEW PURNEA	13.12.12	10:00	13.12.12	14:00		POWERGRID	BAY CONSTRUCTION WORK OF 400 KV PURNEA- BSF LINE
400 KV ARAMBAG - PPSP - II	14.12.12	8:00	14.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400 kV TSTPS-Rourkella line-1	14.12.12	9:00	16.12.12	17:00	ODB	NTPC	Preventive maintenance & testing
220 KV Siliguri –Dalkhola D/C line	15.12.12	9:30	30.12.12	17:30	OCB	POWERGRID	For shifting of critical tower (due to river encroachment) loc. No 125 on pile foundation
220 KV NJP - BINAGURI - II & 220 KV MAIN BUS	16.12.12	7:00	16.12.12	16:00	ODB	WBSETCL	STRINGING WORK OF CONDUCTOR
132 KV BIRPARA - BIRPARA(PG) - II	17.12.12	8:00	17.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400KV KAHALGAON - BANKA - BIHARSARIFF - I	17.12.12	7:00	18.12.12	18:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF 80MVAR B/R AT BANKA
400 KV ANDAL - JAMSHEDPUR	17.12.12	9:00	17.12.12	17:00	ODB	Powergrid	CROSS JUMPERING WORK
400KV BSF-SASARAM-III	17.12.12	8:00	18.12.12	18:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF BSF- PRN LINE T BSF
400 KV BUS - I AT SUBHASGRAM	17.12.12	9:00	17.12.12	17:00	ODB	Powergrid	AMP WORK
400 KV MAIN BUS - I AT BARIPADA	17.12.12	9:00	18.12.12	17:00	ODB	Powergrid	AMP WORK
132 KV BIRPARA - BIRPARA(PG) - I	18.12.12	8:00	18.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
132 KV DTPS - BURDWAN D/C(DVC)	18.12.12	8:00	21.12.12	16:00	OCB	WBSETCL	FOR CONSTRUCTION OF DPL 8TH UNIT S/Y
132 KV MALDA - MALDA(PG) - I	18.12.12	8:00	18.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
220 KV Farakka-Lalmatia	18.12.12	9:30	18.12.12	16:30		NTPC	Relay Testing
315 MVA ICT-II AT RANCHI	18.12.12	8:00	18.12.12	17:00		POWERGRID	BAY CONSTRUCTION WORK OF 220 KV RNC-GOLA
315 MVA ICT-II AT NEW PURNEA	18.12.12	1000	18.12.12	14:00		POWERGRID	BAY CONSTRUCTION WORK OF 400 KV PURNEA – BSF LINE
HVDC BACK TO BACK STATION AT PUSAULI	18.12.12	9:30	22.12.12	17:30	ODB	POWERGRID	FACILITATE INTERCONNECTION OF 765/400 KV BAY CONSTRUCTION WORK AT PUSAULI
400 KV BUS - II AT SUBHASGRAM	18.12.12	9:00	18.12.12	17:00	ODB	Powergrid	AMP WORK
200 KV FARAKKA - LALMATIA & 315 MVA ICT of Farakka	18.12.12	10:00	23.12.12	15:00	OCB	Powergrid	O/H WORK OF 220 KV CB(CGL) & O/H WORK OF OLTC OF ICT
315 MVA ICT - I AT DURGAPUR	18.12.12	9:00	20.12.12	17:00	OCB	Powergrid	OLTC O/H WORK
400 KV MAIN BUS - II AT BARIPADA	19.12.12	9:00	20.12.12	17:00	ODB	Powergrid	AMP WORK
220KV JEYPORE-JAYANAGR-I	19.12.12	7:00	20.12.12	17:00	ODB	OPTCL	AMP WORK
400KV ARAMBAG-KTPP	19.12.12	8:00	19.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400KV KAHALGAON - BANKA - BIHARSARIFF - II	19.12.12	7:00	20.12.12	18:00	ODB	Powergrid	FOR BAY CONSTRUCTION WORK OF 80MVAR B/R AT BANKA
63 MVAR BUS REACTOR AT MUZAFFARPUR S/S	19.12.12	10:00	19.12.12	14:00		Powergrid	AMP WORK
132 KV MALDA - MALDA(PG) - II	19.12.12	8:00	19.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400 Bus Reactor-1 at FARAKKA	20.12.12	9:30	20.12.12	16:30		NTPC	Reactor & Relay testing
400 kV Kahalgaon-Farakka line-1	20.12.12	9:00	20.12.12	17:00		NTPC	Preventive maintenance & testing
132 KV NBU - SILIGURI(PG) - I	20.12.12	8:00	20.12.12	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
132 KV NBU - NJP - SILIGURI(PG)	21.12.12	8:00	21.12.12	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
132 KV MAIN BUS AT BARIPADA	21.12.12	9:00	21.12.12	17:00	ODB	Powergrid	AMP WORK
315 MVA ICT - II AT DURGAPUR	21.12.12	10:00	23.12.12	17:00	OCB	Powergrid	OLTC O/H WORK
400 kV TSTPS-Rourkella line-2	21.12.12	9:00	23.12.12	17:00	ODB	NTPC	Preventive maintenance & testing
220 KV RENGALI - KANIHA	21.12.12	7:00	22.12.12	17:00	ODB	OPTCL	AMP WORK

B. Shutdown of Transmission elements approved in 80th OCC meeting

Annexure-V(B)

NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS		Reason
100 MVA ICT-III AT PURNEA S/S	22.12.12	6:00	22.12.12	18:00		POWERGRID	OLTC OVERHAULING
315 MVA ICT - I AT SUBHASGRAM	23.12.12	9:00	23.12.12	17:00	ODB	Powergrid	AMP WORK
100 MVA ICT-I AT PURNEA S/S	23.12.12	6:00	23.12.12	18:00		POWERGRID	OLTC OVERHAULING
100 MVA ICT -II AT PURNEA S/S	24.12.12	6:00	24.12.12	18:00		POWERGRID	OLTC OVERHAULING
315 MVA ICT - I AT MAITHON	24.12.12	9:00	27.12.12	18:00	OCB	Powergrid	OLTC INSPECTION & O/H WORK & AMP OF ICT,400/220 KV BAY,PAINTING WORK
400KV BSF-BALIA-I	24.12.12	9:00	24.12.12	17:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF BSF-PRN LINE T BSF
220 KV TARKERA - ROURKELA - II	24.12.12	8:00	24.12.12	16:00	ODB	OPTCL	AMP WORK
315 MVA ICT - I AT BARIPADA	25.12.12	9:00	25.12.12	17:00	ODB	Powergrid	AMP WORK
400KV BSF-BALIA-II	25.12.12	9:00	25.12.12	17:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF BSF-PRN LINE T BSF
220 KV BUDHIPADAR - KORBA - I	26.12.12	9:00	26.12.12	17:00	ODB	OPTCL	AMP WORK
220 KV BIHARSHARIFF(BSEB)- TENUGHAT	26.12.12	8:00	27.12.12	18:00	ODB	Powergrid	POWERLINE CROSSING OF 400 KV GAYA MTNLINE
315 MVA ICT - II AT BARIPADA	26.12.12	9:00	26.12.12	17:00	ODB	Powergrid	AMP WORK
400 KV BUS - I AT DURGAPUR	26.12.12	9:00	26.12.12	17:00	ODB	Powergrid	BUSBAR STABILITY FOR NEWLY COMMISSIONED BAY
200 KV RENGALI(PG) - RENGALI(GR) - I	27.12.12	7:00	27.12.12	17:00	ODB	OPTCL	AMP WORK
220KV JEYPORE-JAYANAGR-II	27.12.12	7:00	28.12.12	17:00	ODB	OPTCL	AMP WORK
400 KV Farakka-Jeerat	27.12.12	7:00	27.12.12	15:00		POWERGRID	Relay testing
315 MVA ICT - V AT MALDA	27.12.12	10:00	29.12.12	15:00	OCB	Powergrid	OLTC O/H WORK
200 KV RENGALI(PG) - RENGALI(GR) - II	28.12.12	7:00	28.12.12	17:00	ODB	OPTCL	AMP WORK
400 KV BUS - II AT DURGAPUR	28.12.12	9:00	28.12.12	17:00	ODB	Powergrid	BUSBAR STABILITY FOR NEWLY COMMISSIONED BAY
315 MVA ICT - II AT MAITHON	28.12.12	9:00	29.12.12	18:00	ODB	Powergrid	OLTC INSPECTION & O/H WORK & AMP OF ICT,400/220 KV BAY,PAINTING WORK
315 MVA ICT - II AT SUBHASGRAM	29.12.12	9:00	29.12.12	17:00	ODB	Powergrid	AMP WORK
315 MVA ICT -I AT PUSAULI S/S	29.12.12	9:00	29.12.12	15:00		POWERGRID	FOR BAY CONSTRUCTION WORK OF 765 KV SSRM- FATEHPUR
400 KV ARAMBAG - DURGAPUR	29.12.12	8:00	29.12.12	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
50 MVA ICT - IV AT MALDA	30.12.12	10:00	01.01.13	15:00	OCB	Powergrid	OLTC O/H WORK
400 KV MAITHON - KAHALGAON - II	02.01.13	9:00	02.01.13	17:00	ODB	Powergrid	AMP OF REACTOR
400KV MALDA-PRN-I	02.01.13	10:00	05.01.13	18:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF BSF-PRN LINE T PRN
400 KV RENGALI - BARIPADA	04.01.13	6:00	07.01.13	17:00	ODB	OPTCL	AMP WORK
400 KV ARAMBAG - BAKRESWAR	05.01.13	8:00	05.01.13	16:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
220 KV Malda- Dalkhola Ckt-I	06.01.13	9:00	06.01.13	17:30		POWERGRID	AMP work
400KV KTPP-JEERAT	06.01.13	7:00	06.01.13	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
63 MVAR B/R AT JEYPORE	07.01.13	9:00	07.01.13	17:00	ODB	Powergrid	AMP WORK
220 KV NJP - BINAGURI - I	07.01.13	8:00	07.01.13	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
220 KV Malda- Dalkhola Ckt-II	07.01.13	9:00	07.01.13	17:30	OCB	POWERGRID	AMP work
400 KV BARIAPADA - KHARAGAPUR - KOLAGHAT	07.01.13	6:00	07.01.13	17:00	ODB	WBSETCL /OPTCL	MAINTENANCE OF ISOLATORS AND BREAKERS

B. Shutdown of Transmission elements approved in 80th OCC meeting

Annexure-V(B)

NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS		Reason
50 MVA ICT - II AT MALDA	07.01.13	9:00	07.02.13	17:00	OCB	Powergrid	REPLACEMENT OF 50 MVA ICT WITH 160 MVA ICT
315MVA ICT-II AT BSF S/S	08.01.13	10:00	08.01.13	14:00	ODB	POWERGRID	AMP WORK
220 KV NJP - BINAGURI - II	08.01.13	8:00	08.01.13	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400KV JMS-RKL-I	08.01.13	9:00	09.01.13	17:00	ODB	POWERGRID	FOR BAY CONSTRUCTION WORK OF JMS-BARIPADA LINE T JMS
220KV NPRN-PRN-I	08.01.13	10:00	09.01.13	14:00	ODB	POWERGRID	AMP WORK
400 KV FARAKKA-KAHALGAON-II	09.01.13	9:00	11.01.13	17:00	OCB	POWERGRID	CT & CVT REPLACEMENT
400 KV ROURKELA - RAIGARH - I	10.01.13	9:00	10.01.13	17:00	ODB	Powergrid	AMP WORK
50MVAR B/R-I AT BSF	10.01.13	10:00	10.01.13	14:00	ODB	POWERGRID	AMP WORK
400 KV ROURKELA - SEL - I	11.01.13	9:00	11.01.13	17:00	ODB	Powergrid	AMP WORK
400 KV RENGALI - INDRAVATI	12.01.13	8:00	12.01.13	18:00	ODB	Powergrid	AMP & CVT REPLACEMENT WORK
400 KV BUS - I AT ROURKELA	14.01.13	8:00	14.01.13	17:00	ODB	Powergrid	AMP WORK
400 KV BARIAPADA - KHARAGAPUR - KOLAGHAT	15.01.13	8:00	15.01.13	15:00	ODB	WBSETCL	MAINTENANCE OF ISOLATORS AND BREAKERS
315 MVA ICT - II AT JEYPORE	16.01.13	9:00	17.01.13	17:00	OCB	Powergrid	OLTC O/H WORK
400 KV BUS - II AT ROURKELA	16.01.13	8:00	16.01.13	17:00	ODB	Powergrid	AMP WORK
400 KV KAHALGAON-BARH-II	17.01.13	9:00	17.01.12	17:00		NTPC	AMP
L/R OF 400KV BSF-GAYA	17.01.13	10:00	17.01.13	14:00	ODB	POWERGRID	AMP WORK
315MVA ICT-I AT RANCHI S/S	18.01.13	10:00	18.01.13	14:00	ODB	POWERGRID	AMP WORK
400 KV TALCHER - ROURKELA - I	18.01.13	8:00	18.01.13	18:00	ODB	Powergrid	REPLACEMENT OF DEFECTIVE INSULATOR
400 KV BAKRESWAR - JERAT	20.01.13	7:00	20.01.13	15:00	ODB	WBSETCL	WINTER MAINTENANCE WORK
400 KV KAHALGAON-BIHARSHARIF-I	22.01.13	9:00	24.01.13	17:00	OCB	NTPC	CT & CVT REPLACEMENT
400 KV TALCHER - ROURKELA - II	25.01.13	8:00	25.01.13	18:00	ODB	Powergrid	REPLACEMENT OF DEFECTIVE INSULATOR
315 MVA ICT - III AT MALDA	28.01.13	9:00	28.01.13	17:00	ODB	Powergrid	AMP

**** 400 KV TESTA - BINAGURI - I & II EACH FOR 15 DAYS ON CONTINUOUS BASIS IS APPROVED IN OCC (DATE WILL BE CLARIFIED LATTER)**