Eastern Regional Power Committee
Kolkata-33

Salient Decisions taken in 86th OCC meeting held on 21.06.13

1. OCC decided to implement the total load relief through operation of UFR in four stages without any changes in total amount of load relief. The time schedule is one month.

2. It was agreed that a separate meeting would be convened by secretariat with ERLDC, NTPC and JSEB at ERPC Kolkata sometimes in the month of July, 2013 to discuss cost estimation details and formulation of Road map on NTPC Farakka Islanding scheme.

3. CERC has issued the procedure for assessment of FRC of Control Areas in Indian Power System. OCC advised all constituents to implement FRC immediately as per CERC order.

4. OCC requested all constituents to update the latest status of compliance on observations on "Third Party Protection Audit" in every 15 days.

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

Sl. No.	Particulars	Present Status
1	It was agreed that as per ERPC direction, all SLDCs/STUs to take up the issue with their embedded captive plants for compliance to provide required help to Load Despatch Centres for restoration of the grid during any disturbance and confirm their status to ERPC Secretariat by 25 January, 2013. (81st OCC)	All major captive power plants complied. However, DSP in DVC control area raised certain issues, on which OCC advised DVC to have a separate meeting with DSP and revert back.
2	OCC requested to all constituents to take appropriate actions at their end to establish the existing communication system (SCADA) with ERLDC healthy by June 2013 without fail.	ERPC decision is being implemented in majority cases. But, in case of BSPHCL/JSEB, the restoration is far behind the schedule.
3	OCC requested all utilities to submit the information on GT and ICT tap coordination as given in agenda item B5 latest by next OCC (80th OCC).	ERLDC compiled the data, the details are placed. Constituents were requested to update the details if any, before finalization.
4	OCC felt the need of identifying some radial feeders in each of the constituents system which can be disconnected at the direction of ERLDC to prevent overdrawal. (77th OCC)	OPTCL, DVC, BSEB, WBPDCL and DPL had given the relevant information. All defaulting constituents were requested to submit the relevant information by next OCC.
5	**a) Testing and calibration of special energy meter in Eastern Region** **b) Automatic Meter Reading (AMR)**	Powergrid informed that, Testing and calibration of SEMs have been completed in North Bengal area. The same is in progress in Sikkim area. Powergrid updated the status of progress on Automatic Meter Reading (AMR). Latest status is available at ERPC website.

Eastern Regional Power Committee

Minutes of 86th OCC Meeting held on 21.06.13 at ERPC, Kolkata

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

Member Secretary I/c, ERPC greeted the participants in the 86th OCC meeting. After that the agenda items were taken up one by one.

Item no. A.1: Confirmation of minutes of 85th OCC meeting of ERPC held on 17.05.13

The minutes were circulated vide letter dated 29.05.13 to all the constituents and also uploaded in ERPC website. No comments were received till date.

Members may confirm the minutes.

Deliberation in the meeting

Members confirmed the minutes.

PART B

Item no. B1: Review of load relief under various stages of UFR

As per decision taken in 77th OCC meeting, following are status of implementation of frequency setting and quantum of load to be shed through UFR to be adopted in ER grid. In the 83rd OCC, BSEB has updated the actual quantum of load relief. The revised table indicating the details of planned vis-a-vis actual UFR quanta are depicted below:

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

Scheme for Emergency setting at 47.6 Hz will remain unchanged

In last OCC, house was informed that, in its first meeting NPC decided stages of load relief under UFR is increased to 60%. Initially to start with it would be in the following 4 stages:

Stage-I	49.2 Hz	10% of load relief
Stage-II	49.0 Hz	10% of load relief

Stage-III	48.8 Hz	15% of load relief
Stage-IV	48.6 Hz	15% of load relief

In 85th OCC members agreed to divide the UFR load relief into four stages without any changes in total amount of load relief. ERLDC in next OCC will place the concrete plan dividing the UFR load relief in four stages.

ERLDC may place the UFR load relief quantum. Members may finalise the quantum of load to be shed under each stage.

Members are requested to inform ERLDC feeder wise operation of UFR for each stage, whenever operates.

Deliberation in the meeting

*ERLDC gave a presentation on UFR load relief quantum. Presentation is enclosed at **Annexure-I**. In the presentation constituents' wise load relief quantum of all four stages are shown. OCC decided to implement the total load relief in four stages within a month. Constituents agreed.*

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

In the 23rd ERPC meeting it was decided that:

i. All captive power plants in Eastern Region, which are connected to Eastern Grid, should provide required help to Load Dispatch Centres for restoration of the grid during any disturbance; otherwise, the Captive Plants will not be allowed to remain connected with Grid.

Compliances received from most of the major CPPs except DSP in DVC system.

Since DSP is an embedded entity of DVC, TCC advised DVC to issue a notice to DSP giving 15days time to give their compliance. TCC also advised that if DSP fails to submit its compliance within the stipulated period then the matter can be taken up with CERC for considering disconnection of DSP from the grid. ERPC accepted the decision of TCC.

In 85th OCC DVC informed that, DVC had already written a letter to DSP as per ERPC decision. Following DVC's communication DSP complied. However, DSP needs a separate meeting on the issue covering the following points.

- Quantity of startup load and the capacity of drives that required to start up with DSP CPP.
- The most suitable route to transmit the start up power from DSP CPP to DVC, DTPS as an alternative route through ASP-DVC, Durgapur 132/33 kV substation is also exist.
- Change of switching and relay coordination required at different substation to protect the CPP from overloading.
- To develop a SOP for such situation.

DVC may update.

Deliberation in the meeting

OCC advised DVC to have a separate meeting with DSP and outcome of the meeting should communicate to ERPC.

ii. More islanding schemes should be planned in Eastern Region for ensuring adequate start up power during such large scale disturbance.

In 85th OCC NTPC informed that the issue was already taken up with its corporate office for finalizing the Engineering Diagram of Farakka Islanding scheme.

OCC informed that, road map and cost estimation of Farakka islanding scheme are to be placed in next TCC/ERPC meeting after detailed deliberation in lower forums. Therefore, OCC advised NTPC to place the road map and cost estimation details in next OCC. NTPC agreed.

NTPC may update their position.

Deliberation in the meeting

NTPC informed that, engineering drawing of the proposed scheme would be finalized within the month of June by their corporation office. OCC advised NTPC to share the approved engineering drawing details with JSEB with copies to ERPC and ERLDC for detailed study. JSEB was advised to study the details and chalk out their plan for installation of UFR and PLC panels etc at Lalmatia end for implementation of the scheme. It was agreed that a separate meeting would be convened by secretariat with ERLDC, NTPC and JSEB at ERPC Kolkata sometimes in the month of July wherein the following will be placed and discussed:

i) Engineering drawing details of the scheme along with cost estimation and Road map (Action: NTPC);

ii) Action plan for procurement and Installation of required no of UFR & PLC panels at Lalmatia end (Action: JSEB);

As far as islanding schemes of Tata power (Haldia), DPL & DVC as a whole are concerned, it was informed that these schemes are in initial stages of planning and there would be further deliberation in lower forums of ERPC. TCC advised to place the status of these schemes in its next meeting.

In 85th OCC, OCC requested WBSETCL to pursue the issue with Tata power (Haldia). Thereafter, WBSETCL communicated vide letter dated 4th June, 2013, TATA Power, Haldia has conveyed their acceptance on the islanding scheme of Haldia generating station.

Members may further advice for implementation of the same.

Deliberation in the meeting

OCC agreed for Tata Power, Haldia islanding scheme and advised WBSETCL to place the road map for implementation by Next OCC so that the same could be placed before TCC/ERPC for final approval.

In 85th OCC meeting, DVC informed that, Islanding Scheme of DVC as a whole has been finalized from DVC end and it would be placed in next OCC.

DVC may update the status.

Deliberation in the meeting

DVC informed that, Islanding Scheme of DVC as a whole has been finalized from DVC end, but not yet authorized by DVC corporate office. The same would be done shortly.

House was informed that, CEA had advised all RPCs to include Railway supply in the islanding scheme. Members felt that, inclusion of railway feeders in islanding scheme may affect the stability of the island because of unbalanced traction supply. Thereby it will reduce the chances of surviving an island. Therefore, OCC placed reservation to include the traction supply in an islanding scheme. However, in continuation of present practice OCC agreed on giving Traction supply on priority basis once generating stations get successfully islanded from the grid.

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

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

In 85th OCC POWERGRID updated the following status of RTUs whose priority list was given:
List of RTU supplied under ULDC Project but data is faulty/intermittent:

SL no	Name of Utility	Kv	Name of station	Reason for non reporting	Status as on 17-05-2013
1	WBSETCL	400	Sagardighi TPS	RTU data is very intermittent	WBSETCL informed they are looking on the matter and will resolve the problem at the earliest possible.
1	DVC	220	220 KV CTPS – B (2 x 250 MW)	Except GT MW,line flow (MW/MVAR) no other data's are available	DVC requested M/s POWERGRID for installion of the RTU on priority
2		400	DSTPS	GT data is not updating properly. Unit data not provided.	DVC informed that they have taken up the matter with Vendor and will resolve the problem very soon.
3		400	Mejia -B	Data reporting is intermittent .GT data is not updating properly. Unit data not provided.	DVC informed that they have taken up the matter with Vendor and will resolve the problem very soon.

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

SL no	Name of Utility	KV	Name of station	Reason for non reporting	Status as on 17-05-2013
1	NTPC	400	400 kV Kahalgaon STPS : (4X 210 + 3X 500 MW) primary (LV) side of GT is not available.	MW,MVAR oF primary(LV) side of All GT is not available.	NTPC informed they are looking on the matter and will revert back .
		400	400 kV Farakka : (3x 200 + 2 x 500 MW)	MW,MVAR oF primary(LV) side of All GT is not available. GT -3 MVAR not available.	NTPC informed that GT-3 MVAR will available during opportunity shut down and they are looking on the remaining matter and will revert back .
2	OPTCL	220	220 KV Vedanta (9 x 135 MW)	No status points are available.	OPTCL informed they are looking on the matter and will resolve the problem at the earliest possible.
3	WBSETCL	220	DPL	Unit -7 data never reported to SLDC.	WBSETCL informed they are looking on the matter & will resolve the problem at the earliest possible.

Powergrid may update the status of work

<u>Deliberation in the meeting</u>

Constituents updated the status. Updated status is as follows,

List of RTU supplied under ULDC Project but data is faulty/intermittent:

SL no	Name of Utility	Kv	Name of station	Reason for not reporting	Status as on 21-06-2013
1	WBPDCL	400	Sagardighi TPS	RTU data is very intermittent Voltage data not available, MW and MVAR intermittent.	WBPDCL informed they are looking on the matter and will resolve the problem at the earliest possible.
1	DVC	220	220 KV CTPS – B (2 x 250 MW)	Except GT MW, line flow (MW/MVAR) no other data's are available.	RTU available. Data reporting in steps. DVC agreed to look into it.
2		400	DSTPS	GT data is not updating properly. Unit data not provided.	DVC informed that they have taken up the matter with Vendor and will resolve the problem by 30th June, 2013.

3		400	Mejia -B	Data reporting is intermittent .GT data is not updating properly. Unit data not provided.	DVC informed that they have taken up the matter with Vendor and will resolve the problem by 30th June, 2013.

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

SL no	Name of Utility	KV	Name of station	Reason for non reporting	Status as on 21-06-2013
1	NTPC	400	400 kV Kahalgaon STPS : (4X 210 + 3X 500 MW) primary (LV) side of GT is not available.	MW, MVAR oF primary (LV) side of All GT is not available.	NTPC informed that X-bus data is sufficient and the issue of providing LT side data is placed to CERC. No decision from CERC. ERLDC insisted to provide the LV side data. NTPC has reservation to provide LT side data.
		400	400 kV Farakka : (3x 200 + 2 x 500 MW)	MW,MVAR oF primary(LV) side of All GT is not available. GT -3 MVAR not available.	NTPC informed that GT-3 MVAR will be made available during opportunity shut down. However, NTPC Farakka not getting opportunity shutdown.
2	OPTCL	220	220 KV Vedanta (9 x 135 MW)	No status points are available.	OPTCL informed they are looking on the matter and will resolve the problem at the earliest possible.
3	WBSETCL	220	DPL	Unit -7 data never reported to SLDC.	WBSETCL informed they are looking on the matter. It is not possible to resolve the problem by 30th June, 2013.

A. Non availability of Telemetry of BSEB Substation: -

In 85th OCC BSPHCL and Powergrid updated the station wise status as given below:

S/n	Name of RTU locations	BSEB action plan for RTU supplied during ULDC project and restoartion by June 2013
1	Khagaul RTU	BSEB informed that after commissioning of Sipara, PLCC link may be provided for Khagaul GSS for integration by June 2013 on contigenncy
2	Koshi	BSEB informed that RTU reporting to SLDC not possible by June 2013.
3	Purnea	BSEB informed that RTU reporting to SLDC not possible by June 2013.

4	Barauni TPS	BSEB Required PDH MUX at BTPS from POWERGRID for RTU restoration . However, POWERGRID further informed that they don't have any spare PDH/MUX with them and any such requirement of BSPHCL has to be arranged by BSPHCL only.
5	Dehri	BSEB informed that RTU will start reporting once PLCC repeater at Gaya (PG) link made healthy . No time schedule provided .
6	Kamarnasa	BSEB informed that RTU reporting to SLDC not possible by June 2013.
7	Sultanganj	RTU is reporting to SLDC .

BSPHCL and Powergrid may update the status.

Deliberation in the meeting

BSPHCL and Powergrid updated the status. Updated status is as follows,

S/n	Name of RTU locations	BSPHCL action plan for RTU supplied during ULDC project and restoration by June 2013
1	Khagaul RTU	BSPHCL informed that, earlier it was expected that after getting OPGW link at Sirpara, BSPHCL could provide PLCC panel w.r.t. Khagaul GSS. But, plan did not finalize yet. So, BSPHCL is now planning for GPRS telemetry option.
2	Koshi	BSPHCL informed that, PGCIL is not in a position to provide OPGW on priority basis. Hence, PGCIL suggested resolving the issue with GPRS. BSPHCL requested PGCIL to submit the cost details which is awaited.
3	Purnea	BSPHCL informed that, PGCIL is not in a position to provide OPGW on priority basis. Hence, PGCIL suggested resolving the issue with GPRS. BSPHCL requested PGCIL to submit the cost details which is awaited.
4	Barauni TPS	BSPHCL required PDH MUX at BTPS from POWERGRID for RTU restoration. However, POWERGRID further informed that they don't have any spare PDH/MUX. BSPHCL is now working on shifting the PLCC panels of Pasauli(PG) to Gaya (PG) to make through the Dehri-Bodhgaya link. Expected to be completed by 30th June, 2013.
5	Dehri	BSPHCL required PDH MUX at BTPS from POWERGRID for RTU restoration. However, POWERGRID further informed that they don't have any spare PDH/MUX. BSPHCL is now working on shifting the PLCC panels of Pasauli(PG) to Gaya (PG) to make through the Dehri-Bodhgaya link. Expected to be completed by 30th June, 2013.
6	Kamarnasa	BSPHCL informed that, PGCIL is not in a position to provide OPGW on priority basis. Hence, PGCIL suggested resolving the issue with GPRS. BSPHCL requested PGCIL to submit the cost details which is awaited.
7	Sultanganj	RTU is reporting to SLDC .

B. Non availability of Telemetry of JSEB Substation:

In 85th OCC JSEB and Powergrid updated the station wise status as given below:

S/n	Name of RTU Locations	JSEB action plan for RTU supplied during ULDC project and restoartion by June 2013 .
1	Ramchadrapur RTU	JSEB informed that there is roblem is in PLCC link between Chandil - Ramchadrapur and same will be resolve by June 2013 .

2	Jamtara RTU	JSEB informed that It will be commissioned by June 2013 .
3	Deoghar RTU	JSEB informed that RTU will report by June 2013 after rectification of Deoghar –Jamtara link.
4	Garwarah RTU ,	JSEB informed that RTU may report after divert to new PLCC link to Garwah- Daltanganj –Ranchi . No time schedule provided .
5	Patartu RTU	JSEB informed that RTU will start reporting once link made healthy by POWERTEL.
6	Tenughat RTU	JSEB informed that RTU will start reporting by June 2013 after rectification of Tenughat – Patratu PLCC link .

JSEB & Powergrid May Update.

Deliberation in the meeting

JSEB and Powergrid updated the status. Updated status is as follows,

S/n	Name of RTU Locations	JSEB action plan for RTU supplied during ULDC project and restoartion by June 2013.
1	Ramchadrapur RTU	JSEB informed that there is problem in PLCC link between Chandil – Ramchadrapur. AMC to M/s PUNCOM for PLCC link is under process. It would not be resolved by June 2013.
2	Jamtara RTU	JSEB informed that, RTU has been shifted to new control room and requested Powergrid to reintegrate the feeders in RTU as integration of additional feeder (new element) in the existing RTU. It will be commissioned by June 2013.
3	Deoghar RTU	JSEB informed that RTU will report after rectification of Deoghar –Jamtara PLCC link. AMC to M/s PUNCOM for PLCC link is under process. It would not be resolved by June 2013.
4	Garwarah RTU ,	JSEB informed that RTU may report after divertion of new PLCC link to Garwah- Daltanganj –Ranchi. No time schedule provided.
5	Patartu RTU	JSEB informed that, reporting of RTU is frequently interrupted because of frequent damages in UGFO. RTU will start reporting once link made healthy by POWERTEL.
6	Tenughat RTU	JSEB informed that RTU will start reporting after rectification of Tenughat – Patratu PLCC link. AMC to PUNCOM is under process. It would not be resolved by June 2013.

In 85th OCC Sikkim and Powergrid updated the status as given below:

S/n	Name of RTU Locations	SIKKIM action plan for RTU supplied during ULDC project and restoartion by June 2013.
1	Melli 132 KV	E & PD Sikkim informed that Survey has been completed for old RTU shifting to 132 KV S/s along with POWERGRID and Alstom representative, and requested POWERGRID for providing estimate for the data reporting of Melli to ERLDC and & Gangtok Monitoring Centre at the earliest possible.

Sikkim & Powergrid may update

Deliberation in the meeting

Sikkim and Powergrid updated the status. Updated status is as follows,

S/n	Name of RTU Locations	SIKKIM action plan for RTU supplied during ULDC project and restoartion by June 2013.
1	Melli 132 KV	E & PD Sikkim informed that Survey with Powergrid and Alstom has been completed for old RTU shifting to 132 KV S/s. Powergrid was requested for providing estimate. Powergrid informed that estimate has already been sent to Sikkim.

In 85th OCC OPTCL updated the status as given below:

S/n	Name of RTU Locations	OPTCL action plan for RTU supplied during ULDC project and restoartion by June 2013 .
1	Nalco	OPTCL informed that Data telemetry of NALCO RTU is under progress.
2	Machkund HPS	OPTCL informed that Machkund HPS RTU will be commissioned by June 2013 .

OPTCL may update

Deliberation in the meeting

OPTCL updated the status. Updated status is as follows,

S/n	Name of RTU Locations	OPTCL action plan for RTU supplied during ULDC project and restoartion by June 2013 .
1	Nalco	Work has been awarded and wiring is in progress. RTU will be commissioned by July 2013.
2	Machkund HPS	OPTCL informed that Machkund HPS RTU will be commissioned by June 2013.

Item no.B3: CT Replacement at Melli end of 132 kV Melli – Chuzachen feeder----ERLDC

132 kV Gangtok (PG) – Melli(Sikkim) Line has been made LILO at Chuzachen for evacuation of 110 MW of power from Chuzachen as an interim arrangement. It has been observed that Melli end data is recording less energy compared to the actual energy sent by Chuzachen HEP end. It has been observed that there is a possibility of CT saturation as the CT ratio at Melli end is 150/1 leading to less recording of energy at Melli end.

CT at Melli end requires replacement in order to avoid any discrepancy in computation of net energy drawal by Sikkim. Till replacement of CT is done, the computation of energy for this line shall be done considering SEM at Chuzachen end.

POWERGRID may take necessary action.

Deliberation in the meeting

Powergrid informed that, CT of desired ratio is not available with Powergrid. Order has been placed to Areva for new CT and it would be replaced by August, 2013.

Item no.B4: Tripping incidences of BSPHCL and OPTCL systems

i. **Tripping of Purnea- Purnea lines of BSPHCL on 10.04.13 at 11:37 hrs**

ii. **At around 03:50 hrs on 21.04.13, due to fault in 220Kv Biharshariff-Fatuah-II (B-N fault, Z-II at Biharshariff), 220Kv Biharshariff-Tenughat S/C and all three 315 MVA ICTs, 150 MVA ICT-I, II & III at Biharshariff got tripped as reported by BSPHCL**

BSPHCL may explain their position.

Deliberation in the meeting

ERLDC informed that, BSPHCL has submitted the reports in proper format. BSHCL informed that, relay coordination is in progress with consultation of PGCIL. BSHCL initiated the process for installation of back up over current relay at Fatuah and Purena (BSPHCL) as agreed in Special Protection Committee Meeting held on 14th June, 2013.

iii. **System Disturbances in OPTCL at 400kv Meramundali Sub-Station On 03.04.2013 at 01:40 Hrs**

At around 01:40 Hrs, 02:54 hrs and 03:08 hrs on 03.04.13 due to thunder and stormy weather in Baripada ,Kolaghat & Meramundali area several lines tripped alongwith U#6 of Kolkaghat (210MW).

At Meramundali: 400 kV Mendhasal ckt tripped on D/P, E/F relay along with 400 kV Bolangir ckt on O/V relay indication. 400/220 kV ICT-I & II, 220 kV Bhanjanagar ckt-II, 220 kV Kaniha ckt-II and 132 kV NBVL ckt-II also tripped at Meramundali end.

At Mendhasal: 400 kV Mendhasal-Meramundali ckt tripped on D/P relay indication and 400 kV Baripada-Mendhasal ckt-I & II tripped on DTT relay indication.

Deliberation in the meeting

*OPTCL gave a detailed presentation with a single line diagram explaining the cause of incidence, sequence operations occurred and action taken to reduce such incidences. Presentation is enclosed at **Annexure-II**.*

iv. **System Disturbances in OPTCL at Budhipadar 220kv Sub-Station on 13.04.13 at 21:52 Hrs.**

At 21:52hrs, 132kV Budhipadar-Tarkera-I tripped at Budhipadar on D/P relay indication with line to line Fault. At 21:58hrs 220kV Budhipadar-Tarkera-II tripped at Budhipadar end on D/P relay operation in B-phase E/F. subsequently all 220kV lines emanating from

Budhipadar tripped. Later it was found that earth wire of 220kV Budhipadar-Tarkera-II at loc No-77 snapped due to heavy stormy weather causing tripping of feeders from Budhipadar. IBTPS U#1 & 2, Sterlite U#2, Burla HEP U#5 & 7 also tripped.

ERLDC has already made a preliminary analysis of the trippings and their observation is enclosed in **Annexure-I** OPTCCL may explain their position in respect of the this analysis**.**

Deliberation in the meeting

*OPTCL gave a detailed presentation with a single line diagram explaining the cause of incidence, sequence operations occurred. Presentation is enclosed at **Annexure-III**. In the presentation OPTCL explained all the queries raised by the Protection Committee members (**Annexure-I of Agenda)**.*

During deliberation, OPTCL explained that relay maloperated at Budhipadar end of Korba III feeder due to problem in CVT. CVT is being looked after PGCIL. OPTCL informed that, CVT problem has been intimated several times to PGCIL. But no response received from PGCIL end. OCC requested PGCIL to look into the matter of CVT problem and give feedback at the earliest.

*OPTCL also proposed a LADR scheme to reduce such incidences. Details of LADR scheme is enclosed in **Annexure-IV**.*

v. Repeated tripping incidences at Chandil 220KV OF JSEB on 02.04.13 at 10:29 hrs, 12.04.13 at 14:56 hrs, 07.05.13 at 15:48 hrs, 10.05.13 at 11:42 hrs & Ranchi complex including Patratu TPS on 06.05.13 at 15:32 hrs, on 16.06.2013 and 18.06.2013

On above repeated tripping and resultant maloperation of outgoing feeders and generators etc. discussions were held in Special Protection Committee Meeting held on 14.06.2013. In the meeting, representative from JSEB assured to take appropriate measures for prevention of such type of maltripping. But again on 16th and 18th of this month for a transient type of fault network surrounding Chandil S/s got tripped. In Special Protection Meeting JSEB was advised to present the details of various tripping of in an around Chandil, Ranchi and Hatia complex with standard grid incidence report along with SLD in the next OCC meeting.

JSEB may clarify their position.

Deliberation in the meeting

OCC expressed displeasure on non compliance & non adherence of issues and problems raised/suggested in earlier protection committee meetings. OCC again advised to comply the recommendations in respect of protection systems in their network for arresting such type of disturbances. JSEB was also requested to give their detail action plan in this regard in next protection meeting. JSEB was impressed upon that, in case of default issue would be referred to TCC/ERPC for further communication to CERC and MOP/GOI.

Item no.B5: Heavy loading of 315MVA ICTs at Jamshedpur and Sasaram

It has been observed that 315MVA ICTs at Jamshedpur are loaded to the levels of 150MW or more per ICT, and while that at Sasaram touches 200MW or more. Thus n-1 compliancy is not there. Hence, it is felt that augmentation of ICTs at Jamshedpur and Sasaram may be carried out.

ERLDC may place the augmentation proposal.

Deliberation in the meeting

OCC felt that, ICTs may be replaced with 2x500 MVA ICTs. However, OCC advised ERLDC to monitor the loading of ICT for one more month, do the load flow study and revert back in the next study.

Item no. B6:
(Item No. B1 of 84th OCC meeting)

a) **Testing and calibration of special energy meter in Eastern Region--Powergrid**

b) **Automatic Meter Reading (AMR) --Powergrid**

Powergrid may update the latest status of progress etc.

Deliberation in the meeting

Powergrid informed that, Testing and calibration of SEMs have been completed in North Bengal area. The same is in progress in Sikkim area.

*PGCIL has given the updated SEM calibration plan of Eastern Region enclosed at **Annexure-V**. PGCIL also has given the status of progress on Automatic Meter Reading (AMR). Status of progress on Automatic Meter Reading (AMR) is available at ERPC website.*

Item no. B7: 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

Maximum and minimum voltage observed (data taken from SCADA)

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

Power Plant	Max and Min Voltage observed for May 13 (KV)	Date for monitoring (May 2013)
Farakka STPS	427, 409	13,31
Khalgaon STPS	430, 414	11,31
Talcher STPS	417, 401	Voltage within IEGC band
Teesta	420, 395 (Binaguri)	Voltage within IEGC band
Bakreshwar TPS	414, 383	Voltage within IEGC band
Kolaghat TPS	425, 388	

Sagardighi TPS	427, 409 (Farakka)	13,31
MPL	428, 416	12,31
Mejia-B	432, 420	12,31
DSTPS	436, 424	1,26
Adhunik TPS	431, 417 (Jamsedpur)	30,31
Sterlite	429, 421	1,19

Performance analysis:

I. Farakka : Though there was absorption of reactive power in 500MW units, but the 200 MW units are not absorbing VAR during high voltage.

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

III. Sagardighi: Reactive performance of sagardighi units was satisfactory.

IV. MPL: MPL absorbing VAR during High voltage condition but not adequate.

V. Reactive capability performance of DSTPS and Mejia'B' can not be monitored as data for voltage are not changing with respect to time. This problem is persisting for quite some time DVC may kindly ensure availability of complete data from Mejia-B & DSTPS.

VI. Adhunik TPS: Adhunik was not absorbing VAR during high voltage condition. Similar performance was observed in the month of April 13 also, Reactive power injection by Adhunik is contributing towards high voltage condition at Jamsedpur.

VII. Sterlite: Sterlite was not absorbing VAR during high voltage condition. Inadequate reactive power absorption by SEL units is aggravating the high voltage condition at Rourkela.

Members may please note.

Deliberation in the meeting

Members noted.

b) Schedule for reactive capability tests

DVC had intimated that reactive capability test for Mejia TPS units would be carried out in May,13. WBSETCL has intimated that reactive capability test for KolaghatTPS would be carried out in the 1stweek of June, 13. NTPC had also not yet indicated dates for FSTPP.

NTPC, DVC and WBSETCL may update the status.

Deliberation in the meeting

DVC informed that, reactive capability test of Mejia TPS would be carried out in July, 2013.

Item no.B8: Revised congestion management procedure in Real Time System operation (Item No. B2 of 85th OCC meeting)

CERC has released the revised congestion management procedure for real time system operation which has been operationalized w.e.f 22/04/13. A presentation on the procedures would be given by ERLDC for benefit of the members.

In 85th OCC, ERLDC gave the presentation on the subject matter. Constituents requested to arrange a separate workshop on TTC and ATC. Members agreed. However ERLDC informed that, all constituents should implement "Revised Congestion Management Procedure" immediately as per CERC order.

Members may update the status.

Deliberation in the meeting

For better understanding of the subject, OCC requested ERLDC to convene a separate workshop on ATC/TTC etc. in the month of July, 2013. OCC also advised all constituents to implement revised congestion management procedure and intimate the status to ERLDC.

Item no.B9: Procedure for assessment of Frequency Response Characteristic (FRC) of Control Areas in Indian Power System (Item No. B3 of 85th OCC meeting)

CERC has issued the procedure for assessment of FRC of Control Areas in Indian Power System. A presentation on the procedures would be delivered by ERLDC, for benefit of the members.

In 85th OCC, ERLDC gave the presentation on the subject matter. Constituents requested to arrange a separate workshop on FRC. Members agreed. However ERLDC informed that, all constituents should implement FRC immediately as per CERC order.

As per CERC order in Petition no 47/MP/2012 **"Procedure for Assessment of Frequency Response Characteristic in Indian Power System",** all RLDCs and SLDCs shall work out FRC within one week and communicate the same to NLDC/RLDC, due to loss of 1000MW Load/Generation. RLDC shall send initial frequency (f_A), final frequency (f_B) with time and Loss of Generation/Load to SLDCs for calculation of FRC.

The procedure for calculation of FRC and relevant format is given in CERC order on FRC, which is available in public domain.

To start with, all SLDCs may work out their respective control area's FRC for the following event, and send the results to ERLDC:-

Event	Loss of Gen	Initial frequency (Fa)	Final Frequency (Fb)
Tirora Unit -1&3 (WR)	1050MW	50.21Hz	49.87Hz
Time	17:37Hr of 30.5.13	17:30:10	17:38:40

All SLDCs may please ensure computation of FRCs as per guidelines of CERC

Deliberation in the meeting

OCC requested all SLDCs to calculate FRC for the given data and send the results to ERLDC.

Item no.B10: Taking Auto-reclose feature into service consequent to opening of Line Reactor for a short line (Item No. B4 of 85th OCC meeting)

50MVAR Line reactor at Jeerat end for 400kV FSTPP-Jeeratline(238kM) and 63MVAR Line Reactor at Jeerat end for 400kV Jeerat-Bakreshwar line have been taken out of service for improving Bus voltages at Jeerat. However, on insistence of WBSETCL the Autoreclose feature has been kept disabled as the NGR (Neutral grounding Reactor) becomes unavailable when the line reactor is taken out. However, CTU has communicated vide mail that for short lines auto-reclosure can be taken into service without line reactor. They have also confirmed that 400kVJeerat-Bakreshwar being a short line, the auto-reclose for the same could be kept in service. Accordingly, in the interest of Grid security it is felt that auto-reclose feature may be kept enabled for 400Kv Jeerat-Bakreshwar line even though the line reactor has been taken out of service.

In 85th OCC, OCC decided that Auto-reclose feature should be in service for short lines even without line reactor. Accordingly, WBSETCL agreed to put the Auto-reclose feature of 400Kv Jeerat-Bakreshwar line in service.

WBSETCL may update the status.

Deliberation in the meeting

WBSETCL informed that, Autoreclosure feature of 400Kv Jeerat-Bakreshwar *would be in service from today.*

Item no.B11: Strengthening of ERTS with respect to Indo-Bangladesh Power Transmission Link For export of 500 MW power to Bangladesh –WBSETCL
(Item No. B2 of 84th OCC meeting)

CEA communicated vide letter dated 20th May, 2013 that, CEA agreed with 24th ERPC decision on additional connectivity of of a 400 kv D/C connectivity with Berhampore 400kv S/s of Powergrid from nearby Sagardighi STPS of WBPDCL

Members May Note.

Deliberation in the meeting

Members noted.

Item no. B12: Data regarding STU network including Grid substations loads and system constraints (Item No. B8 of 84th OCC meeting)

The above agenda was discussed in the 85th OCC meeting and constituents agreed to send the relevant information. Till date no data has been received from the constituents. Accordingly to start with it is felt that SLDCs should furnish at least the following:

a) On a weekly basis the list of lines upto 132kV level which are under outage/shutdown or kept open due to system constraints. The above list should include only the list of lines under outage/shutdowns/kept open as at the end of the previous week.

b) The list of new elements commissioned in the previous month should be positively forwarded by first working day of the current month to ERLDC.
c) SLDCs are also requested to forward to ERLDC details of system constraints faced by them in the previous month.

On receipt of the same from SLDC, ERLDC would put up an agenda regarding system constraint faced by SLDCs/RLDCs in the previous month in each OCC for discussion and charting methodologies to remove such system constraints. If the constraints are significant, the same could also be taken up further in TCC/ERPC meetings and further place before the Standing Committee for transmission planning. Feedback could be given to NLDC for incorporation in quarterly feedback to CTU and the same could also be referred to the standing committee.

The above may be forwarded vide mail to **erldc.cal@gmail.com** & **psdas_psd@yahoo.com**.

ERLDC may update. Members may please note and ensure compliance.

Deliberation in the meeting

OCC requested all constituents for submitting the relevant information to ERLDC.

Item no. B13: Status of "Third Party Protection Audit"

List of the observations along with compliances received from the constituents (updated) is placed in the meeting and also available in ERPC website (**www.eastrpc.org)**.

In 85th OCC, OCC requested all the constituents to execute the action plan on observations within a reasonable time. ERPC secretariat requested all constituents vide letter dated 11th June, 2013 to update the compliance status on observations of Third Party Protection Audit.

Thereafter, Powergrid, NTPC, WBPDCL, DVC and OPTCL have updated their status. Updated status are already uploaded in ERPC web site and given in Annexure.

Members may update the present status of compliance of observation.

Deliberation in the meeting

OCC requested all constituents to update the latest status of compliance on observations every 15 days.

Item no. B14: Evacuation arrangement of DSTPS and Mejia B - ERLDC

In 85th OCC DVC informed that, DSTPS-Ragunathpur line would be completed by June, 2013 and Ragunathpur-Ranchi line would be completed by Sep'13. Line progress status

In special protection committee meeting held on 14th June, 2013 DVC informed that DSTPS-Ragunathpur line would be in service by 30th June, 2013.

Powergrid and DVC may update the status.

Deliberation in the meeting

DVC informed that DSTPS-Ragunathpur line would be in service by 30th June, 2013.

Item no. B15: Identification of feeders for distress load shedding - ERLDC
(Item No. B1 of 82nd OCC meeting)

In 85th OCC ERLDC informed that, DVC, BSEB and DPL have identified the feeders and given the relevant information. WBSETCL informed that, apart from UFR feeders it could not be possible to identify other feeders dedicated for distress load shedding for their system.
In the said meeting all defaulting constituents were again requested to submit the relevant information by next OCC.
The issue has been discussed in the Special meeting on 31.5.13 taken by chairman, CEA and it was deliberated that, CEO, POSOCO will also direct the RLDCs to identify appropriate EHV lines / ICTs of the states, which could be got opened to check overdrawal by a state in violation of instructions of RLDC like the arrangement adopted in the Northern Region.

ERLDC may please update the latest status.

Deliberation in the meeting

OCC requested all other constituents to give feeders details to ERLDC.

Item no. B16: Draft procedure for transmission element outage planning

Coordination for outages vide the RPC forum is an important function of RPCs and RLDCs. The above is done regularly in the OCC meetings and such coordination leads to availing of shutdowns/outages keeping the Grid security sacrosanct. However, considering the NEW grid running in synchronism and future formation of a PAN India grid it is essential that a well documented procedure for availing outages be developed as presently, shutdown taken in a remote corner of one region may affect the Grid/outages taken or proposed to be taken in another region.
Accordingly, a draft procedure for outage planning of transmission elements has been prepared and already uploaded in ERPC web site (www.eastrpc.org). All members are requested to go through the draft procedure and offer their views regarding the same. The procedure would be finalised after suitably incorporating the comments received from all the constituents.

In 84th OCC ERLDC gave the presentation and fruitful deliberations were held. During deliberation it was emphasized that procedure could be designed only within the provisions of IEGC. OCC requested all constituents to give their views at the earliest.

Till date comments have been received only from NTPC and WBSETCL.

Constituents give their views.

Deliberation in the meeting

OCC requested all other constituents to give their views on draft procedure for transmission element outage planning.

Item no. B17: Need for Bus strengthening at Malda and Birpara consequent to augmentation of transformation capacity at North Bengal – ERLDC
(Item No. B2 of 82nd OCC meeting)

Augmentation of transformation capacity has been already been carried out in North Bengal vide installation of additional 160MVA, 220/132kV ICTs at Siliguri, Birpara, Malda. Reconductoring

work has also been taken up parallely for enabling secure off-take of additional power consequent to augmentation of the transformation capacity at the above substations.

In the 82nd OCC meeting, Powergrid had informed that, re-conductoring work at Siliguri had been completed and also the same was in progress at Birpara and Malda. WBSETCL had also informed that, re-conductoring work was is in progress at Birpara(WB) and would be completed by March' 2013. The same at Malda is expected to be completed by May' 2013.
In 83rd OCC Powergrid informed that, re-conductoring work at Siliguri, Birpara and Malda was completed. WBSETCL had also informed that, re-conductoring work at Birpara(WB) and Malda would be completed by April' 2013.
In 84th OCC WBSETCL informed that, re-conductoring work at Birpara (WB) was completed and the same at Malda would complete shortly.

In 85th OCC WBSETCL informed that, Birpara and Malda are ready for the argumentation of transformation capacity.

Powergrid/WBSETCL may update the latest status.

Deliberation in the meeting

WBSETCL informed that, bus strengthening at Birpara has been completed and the same at Malda would be completed before Puja.

Powergrid informed that, bus strengthening has been completed at Powergrid sub-stations.

Item no. B18: Collection of Daily Energy Data – ERLDC
(Item No. B4 of 82nd OCC meeting)

Presently all constituents are giving data in the prescribed format except OPTCL, WBSETCL and Chuzachen. WBPDCL power plants viz. Santhaldih, Bakreswar, DPL, Kolaghat and CESC are submitting data in the prescribed format directly to ERLDC.

In 84th OCC JSEB was requested to take appropriate action for monitoring Tisco and Jusco and give feedback by next OCC.

In the 85th OCC JSEB mentioned that a letter had been written to TISCO/JUSCO in this regard.

ERLDC and JSEB may kindly update the latest status.

Deliberation in the meeting

ERLDC informed that, OPTCL is not giving the daily energy data and WBSETCL is submitting individual plant data. OCC requested OPTCL and WBSETCL to provide the relevant information to ERLDC.

Item no. B19: Submission of Grid Incidence Report as per specified format - ERLDC
(Item No. B3 of 80th OCC meeting)

It has been observed that grid incidence reports though being submitted in the prescribed format are not furnished properly as they are not accompanied by relay indications or supported

by proper analysis and are without DR/EL printouts. Also, in case of disturbance, ERLDC is issuing messages asking for DR/EL printouts with full relay indications, and such data are sometimes not received properly or are time delayed.

Accordingly, a list of disturbances starting from April, 2013 and correspondingly the status and delay in receipt of data from the constituents involved have been compiled and place at **Annexure-VI**.

Constituents from which there is a delayed or incomplete receipt of data as per Annexure are requested to note and take necessary action in future to prevent recurrence of the same.

Deliberation in the meeting

Members noted. OCC advised all constituents send the grid incidence report as per format within 24 hrs to comply with IEGC.

Item no. B20: Commissioning of 220 kV bus bar protection at Ramchandrapur & Chandil substations (JSEB) – (Item No. B13 of 22nd TCC meeting)

In the last OCC meeting JSEB informed that, 220 KV Busbar protection at 220 KV Chandil Sub-station would be completed by 30th April, 2013. The same at 220 kV Ramchandrapur Sub-station would be completed by 31st May, 2013.

JSEB may update the latest status.

Deliberation in the meeting

JSEB informed that, LBB has been provided in Chandil GSS as per committee report. For Ramchandrapur GSS work has been delayed as CTs are not available and it is under procurement process in headquarter. As such completion date is not certain. OCC expressed their displeasure as project is under process since last two years and insisted for concrete action plan and target date by next OCC.

Item No. B21: Procurement and installation of numerical relays by JSEB for Lalmatia substations
(Item No. B14 of 22nd TCC meeting)

In the last OCC meeting JSEB informed that, installation of relays is in progress and it would be completed by 30th April, 2013.

JSEB may update the latest status.

Deliberation in the meeting

JSEB informed that although previous target date was 30th April, 2013 as given in 84th OCC, but till date there is no progress in the work. OCC insisted for concrete action plan and target date by next OCC.

Item no.B22: GT and ICT Tap coordination throughout the Easter Region --- ERLDC

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

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

Till date Powergrid, NTPC, Tista-V, Rangit, BSEB, WBSETCL, WBPDCL, Sterlite and Adhunik Power had submitted the relevant information.
ERPC already compiled the data received by it and handed over to ERLDC for finalization.
In 84th OCC ERLDC informed that, data will be finalized and placed in next OCC.

In 85th OCC ERLDC compiled the data, the details were placed. Constituents were requested to submit the details of GT and ICT which are not available with ERLDC.

ERLDC may update the status.

Deliberation in the meeting

*ERLDC updated the status of GT and ICT details available with ERLDC (Given in **Annexure-VII**). OCC requested all constituents to give the pending data. Constituents agreed to send the relevant information to ERLDC.*

Item no. B23: 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:

Feeder No.	Target Date
Feeder-I	By November 2012
Feeder-II	By December 2012
Feeder-III	By January 2013

Feeder-IV By February 2013

In 81st OCC Meeting, DGPC representative informed that, Auto reclosing scheme of Feeder-II was tested successfully on 14 January, 2013 but approval from competent authority for commissioning of the same is still waited.
In 82nd OCC DGPC informed that, on approval from their authority it may take one month for commissioning of the Feeder-II. ERLDC requested DGPC to put the Feeder –II auto reclosing feature in service by next OCC. DGPC added that, testing of rest of the feeders will be done after April, 2013.
In 83rd OCC DGPC informed that, Auto reclosing scheme of Feeder-III & IV were tested successfully and found satisfactory. Testing of Feeder-I would be done in April, 2013. DGPC added that, all the feeders would put in service by May, 2013.

In 84th OCC, DGPC informed that, all feeders would put in service as soon as their management approves.

In 85th OCC DGPC informed that, testing feeder-I would be done within a month. Other three feeders were tested successfully and found satisfactory. These feeders would put in service as soon as their management approves.

DGPC may update the latest status.

Deliberation in the meeting

DGPC informed that, feeders would be put in service as soon as their management approves.

Item no. B24: Procurement of spare transformers by Powergrid

The procurement of following 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):

- 4 number 400/220 kV, 315 MVA transformers
- 2 number 220/132 kV, 160 MVA transformers
- One 132/66 kV, 50 MVA transformer
- One 80 MVAR shunt reactor

The latest status as informed by Powergrid is given below:

- 315 MVA spare transformers at Biharshariff and Jamshedpur were already installed, while the same at Durgapur and Rourkella were already reached the site.
- One 80 MVAR reactor was already supplied to Rourkella.
- 1 number of 150/160 MVA, 220/132 kV ICTs at Baripada would be installed within a week
- 1 number of 150/160 MVA, 220/132 kV ICT of Gangtok is at Siliguri.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid updated the latest status a given below:

- 315 MVA spare transformers at Biharshariff and Jamshedpur were already installed, while the same at Durgapur and Rourkella were already reached the site.
- One 80 MVAR reactor at Rourkella was already commissioned.
- *1 number of 150/160 MVA, 220/132 kV ICTs of Baripada is being diverted to Purnea.*
- *1 number of 160 MVA, 220/132 kV ICT at Siliguri was already commissioned.*
- *1 number of 50 MVA, 132/66 kV ICT of Gangtok is at Siliguri. Unable to dispatch to Gangtok due to road clearance problem.*

Item No. B25: Permanent connectivity of Dalkhola (WB)-Dalkhola (PG) and dismantling of ERS in Dalkhola (WB)-Dalkhola (PG) section

In 84th OCC meeting, Powergrid informed that XLPE cable reached the site and permanent connectivity of Dalkhola(PG)-Dalkhola(WB) would complete by 15th April, 2013.

In 85th OCC Powergrid informed that, one circuit has been restored on 7th May, 2013. Permanent connectivity of other circuit would be completed by 31st May, 2013.

Powergrid may update the latest status.

Deliberation in the meeting

Powergrid informed that, permanent connectivity of second circuit has been completed.

Item no. B26: Restricted Governor Mode of Operation --- ERLDC

The status of units of ER under RGMO is placed in 85th OCC meeting. Generators updated their latest status. Updated status as available in secretariat is enclosed at **Annexure-VIII.** In the meeting DPL has confirmed implementation and operation of RGMO in DPL U#7 but ERLDC did not receive any letter regarding this from DPL.

DPL may confirm the above vide letter.

Concerned generators may update their latest status.

Deliberation in the meeting

ERLDC informed that, DPL data is not coming to ERLDC. DPL agreed to look into it.

Item no. B27: Mock Black start exercises in Eastern Region --- ERLDC

i. List of actual mock Blackstart exercises to be carried out in June/July, 2013

DVC informed vide letter dated 12th June, 2013, Mock Black start operation of Maithon Hydel unit#1 has been carried out on 12th June, 2013 and completed successfully.

As per the schedule of blackstart exercises finalized in the 85th OCC the following blackstart exercises are due to be carried out:

a) Upper-Kolab HEP:: Last week of May,2013(Already due)
b) Rengali HEP:: 2nd week of June,2013(Already due)
c) Upper Indravati HEP: 3rd week of June

OHPC may confirm the final dates.

Chuzachen may also furnish details as required for preparation of their Black start procedure and furnish tentative dates for inclusion in the list.

Deliberation in the meeting

OHPC informed that, DG set of Upper Kolab HEP is not yet commissioned and it would be commissioned in the month of July, 2013. Accordingly, OHPC has given the dates of blackstart exercises as given below:

a) Upper-Kolab HEP:: In the month of July, 2013.
b) Rengali HEP:: Last week of June, 2013
c) Upper Indravati HEP: Last week of June, 2013

Chuzachen agreed to give the details to ERLDC for preparation of their Black start procedure. Chuzachen informed that, blackstart exercise of chuzachen may carry out after this monsoon.

ii. Testing of DG sets meant for Blackstart

No reports on testing of DG sets have been received from the constituents. Report from Rangit HEP has only been received. All such test reports may be forwarded to **erldc.cal@gmail.com** & **psdas_psd@yahoo.com**.

Members may note and ensure compliance.

Deliberation in the meeting

Members noted.

Item no. B28: Repeated tripping of 400kV Koderma-Biharshariff on over-voltage
(Item No. B7 of 84th OCC meeting)

In 84th OCC to prevent repeated trippings of 400 KV Koderma-Biharsariff line on overvoltage, members revised the overvoltage settings of the lines for proper coordination of overvoltage relays. Members advised Powergrid to change the overvoltage setting in coordination with Koderma (DVC)

In 85th OCC Powergrid informed that, the overvoltage settings of the lines have been revised as per OCC decision. DVC is yet to confirm.

DVC may update the status.

Deliberation in the meeting

DVC informed that, the overvoltage settings of the lines have been revised as per 84th OCC decision and no tripping has been occurred after that.

Item no. B29: Pollution mapping for Eastern Region - Powergrid

Powergrid may update the status.

Deliberation in the meeting

Powergrid informed that, Grid mapping was completed and methodology for the mapping is also finalized. Offer has been placed to CPRI. Pollution mapping would start as and when CPRI accepts the offer.

Item no.B30: Directions by CEA for ensuring reliable Grid operation.

A meeting was taken by Chairman, CEA on 31.05.13 regarding ensuring reliable Grid operation during summer months. The MOM of the meeting regarding actions to be taken is attached at **Annexure-IX**.

Constituents may kindly note and ensure compliance.

Deliberation in the meeting

Members noted.

Item no.B31: Schedule/generation restriction for Chuzachen HEP in view of repeated disturbances.

Chuzachen HEP has been allowed connectivity vide LILO of 132kV Gangtok-Melli. However, the evacuation system from the area after catering to Sikkim/WBSETCL loads is not sufficient and n-1 compliancy does not exist. Repeated disturbances have been observed to occur in case of tripping of 132kV Rangit-Kurseong on cascading effect with 3-phase overcurrent indication observed. The following actions have hence been taken in his regard:

a) Plug Setting Multipliers (PSMs) for 3-phase over-current has been raised suitably to allow transfer capacity of at least 102MVA through the lines, before operation of 3-phase over-current relays. The above has been done considering recommended ampacity for ACSR Panther (at 45°C ambient temperature and 75°C conductor) and as per CEA planning criterion guidelines regarding thermal loading limits.

b) Powergrid/WBSETCL are requested to carry out a thorough patrolling of 132kV Rangit-Kurseong, specifically the Kurseong LILO portion (which belongs to WBSETCL), considering repeated instances of E/F in the line.

The issue has been discussed in special protection committee meeting held on 14th June, 2013, wherein besides aforesaid actions ERLDC proposed a Special Protection Scheme to tackle overloading of this network. PCC agreed. Gati-Infrastructure was requested to implement the SPS scheme in consultation with Powergrid and NHPC. Till then, Chuzachen generation/schedule has to be restricted to a maximum limit of 50 MW and in case of line shutdowns the same would be restricted further.

Members may note.

Deliberation in the meeting

Powergrid and WBSETCL informed that Plug Setting Multipliers (PSMs) for 3-phase over-current has been raised and also carried out the line patrolling of 132kV Rangit-Kurseong line. It was informed that, no tripping has been occurred after 10th June, 2013.

For implementation of SPS Chuzachen preferred an official communication from ERPC. OCC agreed.

Item no.B32: Revised operating procedure for Eastern Region

The revised operating procedure for Eastern Region has already been forwarded to all the constituents, for their comments and suggestions regarding any modifications/additions. The responses as received from constituents would be compiled and presented for further discussions.

Members may deliberate.

Deliberation in the meeting

*ERLDC gave a presentation on the changes made in operating procedure. Presentation is enclosed at **Annexure-X**. OCC requested all constituents to look into it and give their views to ERLDC. Member's agreed.*

Item no.B33: Argumentation of Transformation capacity of 400/220 kV, 315 MVA ICT of Baripada Sub-station. (Item No. B1 of 85th OCC meeting)

At present, two nos of 400/220 kV, 315 MVA ICTs are available at Baripada S/s of Powergrid. It has been observed that the power flow through both the transformers exceeds more than 500 MW during peak hours on several occasions and it is clear that with the same transformation capacity of 630 MVA available at Baripada, and with the growing load pattern, it will be difficult to cater the load through this transformer and the full load of OPTCL cannot be met in near future. Further, due to non-availability of alternate source at Baripada, OPTCL has to resort load shedding in case of outage of any one of ICT. As such the augmentation of transformation capacity at Baripada S/s is required immediately to have sufficient margin to take care of load growth in future.

In view of such increasing loading pattern, it is proposed to augment the transformation capacity of Baripada by 1x500 MVA including GIS bay due to space constraint. Otherwise, there will be serious constraint in meeting the load requirement of OPTCL in case of outage/failure of one the ICT.

In 85th OCC, OPTCL informed that 400/220 kV, 315 MVA ICT-I & II at New Duburi were idle charged since 27/02/13 and 29/04/13 respectively from 220 kV side. 400 kV connectivity to New Duburi is expected soon. As such, argumentation of ICT capacity at Baripada may not be required. This needs to be reexamined considering commissioning of New Duburi 400 kV/220 kV sub-station.

After deliberation OCC decided that, OPTCL is to give the load profile and line configuration details to ERLDC. OCC requested ERLDC to study the load profile and give their views in 87th OCC.

OPTCL and ERLDC may update the status.

Deliberation in the meeting

ERLDC informed that, load profile has not been received from OPTCL. OCC advised OPTCL to give the load profile and line configuration details to ERLDC. OCC requested ERLDC to study the load profile and give their views in next OCC.

Item no.B34: Technical minimum generation level for Talcher Stage-I units –NTPC

The declared technical minimum gross generation for TSTPS Stage-I (2x500 MW) is 350 MW (Ex-Bus 327 MW), i.e. when the unit can be run without oil support. However, due to wet coal, generation level below 400 MW is causing flame instability and tripping the units on flame failure protection. In last year the stage-I units had tripped on several occasions due to operation of flame failure protection and this year also Unit-2 of Talcher stage–I got tripped on 16.06.2013 on similar reason. Lower generation in stage-I units is maintained either with oil support for flame stabilization or we are constrained to generate beyond schedule, so that flame stability is maintained. Both the situations are not desirable and needs to be avoided. It is to be noted that, Talcher stage-I units are of different design (Drum less tower type boilers with boiler height of 92 mtrs.).

It is proposed to consider the technical minimum generation level for Talcher Stage-I units as 400 MW (Ex-bus 374 MW) for such time the problem of wet coal is over, i.e. for the monsoon period till Oct'2013.

Members may deliberate.

Deliberation in the meeting

Members requested NTPC to share the capacity curve along with manufacturers' details and on going through the same it could be considered. NTPC agreed to give the details if it is relevant and necessary.

Item no.B35: Energy Generation data management from Renewable Energy Sources

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

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

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

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

Email: ceaopmwind@gmail.com with a copy to rishika.engineer@gmail.com and s.sewak@cea.nic.in
Nodal officers from CEA:
Mrs. Rishika Sharan, Director, CEA, 011-26732663 and 26102263(Fax), Mobile: 9868021299
Mrs. Sarita Sewak, Dy. Director, 011-26732656

SLDCs may note and nominate their Nodal officers as advised.

Deliberation in the meeting

Members noted.

Item no.B36: Frequent tripping of 220 kV D/C Birpara-CHPC and 220 kV S/C Birpara-Malbase line on Transient Earth Fault during monsoon - Powergrid.

In view of frequent tripping of 220 kV D/C Birpara-CHPC and 220 kV S/C Birpara-Malbase, Powergrid had already carried out the following measures in Indian Jurisdiction to avoid tripping:

i. PID scanning of Insulators and replacement of defective insulators based on PID
ii. Providing additional earthling
iii. Thermovision scanning of jumpers of all tension type towers and its rectification.

However, considering no of tripping reported in Bhutan jurisdiction CHPC may please also carry out the above measures to avoid tripping of the said line to ensure smooth evacuation of CHPC power.

Members may please discuss.

Deliberation in the meeting

DGPC informed that, remedy measures are being taken to minimize the tripping.

PART C:: OPERATIONAL PLANNING

Item no. C1: Prolonged outage of power system elements in Eastern Region

(i) Generating units:

Generating Station	UNIT NO	CAP(MW)	DATE	REASONS FOR OUTAGE	Restoration Status
STERLITE	4	600	18.12.12	TAKEN OUT FOR PG TEST	
MEJIA	2	210	11.01.13	LOW SYSTEM DEMAND	
MEJIA	1	210	08.02.13	TUBE LEAKAGE	
FARAKKA	5	500	31.05.13	TURBINE VIBRATION HIGH	
MEJIA'B	8	500	30.04.13	FIRE HAZARD IN GT	
KOLAGHAT	1	210	13.05.13	LOW DEMAND	

(ii) Transmission elements

Name	Agency	Date of Outage	Reason	Restoration Status	
				Original	*Latest*
400 kV Sagardighi-Parulia -1	WBPDCL	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 Mar'13.
132KV Rangit-Melli	Sikkim	1.9.12	Tower tilting at Loc.128		No progress reported by NHPC. Sikkim representative is not present.
132KV Lalmatia-Sabour	JSEB	2.1.13	R-Ph CT burst at Lalmatia		CT replaced on on Jan'13
400 KV DURGAPUR – SAGARDIGHI		25.04.12	3 Nos Tower collapsed		Mar'13
400 KV BINAGURI - PURNEA – II	Powergrid	01.12.12	S/D availed by Powergrid for reconductoring work		70 km of 170 km line was completed and the rest will be completed by June'13
400 KV BINAGURI - TALA - IV	DGPC	13.12.12	S/D taken by DGPC		Mar'13
400 KV BINAGURI - TALA - II	DGPC	06.03.13	Kept open on Overvoltage		
220 KV TENUGHAT – BIHARSHARIFF		12.05.13	3 NO. TOWER COLLAPSE		
220 KV BIHARSHARIF - BODHGAYA D/C		12.05.13	6 NO. TOWER COLLAPSE		
132 KV BIHARSARIF – SHEIKHPURA		12.05.13	4 NO. TOWER COLLAPSE		
400 KV MAITHON - KODARMA D/C		13.05.13	TWO TOWERS COLLAPSE(103/1,103/2),3 TOWERS DAMAGED(102/3,103/0,104/0)		
132 kV Muzaffarpur-Sitamarhi	BSPHCL				

Concerned utilities may share the latest status.

<u>Deliberation in the meeting</u>

Members updated the latest status. Updated status is given below:

(i) Generating units:

Generating Station	UNIT NO	CAP(MW)	DATE	REASONS FOR OUTAGE	Restoration Status
FARAKKA	5	500	31.05.13	TURBINE VIBRATION HIGH	
MEJIA'B	8	500	30.04.13	FIRE HAZARD IN GT	

KOLAGHAT	1	210	13.05.13	LOW DEMAND	

(ii) Transmission elements

Name	Agency	Date of Outage	Reason	Restoration Status	
				Original	***Latest***
400 kV Sagardighi-Parulia -1	WBPDCL	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 Mar'13.
132KV Rangit-Melli	Sikkim	1.9.12	Tower tilting at Loc.128		No progress reported by NHPC. Sikkim representative is not present.
132KV Lalmatia-Sabour	JSEB	2.1.13	R-Ph CT burst at Lalmatia		CT replaced on on Jan'13
400 KV DURGAPUR – SAGARDIGHI		25.04.12	3 Nos Tower collapsed		Mar'13
400 KV BINAGURI - PURNEA – II	Powergrid	01.12.12	S/D availed by Powergrid for reconductoring work		70 km of 170 km line was completed and the rest will be completed by June'13
400 KV BINAGURI - TALA - IV	DGPC	13.12.12	S/D taken by DGPC		Mar'13
400 KV BINAGURI - TALA - II	DGPC	06.03.13	Kept open on Overvoltage		
220 KV TENUGHAT – BIHARSHARIFF		12.05.13	3 NO. TOWER COLLAPSE		
220 KV BIHARSHARIF - BODHGAYA D/C		12.05.13	6 NO. TOWER COLLAPSE		
132 KV BIHARSARIF – SHEIKHPURA		12.05.13	4 NO. TOWER COLLAPSE		
400 KV MAITHON - KODARMA D/C		13.05.13	TWO TOWERS COLLAPSE(103/1,103/2),3 TOWERS DAMAGED(102/3,103/0,104/0)		Restored.
132 kV Muzaffarpur-Sitamarhi	BSPHCL				

Item no. C2: Information regarding commissioning of new transmission element -- ERLDC

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

New generating units:

S.No.	Power Plant	Unit size	Expected date
1	GMR	1x350MW	February'13
2	Koderma	2x500MW	U#1 March'13

3	Corporate Power	1x257MW	
4	Teesta-III	1x200MW	
5	Raghunathpur	1x600MW	Mar'13
6	TLDP-IV	1x40MW	

New transmission elements

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

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

Deliberation in the meeting

Members updated the latest status. Updated status is given below:

New generating units:

S.No.	Power Plant	Unit size	Expected date
1	GMR	1x350MW	February'13
2	Koderma	2x500MW	U#1 March'13
3	Corporate Power	1x257MW	
4	Teesta-III	1x200MW	
5	Raghunathpur	1x600MW	Mar'13
6	TLDP-IV	1x40MW	

New transmission elements

SL No.	Transmission Line	Expected date
1	400 kV Maithon-Gaya D/C	Mar'14
2	400 kV Gaya Koderma D/C	June'13
3	400 kV DSTPS – Raghunathpur D/C	Mar'13
4	400 kV Raghunathpur-Ranchi D/C	Sep'13
5	400 kV Meramandali-Dubri D/C	Pending in court
6	400 kV Corporate-Ranchi D/C	
7	220 kV Begusari-Purnea D/C	
8	220 kV Purnea(pg) Madhepur D/C	Mar'13
9	220 kV Girdih-Koderma D/C	ROW problem

Item no. C3: Anticipated power supply position during July'13

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

Members may confirm.

Deliberation in the meeting

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

Item No. C4: Shutdown proposal of transmission lines and generating units for the month of July' 13

Members may finalize the Shutdown proposals of the generating stations for the month of July'13 are placed in the meeting.

As per LGBR shutdown proposals of the following elements are scheduled in the month of July,2013.

Shutdown of Transmssion Elements for the month of July, 2013 as per LGBR 2013-14

Sl. No.	Name of the Element	No of hours
1	315 MVA I C T-II, New Purnea	8
2	400 kV ARAMBAG-DURGAPUR CKT	9
3	400 kV ARAMBAG-KTPP CKT	9
4	400 kV ARAMBAG-PPSP#1	9
5	315 MVA TR#1, ARAMBAG	9
6	400KV, (Bus Tie Breaker),KTPP	35
7	400KV, ARAMBAG	9
8	400KV, (Main Bus#1),BKTPP	9
9	400KV, (Main Bus#2),BKTPP	9
10	400KV Main Bus#1	24
11	400KV Main Bus#2	24
12	220 kV L# 201 & 202(CTPS-Kalyaneswari)	8
13	220 kV L# 228 & 229(KLN-MTPS/Burnpur)	8
14	L# 228 & 232(KLN/Bnpr-MTPS)	8
15	L# 239 & 240(KLN-MTPS)	8
16	L# 60/61/90(CTPS-RKLI-Jamuria)	8
17	L# 100/61(CTPS-Jamuria-DTPS)	8
18	L# 6&7 (CTPS-GOLA)	8
19	L# 12&13 (Putki-PTD)	8
20	L# 14&15 (MHS-PTD)	8
21	L# 35&36 (CTPS-Putki)	8
22	L# 41 (Putki-Balihari)	8

23	L# 42 (PTD-Balihari)	8
24	L# 47&48 (Putki-Nimiaghat)	8
25	L# 49&50 (PTD-Sindri)	8
26	L# 53,54&57 (CTPS-BSL)	8
27	L# 58&59 (CPPS-Purulia)	8
28	L# 60&61 (CTPS-DTPS)	8
29	L# 64&65 (CTPS-Putki)	8
30	L# 86&87 (Nimiaghat-Giridhi)	8
31	L# 88&89 (Sindri-Pradhankhano)	8
32	80MVA TR#2, KALIPAHARI (Sub-stn.)	8
33	80 MVA TR#3, KALIPAHARI (Sub-stn.)	8
34	50 MVA TR#2, JAMURIA (Sub-stn.)	8
35	50 MVA TR#2, BURNPUR (Sub-stn.)	8
36	25 MVA TR#2, RAMKANALI (Sub-stn.)	8
37	50 MVA TR#1, KUMARDHUBI (Sub-stn.)	8
38	50 MVA TR#2, KUMARDHUBI (Sub-stn.)	8
39	50 MVA TR#3, KUMARDHUBI (Sub-stn.)	8
40	150 MVA ATR#2,KALYANESWARI(Sub-stn.)	8
41	50 MVA TR#1,KALYANESWARI(Sub-stn.)	8

Members may finalize the shutdown proposals of transmission elements as placed for the month of July'13.

Deliberation in the meeting

*Approved maintenance programme of generating stations and transmission elements during the month of June, 2013 is at **Annexure-XII**.*

ERLDC requested all the constituents to send the shut down requisition of all transmission elements in first week of the month so that ERLDC can make a consolidated list and forward it to ERPC & NLDC. All constituents were agreed.

PART D:: OTHER ISSUES

Item no. D1: UFR operation during the month of May'13

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

Members may note.

Deliberation in the meeting

Members noted

Item no. D2: Commissioning of new units/transmission elements during the month of April/May 2013

1. 220kV Dalkhola(PG)-Dalkhola(WB) - II was loaded for the first time at 17:20 Hrs of 07/05/13.

2. Adhunik U#2 was declared COD at 00:00 Hrs of 19/05/13.
3. 765 kV Saram – Fatehpur was charged first time at 17:24 Hrs of 25/05/13.
4. Koderma TPS Unit#1 was declared under COD w.e.f 00:00 hrs of 31/05/13.
5. LILO of 400kV Rourkela – Raigarh – II at Jharsuguda completed and charged for the first time at 22:45 Hrs of 31/05/13.
6. 400 kV TISCO – Jamshedpur was first time charged at 23:58 Hrs of 31/05/13 and tripped on over voltage immediately. The line was synchronized at 23:09 Hrs of 03/06/13 with commencement of power flow.
7. 125MVAR Bus Reactor-II at Jharsuguda was taken into service for the first time at 20:55 Hrs of 31/05/13.
8. 125MVAR Bus Reactor-II at Angul was taken into service for the first time at 20:49 Hrs of 31/05/13.
9. 80 MVAR L/R of 400 kV Binaguri – Bongaigaon – IV (Future) was first time taken in to service as B/R at Binagauri at 03:40 Hrs of 01/06/13.
10. 220 kV EM(CESC) – Subhasgram – I & II were first time charged from EM(CESC) end at 21:24 Hrs and 22:26 Hrs of 03/06/13 respectively.
11. 220kV Purnea-Madhepura-I bay was charged for the first time at 18:50 Hrs of 04/06/13.
12. 100 MVA, 220/132 kV new power transformer at Fatua grid s/s charged on 10/05/2013.
13. 220 kV Patna (PG)-Sirpara Ckt-I charged on 15/05/2013.
14. 132/33 kV Banka s/s availed power from 400/132 kV Banka (PG) wef 13:30 hrs on 09/05/2013.

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

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

Deliberation in the meeting

Members noted

Item no. D3: Non-compliance of directions issued by SLDC --- ERLDC

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

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

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

Members may note.

Deliberation in the meeting

Members noted

Item no. D4: Grid incidences during the month of May'13

Disturbance Place	Date & Time of occurrence	Generation loss (MW)	Load loss (MW)	Remark	Category
DVC (Mejia)	01.05.13, 20:20hrs	700	0	At 20:20 Hrs due to bursting of Y-Phase Metering CT of Unit#3 of Mejia al running units of Mejia & 220kV feeders tripped	GD-1
JSEB (Hatia/Patratu)	06.05.13, 15:32hrs	25	100	At 15:32 Hrs, All lines emanating from Hatia 220/132 KV Sub-station tripped along with Patratu unit # 4, due to electrical jerk.	GD-1
JSEB (Chandil)	07.05.13, 15:48hrs	0	100	At 15:48Hrs, power supply at Chandil complex became zero, due to fault in 132 KV Chandil- Adityapur line	GD-1
JSEB (Chandil)	10.05.13, 11:42hrs	0	80	At 11:42hrs, power supply at Chandil complex became zero due to tripping of all 220kV & 132kV lines emanating from Chandil, reportedly due to fault in 220kV Chandil-Santaldih line.	GD-1
WBSETCL (220/132kV Bidhannagr s/s)	12.05.13, 15:55hrs	250	1000	At 15:55hrs, due to a sudden nor'wester with heavy shower and thunderstorm, bus fault occurred at 220/132kV Bidhannagar S/s.	GD-1
JSEB (Tenughat/Patratu)	13.05.13, 16:18hrs	427	200	At 16:18 Hrs, due to fault in 220 KV Tenughat- Patratu S/C line, runing units of Tenughat&Patratu tripped.	GD-1
DVC (CTPS)	16.05.13, 18:55hrs	200	350	At 18:55 Hrs due to suspected fault in 132 KV Chandrapura-Purulia-I, running units of CTPS & 132kV feeders tripped.	GD-1
Sterlite (Jharsuguda, SEL)	19.05.13, 13:28hrs	500	0	At 13:28hrs, all 400kV lines & U#4 of Sterlite tripped.	GD-1
WBSETCL (Jeerat)	21.05.13, 14:28hrs	0	850	Due to bursting of breaker (Y phase) of 50MVAR B/R at Jeerat s/s, bus fault occurred causing tripping of 400KV & 220kV feeders.	GD-1
OPTCL (Meeramundlai)	22.05.13, 05:52hrs	0	140	Due to reported LBB operation at Meeramundali s/s in OPTCL system, 400kV feeders emanating from Meeramundali tripped.	GD-1
POWERGRID (Dalkhola)	23.05.13, 02:53hrs	0	100	At 02:53 hrs, all the lines connected with 220kV Dalkhola S/s tripped.	GD-1
JSEB (Tenughat/Patratu)	25.05.13, 05:48hrs	400	167	At 05:48 hrs Breaker of 220kV PTPS-TTPS and 132kV PTPS-Ramgarhckt opened from Patratu end due to which running units of Tenughat&Patratu tripped.	GD-1
JSEB (Tenughat/Patratu)	26.05.13, 14:25hrs	422	35	Due to stormy weather 220kV feeders along with running units of Tenughat&Patratu tripped.	GD-1
BPC/CHPC	27.05.13, 12:41hrs	205	0	Due to stormy weather all 220kV feeders along with all units of CHPC tripped.	GD-1
WBSETCL (Bidhannagr)	27.05.13, 11:00hrs	0	450	Due to problem at 220kV Bidhannagar s/s (WBSETCL), various lines emanating from Bidhannagar tripped.	GD-1

Rangit, POWERGRID, Chuzachen,Sikkim	28.05.13, 12:22hrs	60	145	At 12:22hrs, all the lines from Rangit HEP except 132kV Rangit- Gangtokckt tripped. Running units of Chuzachen also tripped due to loss of evacuation path	GD-1

Members may note.

Deliberation in the meeting

Members noted

Item no. D5: Eastern Region grid performance during the month of May13

In the month of May13, though the percentage of time frequency was below 49.7 Hz reduced as compared to the previous month, the percentage of time frequency was above 50.20Hz increased to 11.99% as compared to 7.93% for the month of April'13. The minimum frequency touched 49.25Hz while the maximum frequency touched 50.94Hz. It is necessary that all ER constituents ensure no over-drawal/under-generation below 49.7Hz and no under-drawal/over-generation above 50.20 Hz. However, in case of system constraints/congestion, constituents should strictly follow ERLDC instructions irrespective of frequency. A presentation on ER grid performance for the month of May,13 would be given by ERLDC, and the details of constituents who failed to comply with ERLDC instructions would also be stated.

All Constituents may kindly ensure strict compliance in the interest of system security/reliability.

Deliberation in the meeting

Members noted

Item no. D6: 1. Procurement of Emergency Restoration System (ERS Towers) for Eastern Region constituents-Powergrid.

Details are given in **Annexure-XIII**

Deliberation in the meeting

OCC requested PGCIL to give a presentation in next OCC along with cost analysis.

2. Procurement of Circuit Breaker, CT, CVT, LA for Eastern Region as O&M spare-Powergrid.

Details are given in **Annexure-XIII**

Deliberation in the meeting

OCC requested PGCIL to give a presentation in next OCC along with cost analysis.

Meeting ended with vote of thanks to the chair

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Annexure-A

Participants in 86th OCC Meeting

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 21.06.13 (Friday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature
1	A.K. Bandyopadhya	MS i/c	ERPC.	9433068533	mserpc-power @nic.in.	
2	U.K. Verma	GM	ERLDC	8902496220	ujwalkumarverma @gmail.com	
3	[illegible]	[illegible]	[illegible]	9433041802	dkshrivasta va55@ yahoo.co.in	
4	P.S DAS	Ch. Mgr	ERLDC	9433041837	psdas_psd@yahoo.com psdas1972@gmail.com	
5						
6	S. Banerjee	Ch. Manager	ERLDC	9433041823	surojitb@gmail.com	
7	S.K. SINGH	Ch. Mgr(OS)	POCO(ERGRD)	9434740009	sksingh4pg@yahoo.co.in	
8	S.K. PAL	Ch. M (O) ERLDC	ERLDC	9433041829	Palswapankumar@gmail.com	
9	B.N. Prasad	CE/CLD DVC	DVC	9831954299	bnprasad.dvc@gmail.com	
10	B. Pan	DCE, CLD	DVC	9903247102	brahmananda.pan@dvc.gov.in	
11	S Nayak	AGM(S) NTPC-ER-2	NTPC ER-2	9437041581	snayak@ntpc.co.in	
12	C. Chakraborty	GM(opn)	NTPC/TSTPS	9437565285	chandanchakraborty@ntpc.co.in	
13	RAKESH KUMAR	AGM(OS)	NTPC ER-I HQ PATNA	9431011344	rakesh kumar12@ntpc.co.in	
14	S.P. Rathour	SM(E)	NHPC Ltd (Rangit Power station)	9933395788	sprathour@hotmail.com	
15	Ripunjay Kumar	Asst. Manager (Projects)	APNRL	9007098131	ripunjaykumar@adhunikpower.com	
16	Swapan Chowdhury	Asst. Manager (O&M)	SEL	09937204336	swapan.chowdhury@vedantaltd.com	
17	A. Biswas	C.E. (O), SLDC	WBSETCL	9831093513	amitava.biswas22@gmail.com	
18	Saurav K Sahay	Engineer	ERLDC	9432013173	Sahay.saurav@gmail.com	
19	T.R. Mohapatra	Dy. Mgr.	ERLDC	9433041833	tushar.mohapatra@gmail.com	
20	P.K. DE	AD-1	RPSO, CEA Kolkata	9433125849	rpsokolkata@gmail.com	

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

Participants in 86th OCC Meeting

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 21.06.13 (Friday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature
21	DEBARSHI DE	A/M	CESC LTD.	92305-21123	debarshi.de@rp-sg.in	D.De
22	RAHUL CHAKRAVARTY	DGM	CESCLTD	98310-54619	rahul.chakravarty@rp-sg.in	R K
23	H.P. Mahapatra	Mgr	OHPC	9861164943	hpm.ohpc@gmail.com	[illegible]
24	Madhusudan Sahoo	Dy. mngr	GRIDCO	9692427871	Srgmpp gridco@yahoo.com	M.S.Sahoo
25	Aloke R Bhunia	AGM	NTPC/Kol	9433027333	alokebhunia@rediffmail.com	[illegible]
26	Aniruddha Sethy	A.M	GRIDCO	9437506357	srgmpp gridco@yahoo.com	[illegible]
27	RANJAN BISWAS	SM/ALDC	DPL	9434735985	Manjanbiswas1@gmail.com.	[illegible]
28	PRASANTA K. PATTANAIK	Mgr	OPTCL	9438907492	ppk110.pp@gmail.com	[illegible]
29	SANTOSH KUMAR DAS	Tech Consultant	SLDC OPTCL	9437000261	S_santosh dase@rediffmail SLDC gridco@yahoo.com	[illegible]
30	P. K. BASU	DGM (oprn)	KTPS WBPDCL	9432013369	pkbose@wbpdcl.co.in	[illegible]
31	T. K. DE	A.C.E/ ALDC	WBSEDCL	9433870743	kumartapande@gmail.com.	[illegible]
32	P. Saha	CE; EPP	WBSETCL	9434910019	cpedcalc.vsnl.net.in	[illegible]
33	A. K. Sharma	EEE	TVNL	9931306973	aks.ttps@gmail.com	[illegible]
34	A. K. Singh	EEE	JSEB	9973850208	aks.lalpania@gmail.com	[illegible]
35	Vidya Sagar Singh	EEE	JSEB	9934169984	sagarjseb@gmail.com	[illegible]
36	G.K. Chaubey	ESE	BSPHCL	9470001750	gkc_1959@rediffmail.com	gkchaubey
37	G. Bose.	AEE	E. Rly.	9002020309	gopal bose.kol.@gmail.com.	[illegible] 21/06/13.
38	Ganeswara Rao	AEE	ERPC			[illegible]
39	B. SARKHEL	SE(PS)	ERPC	9433065724	buddha_sarkhel@yahoo.co.in	[illegible]
40	J. BANDYOPADHYAY	SE	"			[illegible]

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

Participants in 86th OCC Meeting

Venue: ERPC Conference Room, Kolkata Time: 11:00 hrs Date: 21.06.13 (Friday)

Sl No	Name	Designation	Organization	Contact Number	Email	Signature
41	G. Raichaudhuri	ACE/SLDC	WBSETCL	9433419696	raichaudhuri2017@gmail.com	
42	P.K. Hembram	SE(E), SLDC	WBSETCL	9433086424	phembram_1961@yahoo.co.in	
43	A. Karmakar	SE(E)/CPD	WBSETCL	9434910090	asit.karmakar@wbsetcl.in	
44	S.K. Saha	SSE	E. Rly.	9002025315	Sanjay.saha39@gmail.com	
45	D.K. Bauri	EE	ERPC	9863317236	dinesh_iise@hotmail.com	
46	V. Kalyanam	EE	"	2423 3015	—	
47	N. Sahu	SM(PS)	WBPDCL	9433015915	ngsahu@wbpdcl.co.in	
48	Kumar Nikhil	Manager(OS)	Powergrid, ERT	9431820218	er_os1@yahoo.com	
49	R.P. Singh	DGM(OS)	NTPC ER-I HQ	9431011366	rpsingh01@ntpc.co.in	
50	D. KAR	AGM(EEMG)	NTPC Talcher	9437109350	debabratakar@ntpc.co.in	
51	Tenzin Chophel	S.O	DGPCL (CHP)	17558880	t.chofel22@gmail.com	
52	Tsyme	JE	CHP	17698278	jimi_38@yahoo.co.in	
53	Rajesh Subba	AE	CHP	77207251	rokensbb@gmail.com	
54	Pema Wangchuk	DSS	THP	17631482	pmwangchuk@gmail.com	
55	MANISH RAJ	D.M.(E)	NHPC TEESTA-VPS	9800003548	manisraj@gmail.com	
56	Ugyen Tshering	AE/OD	THP	17882946	ede20631@gmail.com	
57	Niladri Mandal	AGM(O&M)	Chuzachen (Gati)	8016082299	niladri.mandal@gatiinfra.com	21/6/13
58	M.K. Thakur		ERLDC	9432351832	mkt_elect@yahoo.co.in	
59	S. Konar	Manager	ERLDC	9433041859	konar_s@hotmail.com	
60	P.K. Dash	Sr. GM(PS)	SLDC, Orissa	9438907400		

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

Annexure-I

Four stage of UFR settings

Present Settings of UFR

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

Decision of NPC in its 1st meeting held on 15.04.13

- "*....quantum of load shedding of 60% of peak demand had been proposed for shedding through various defense mechanisms indicated in the report. The quantum for shedding through UFRs could be decided by the RPCs appropriately to ensure safe & secure operation of the grid*."
- *"....automatic load shedding through UFRs in 4 stages with 10% of the identified load to be shed at 1st and 2nd stage each, and 15% of the identified load to be shed at 3rd and 4th stage each*."
- ***"....quantum of load to be shed at each level would be discussed by the RPCs internally with their constituents and revert back to NPC at the next meeting"***

Finalized Scheme

- ✓Stage-I 49.2 Hz 10% of load relief
- ✓Stage-II 49.0 Hz 10% of load relief
- ✓Stage-III 48.8 Hz 15% of load relief
- ✓Stage-IV 48.6 Hz 15% of load relief

- In 85th OCC members agreed to divide the UFR actuated load shedding into four stages without any changes in total amount of load relief.

Load relief already agreed to be provided by various control areas

Control Area	Stage-I (48.8Hz)	Stage-II (48.6Hz)	Stage-III (48.2Hz)	Total relief by control area
	MW	MW	MW	
BSEB	80	80	115	275
JSEB	50	50	70	170
DVC	110	110	155	375
Odisha	150	150	208	508
WB and CESC	285	285	397	967
Total	**675**	**675**	**945**	**2295**

Apportioning of UFR actuated load shedding into four stages without change in total load relief.

Control Area	Stage-I (49.2Hz)	Stage-II (49.0Hz)	Stage-III (48.8Hz)	Stage-IV (48.6Hz)	Total relief by control area
	20% of total load relief	20% of total load relief	30% of total load relief	30% of total load relief	
BSEB	55	55	82.5	82.5	275
JSEB	34	34	51	51	170
DVC	75	75	112.5	112.5	375
Odisha	101.6	101.6	152.4	152.4	508
WB and CESC	193.4	193.4	290.1	290.1	967
Total	**459**	**459**	**688.5**	**688.5**	**2295**

Annexure-II

WELCOME TO THE PRESENTATION ON

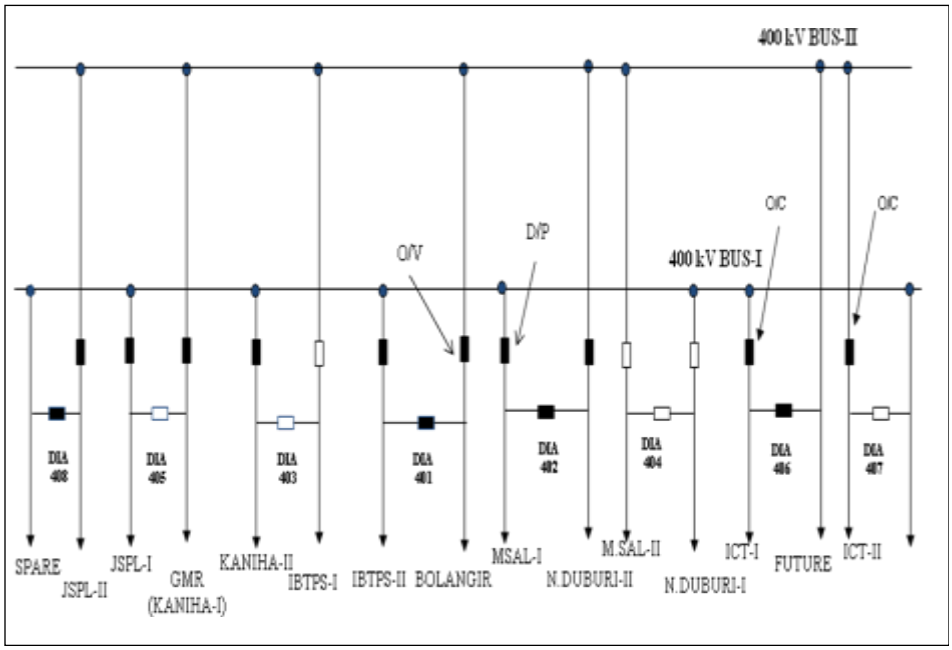
ANALYSIS OF SYSTEM DISTURBANCE ON 03.04.2013 AT MERAMUNDALI GRID

P.K.PATTANAIK
OPTCL, BHUBANESWAR

PHYSICAL FAULTS NOTICED

- **ON 400 KV LINE :**
  - Falling of OPGW on 400 KV Meramundali-Mendhasal line.
- **Besides these physical noticed faults, the other transient faults on the system were lightning, thunder storms followed with rains on different lines.**

400 KV BUS CIRCUIT



STATUS OF 400 KV DIAS (BREAKERS)

Diameter	Bus I	Bus II	DIA Status
401	Ib TPS-II	Bolangir	OK
402	Mendhasal	Duburi New-II(bay)	OK
403	Kaniha-II	Ib TPS-I(bay)	Tie breaker not functioning. Main breaker of IbTPS not functioning.
405	JSPL-I	Kaniha-I	Tie breaker not functioning.
406	ICT-I	SPARE	Tie breaker not functioning. Main breaker of "Future" bypassed.
407	SPARE	ICT-2	Tie breaker not functioning. Main breaker of "Future" bypassed.
408	SPARE	JSPL-II	Tie breaker functioning. Main breaker of "Future" bypassed. Both the Buses connected through this Dia.

FAULT ANALYSIS FOR SYSTEM DISTURBANCE for TRIPPING OF 220 KV SYSTEMS at 21.58 HRS.

400 KV TRIPPING DETAILS AT MERAMUNDALI

SL	FEEDERS	RELAY INDICATIONS	REMARKS
1.	MENDHASAL at 01.40 Hrs	B-N Trip , Zone-1	Tripping at both ends on Zone-1, due to FALLING of OPGW at appx. 6 KMs from Meramundali End. (fault current 16.2 KAon Bph)
2.	ICT 1,2 at 01.40 Hrs.	O/C trip on B ph	As 220 KV ends are connected to the SOURCE feeders. So during fault in the command area, fault currents will be shared and accordingly ICTs have tripped. (Fault current 2.59 KA –ICT1 and 1.22 KA ICT2)
3.	ANGUL (Old Bolangir) at 1.50 Hrs	Over Voltage trip	Outage of ICT loads and Mendhasal feeder, the Voltage on 400 KV rises and causes the tripping of this feeder. As other connected feeders did not trip, so tripping was suspected and on checking it was confirmed regarding the wrong Bph CVT out put.

220 KV TRIPPING DETAILS AT MERAMUNDALI

SL	FEEDERS	RELAY INDICATIONS	REMARKS
1.	Bhanjnagar-1 at 01.40 Hrs	No Relay Indication Only Master relay	This is a Load connected Feeder. So this should not trip. As reported that this incident is repeating many times during any fault in the system. So apprehended of the DC LEAKAGE in the system.
2.	KANIHA -2 at 1.40 hrs	DPR with No Relay indication	The DPR looks the fault as REVERSE zone, needs checking and testing.

INTERRUPTIONS AT REMOTE GRID

400 KV SYSTEM			
SL	FEEDER / GRID	RELAY INDICATIONS	REMARKS
1	Meramundali	Tripping of feeder on DTT and actuation of DP on Zone1 (BN fault)	Fault on the Line showing 78 Kms
2	Baripada 1,2	Over Voltage Tripping	Outage of Meramundali line, causes the Load feeding on Baripada system. On that day HV situation was there causing the trip of these lines and other side on DTT.

REPLY TO ERPC OBSERVATIONS

- Meramundlai-Mendhasal–Affected phase not mentioned for DPR at Meramundali end.Did the DPRs at both Meramundali and Mendhasal operate in Zone-I time? Since the fault was of transient nature, did autorecloseoperate ? If not, why?
  - **DPR has tripped on BN fault and this fault was not transient due to falling of OPGW wire so AR has failed to revive the line.**
- Reason for simultaneous operation of DPR as well as O/C relay not clear, as DPR is supposed to operate faster than O/C relay.
  - **Fault current was of 16.2 KA resulting the tripping HS element on OC and also DPR at Meramundali end.**

REPLY TO ERPC OBSERVATIONS

- Since as per Mendhasal end the fault involved B-phase, reason for tripping of Meramundali-Angul on O/V is not clear
  - **Outage of ICT loads and Mendhasal feeder, the Voltage on 400 KV rises and causes the tripping of this feeder. As other connected feeders did not trip, so tripping was suspected and on checking it was confirmed regarding the wrong Bph CVT out put.**
- Tripping of 400/220kV ICT 1&2 – How can O/C relay operate when the DPR of the affected line has successfully operated? It appears that the O/C relays are nondirectional.May be confirmed
  - **As 220 KV ends are connected to the SOURCE feeders. So during fault in the command area, fault currents will be shared and accordingly ICTs have tripped. (Fault current 2.59 KA –ICT1 and 1.22 KA ICT2). But DP relay action of Mendhasal to be checked.**

Annexure-III

WELCOME TO THE PRESENTATION ON

ANALYSIS OF SYSTEM DISTURBANCE ON 13.04.2013 AT BPADAR GRID

P.K.PATTANAIK
OPTCL, BHUBANESWAR

ANALYSIS OF FAULTS

1. FAULT ANALYSIS FOR TRIPPING OF 132 KV TARKERA-1 AT 21.52 HRS.

2. FAULT ANALYSIS FOR SYSTEM DISTURBANCE for TRIPPING OF 220 KV SYSTEMS at 21.58 HRS.

FAULT ANALYSIS FOR TRIPPING OF 132 KV TARKERA-1 AT 21.52 HRS.

ERPC OBSERVATION :- 132kV Budhipadar-Tarkera-1: Tarkera end relay indication not available. Did it trip from Tarkera ? If not, why?

- No relay indication at Tarkera end (Line was idle charged at B.Padar end)

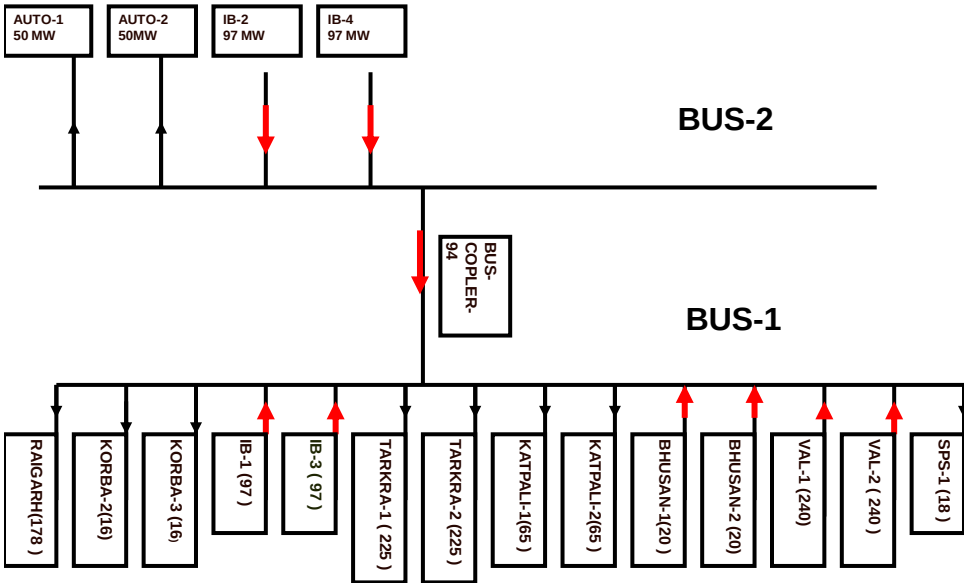
- Transient Fault (Might be lightning in the line) resulted the tripping of 132 KV TARKERA-1 line

- Fault was successfully cleared at B.Padar end by DPR. (Zone-1, YB phase).

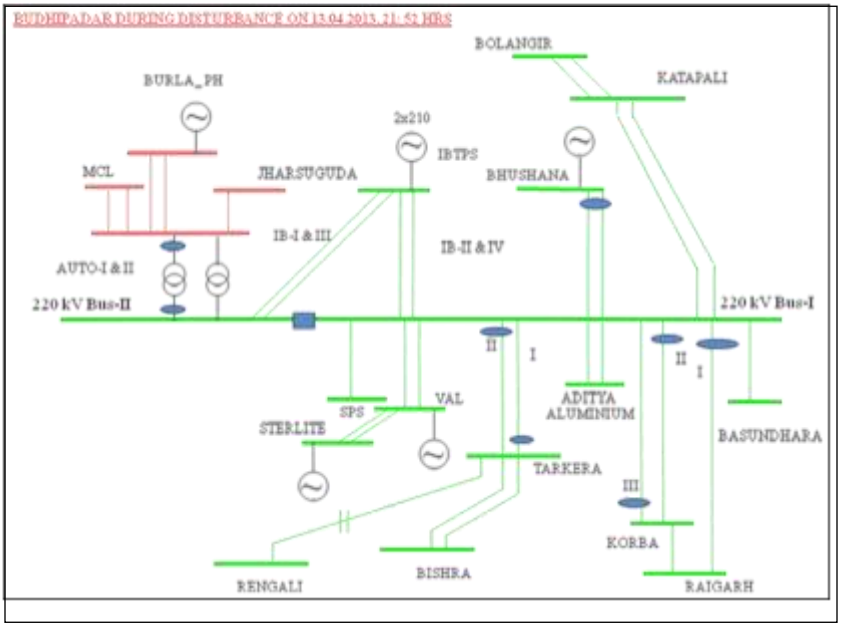
REMARK :- Successful clearance of fault

FAULT ANALYSIS FOR SYSTEM DISTURBANCE for TRIPPING OF 220 KV SYSTEMS at 21.58 HRS.

FEEDER CONNECTIONS ON 13.04.2013 *at Budhipadar*



Transmission system of Budhipadhar S/S



PHYSICAL FAULTS NOTICED

- **ON 220 KV side :**
  - Snapping of Earth Wire at LOC no 77 on 220 KV Tarkera-II Line
  - Burning of Aux. PT on Main Bus -2 in side 220 KV panel

- **Besides these physical noticed faults, the other transient faults on the system were lightning, thunder storms followed with rains on different lines.**

TOTAL BLACK OUT

220 KV TRIPPING DETAILS AT B.PADAR

220 KV SIDE			
SL	FEEDERS	RELAY INDICATIONS	REMARKS
1.	TARKERA -2 at 21.58 Hrs	B-N Trip , Zone-1	Tripping at both ends on Zone-1, due to snapping of Earth wire at LOC .77 and transfer of 225 MW to the healthy 220 KV Tarkera -1 line
2.	TRAKERA-1 at 22.01 Hrs	No trip at B.Padar end only pick up and trip on O/L at Tarkera end.	450 MW on Tarkera-1 results tripping of Non –Dir. Relay at Tarkera end before actuation of Dir. Relay at B.Padar end and results the Extra Power flow to 220 KV Raigarh , KORBA2,3 LINKS,
3.	RAIGARH at 22.02 Hrs	Over Load trip at B.Padar end, NO trip at Raigarh	Tripping of RAIGARH Link causes the extra flow to available Links of KORBA 2 and 3
4.	KORBA-2 at 22.06 Hrs	Over Load trip at B.Padar end , NO trip at KORBA 2	Tripping of Korba-2 results the over and above flow to available Link (KORBA 3)
5.	KORBA-3 at 22.07 Hrs	No trip at B.Padar end and O/L trip at Korba end	Non-tripping was analyzed and found with NO R ph. CVT to relay since long and protection area being looked by M/S PGCIL, (Matter intimated many times)
6.	BHUSAN-1 at 22.08 Hrs	OVER VOLTAGE Trip at B.Padar end and Islanding at Bhusan end	So outage of (450 + 178 + 32)= 660 MW) results abnormal VOLTAGE rise in the system and tripping of BHUSAN-1
7.	220 AT-1 at 22.08 Hrs	Over Flux trip	Abnormal voltage rise results V/f relay actuation.

INTERRUPTIONS AT REMOTE GRID

220 KV SYSTEMS			
SL	FEEDER / GRID	RELAY INDICATIONS	REMARKS
1	VAL-1,2	No trip at B.Padar end Islanding tripping at Vedanta end.	Abnormal Voltage rise results ISLANDING
2	IB1,2,3,4	NO Trip at B.padar end. UNIT tripped at IB end due to voltage rise	Abnormal Voltage rise.
3	Bhusan-1,2	Islanding tripping at Bhusan end.	Abnormal Voltage rise.
Other feeders being Radial LOAD end connection , did not trip at B.Padar end (Katapali1,2, SPS-1)			
132 KV SYSTEMS			
1.	Burla 1,2	NO trip at B.Padar end Over load tripping at Burla P.H. end	Due to outage of Generator links VAL, IB, Bhusan and Korba Link.

SPECIAL NOTE :- ***Outage of 225 MW on 220 KV Tarkera-2 results subsequent tripping of other flexible links and islanding of generator links and FINAL BLACK OUT of B.PADAR COMMAND AREA***

REPLY TO ERPC OBSERVATIONS

- 220kV Budhipadar-Tarkera-2: In para(3), B.Padar end DPR indication given, whereas in para(4) Tarkera end DPR indication given. Did it trip from both ends ? If not, why?
  - **Relay has tripped from both ends on ZONE-1 (BN Fault)**

- 220kV Budhipadar-Korba-2 tripped on DPR from Budhipadar end – Phase not mentioned. What is the relay indication at Korba end? What was the reason of fault?
  - **DPR has not tripped at B.Padar end . Only O/L relay has tripped at B.padar and NO trip at Korba end. (Reason Over drawal due to 450 MW outage to Tarkera Links)**

- At 22:08, the ckt tripped from Korba end only. Reason not mentioned
  - **No R ph CVT since long and M/s PGCIL been intimated to check the protection scheme many times. Korba-3 end tripped on O/L (might be the relay at Korba-3 being in Non-Directional)**

REPLY TO ERPC OBSERVATIONS

- 220kV Budhipadar-Tarkera-1 tripped at 22:08 i.e after 16 minutes on O/C from Tarkera. Why generation of IB or SEL was not reduced in the mean time? Why O/C tripping occurred from Tarkera end only?

  - **Actual time is 22.01 Hrs.in stead 22.08 Hrs. Tarkera end tripped due to Non-Dir. Relay earlier to B.Padar end Dir. Feature.**
  - **No Auto-communication link for ramp down of Generators**

- Reason for tripping of 220/132kV ATR-1 at Budhipadar not clear SOE and DR outputs not available for further analysis

  - **AT1 has tripped on Over flux (V/f relay)**

REPLY TO ERPC OBSERVATIONS

- **220kV Budhipadar-Korba-II tripped from Budhipadar end on DPR, Zone-I as well as O/C at 22:06**
  - **What was the relay indication at Korba end? (No Trip at Korba end)**
  - **Whether the line at all tripped from Korba ?**
  - **Why both DPR and O/C relay operated simultaneously at Budhipadar since DPR is supposed to operate faster. Was there any delay in operation of the DPR ? (DPR has not tripped at B.Padar end)**
  - **What was the location and reason of fault as the line could be restored at 00:19 Hrs (next day) (Line charged at 00.19 Hrs and stood OK, Delaying of charging this line was due to delay in extension of CODE WORD)**

- **220kV Budhipadar-Tarkera-I which had tripped on O/C at Tarkera at 22:08/ 22.01 Hrs was restored at 22:30 Hrs from Tarkera, but again tripped from Budhipadar on DPR, Zone-I . Why? Was there any actual fault as the line was finally charged at 02:23 Hrs.**

  – **This time relay has tripped on Zone3R (reverse Zone) on TRSOTF (As observed many times REL 100 relay mal functions and actuates with reverse zone for the abnormal voltage/ no voltage from PT). So this might be case of that situation**

PRACTICAL TOTAL SOLUTIONS TO B.PADAR SYSTEM

RELAY CO-ORDINATION AND ISLANDING SCHEME TO THE SYSTEM DISTURBANCES FOR (OPGC & B.PADAR SYSTEM)

Annexure-IV

RELAY CO-ORDINATION AND ISLANDING SCHEME TO THE SYSTEM DISTURBANCES FOR (OPGC & B.PADAR SYSTEM)

P. K. PATTANAIK

BHUBANESWAR, ODISHA

WHY THIS ?

- LOSS OF 360 MW TO STATE/NATION
- CASCADE TRIPPING, IMPACT TO KORBA STATION
- BLACK OUT, LOSS OF 1000 MW TO THE SYSTEM
- IMPACT ON B.PADAR COMMAND AREA

POWER FLOW AT B.PADAR SYSTEM

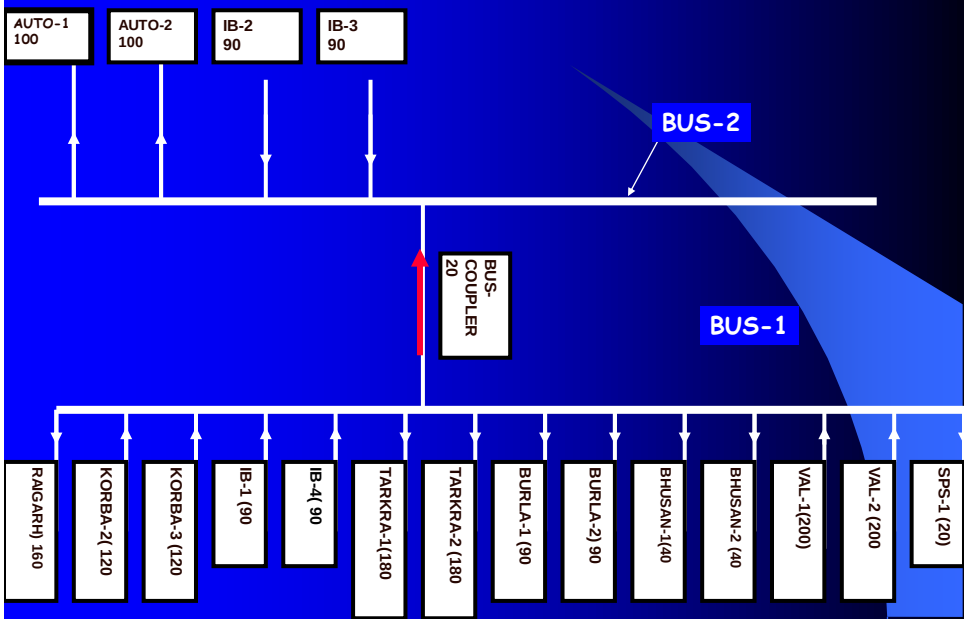
TYPE	NAME	LOW HYDRO	HIGH HYDRO
LOADS	AT1, AT2	220	150
	SPS	20	20
	KATPALI 1,2	160	180
GENRTOR	IB 1,2,3,4	-360	-400
FLEXIBLE LINKS	TARKERA 1,2	320	450
	RAIGARH	120	140
	KORBA 2,3	-120	-60
	VEDANTA 1,2	-320	-400
	BHUSAN	-40	80

+ 350 to 400 MW

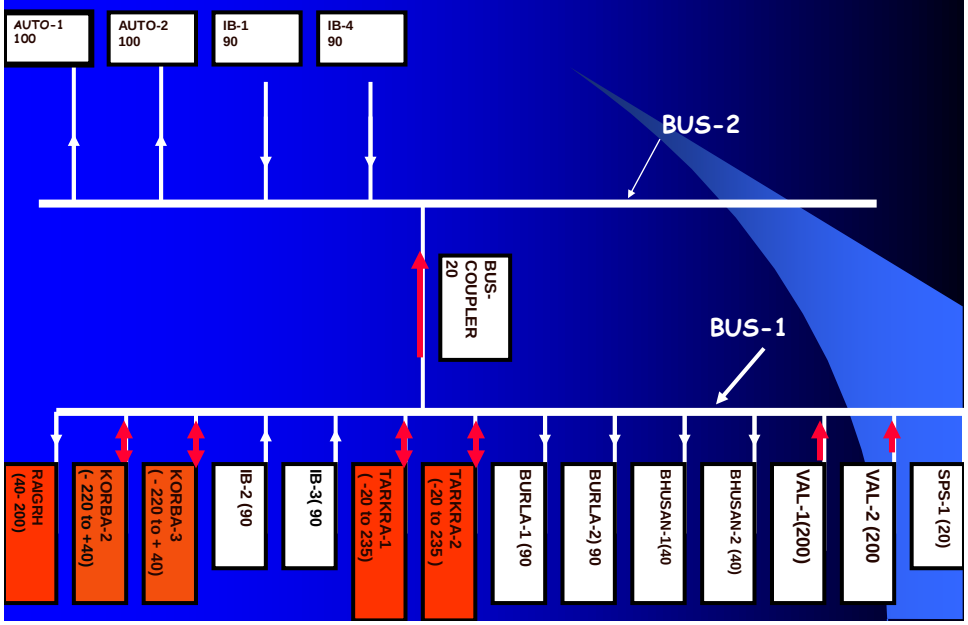
- 360 to 400 MW

- 40 to 210 MW

NORMAL POWER FLOW AT B.PADAR BUS.



AB-NORMAL POWER FLOW



OVERALL SYSTEM DISTURBANCE ANALYSIS AT BPADAR

Fault/Abnormality	Remarks
132 KV feeder	No disturbance
220 KV AT, Katapali, Tarkera or Load Links	Disturbance if 220 KV Korba line trips
Simultaneous Tripping of any TWO fdrs	Disturbance
Any Generator Links (Vedanta, Bhusan)	1. Islanding with Home load 2. No disturbance if Tarkera and Korba line healthy
IB Units	1. BLACK OUT (No Home Load) 2. No disturbance if Tarkera and Korba line healthy

PRACTICAL PROBLEMS AT B.PADAR BUS

1. Transmission Network Constraints
   - 220 KV Tarkera links have limited ampacity to adjust loads during disturbance.(Long process to increase transmission network)
   - 220 KV Korba links have limitation due to load congestions at Korba end.(System constraints)
2. IB Generators have no ISLANDING scheme.
   - These units have no any home loads to manage (Feasible Islanding Relay at B.Padar system to be provided)
3. Fluctuated Generator links
   - Vedanta Generators are not stable and fluctuate for the injection of loads to the system (System problem)

PRACTICAL SOLUTION BY USE OF LADR + ISLANDING SCHEME

LADR (Load Accessed Directional Relay)

- Auto changes the settings for load or generation shedding, by simulating the target loads and generators with proper tripping logic for conditional islanding scheme.

Islanding Scheme

- Opens the BC at B.PADAR keeping Ib generators with certain loads after successful command from LADR scheme.

PRACTICAL STUDIES and RECOMMENDATION

1. LADR and Islanding Scheme on Bus Coupler at B.Padar
   (Ref. Settings and suggestions attached).
2. Load Distribution with BC closed (To be done if approved)

   Bus-1:- IB (1,2,3,4), AT1&2, Katapali (1,2)
   Bus-2:- Vedanta(1,2), Korba-2,3,Tarkera(1,2), Raigarh, SPS, Bhusan (1,2)
3. Islanding gradation for the Vedanta and Bhusan generators
   (Settings enclosed)
4. Relay Co-ordination for the entire scheme
   (To be done if approved) .
5. Only one set of DP relay with AR and PLCC scheme
   (To be done if approved) .
6. The Back up relays HIGH SET to be BLOCKED or time delay more than Zone 2 and Zone-3 of the DP Relay
   (To be done if approved)

Proposed Islanding Relay Settings by OPGC , Modification by OPTCL

Note	Setting	Notation	Setting	Remarks
df/dt	1 Hz/s (± 1.2 Hz/s)	Tf >	0.5 sec/ 0.8s	Island
f <	48.5 Hz/ 48.2	f >	---/52.0Hz	Island
V <	192.5/187	Tv >	3.0 sec	87.5 % (Island)./ 85% Island
V <	198	Tv >	5.0 sec	90 % voltage, 5.0 sec (Alarm).
V >	264	Tv >	3.0 sec	120 % (Island).
V >	245	Tv >	5.0 sec	111.3 % voltage, 5.0 sec . (Alarm).
f <	47.75 Hz	Tf >	3.0 sec	95.5% Island).
f <	48.5 Hz	Tf >	3.0 sec	96% frequency (Alarm).
f >	52 Hz	Tf >	3.0 sec	Alarm
f >	52.25 Hz	Tf>	5.0 sec	Island

Note :- Gradation of Islanding such that the target generators has to be islanded prior to the islanding of Bus at B.Padar system.

Proposed by OPGC , Modification by OPTCL with SHEDDING PRINCIPLE

Note	Setting	Notation	Setting	Remarks
df/dt	1 Hz/sec/ -0.6H/s 1H/s	Tf >	0.5 sec/ 1Sec	Island/ Load Shedding
f <	48.5 Hz/ 48.7	f >	---/51.8Hz	Generator Shedding
V <	192.5 / 195	Tv >	3.0 sec/ 5.0	87.5 % (Island)./ Load shedding
V <	198	Tv >	5.0 sec	90 % voltage, 5.0 sec (Alarm).
V >	264/ 258	Tv >	3.0 sec/ 5.0	120 % (Island)./ Gen. Shedding
V >	245	Tv >	5.0 sec	111.3 % voltage, 5.0 sec (Alarm).
f <	47.75 Hz/ 48	Tf >	3.0 sec/5.0	95.5% Island)./ Load Shedding
f <	48.5 Hz	Tf >	3.0 sec	96% frequency (Alarm).
f >	52 Hz	Tf >	3.0 sec	Alarm
f >	52.25 Hz/52	Tf	5.0 sec/5.0	Island/ Generator Shedding

Islanding Relay Settings (REC-670) Proposed at Vedanta end

Note:- Add Vector Surge Relay with setting of 6 degree for 10 sec.

Not required to set

Not required to set

<0.87p.u.

>51.5Hz
>0.8Hz/s

<48.5Hz
<0.8Hz/s

Islanding Relay Setting Change

Pro
Dat
Ref

Limited, Jharsuguda

A Islanding Function Setting

Sr. No	Function	Previous Setting: Setting	Previous Setting: Time delay	Proposed setting	Time delay
1	UV AND DOC (towards OPTCL)	Stage 1 <0.4 p.u & >500 A	18[illegible] msec	No Cha[illegible]	
		Stage 2 >0.4p.u and <0.7p.u & >500 A	450 msec	No [illegible]hange.	
		Stage 3 <0.75 p.u & >450A	1 sec	Stage 3 <0.75 p.u	1 sec
2	Over Frequency (OF)	>52 Hz	500 msec	No Change.	
3	OF AND +df/dt	>51.3 Hz & >1 Hz/sec	200 msec	[illegible]	
4	Under Frequency (UF)	<46 Hz	500 [illegible]	[illegible]	
5	UF AND -df/dt	<48.5 Hz & <-1.0 Hz/sec	200 msec	No Change.	

Islanding Relay Settings (REG-670)
Proposed relay for Generator at IB end

0.85 x Un

0.80 x Un

1.25 x Un

Device	Settings	Device	Settings
81 U	48.5 Hz, 3.0 sec (Alarm).	27	0.9 x Un, 5.0 sec (Alarm)
81 U	47 Hz, 1.0 sec (Trip).	27	0.85 x Un, 4.0 sec (Trip).
81 O	52 Hz, 10.0 sec (Alarm).	59	1.1 x Un, 5.0 sec (Alarm)
81 O	52.5 Hz, 5.0 sec (Trip).	59	1.2 x Un, 3.0 sec (Trip).

Islanding Relay Settings (Micom Relay)
Proposed at Bhusan end

Note:- Vector Surge Relay with setting of 6 degree for 10 sec.

Note	Setting	Notation	Setting	
df/dt	(± 0.8 Hz/s)	Tf >	300mSec	Island
f <	48.5 Hz	f >	51.5Hz	Island
V <	192.5	Tv >	500msec	87.5 % (Island).
V <	200	Tv >	5.0 sec	90 % voltage, 5.0 sec (Alarm).
V >	253	Tv >	1.0 sec	115 % (Island).
V >	245	Tv >	5.0 sec	111.3 % voltage, 5.0 sec . (Alarm).
f <	48 Hz	Tf >	400msec	95.5% Island).
f <	48.3Hz	Tf >	3.0 sec	96% frequency (Alarm).
f >	51.8 Hz	Tf >	3.0 sec	Alarm
f >	52Hz	Tf	400msec	Island

FINAL RECOMM.
(LADR +ISLANDING RELAY SETTING)

Note	Setting	Not	Sett	Load Condition	Remarks
df/dt	-0.6H/s +1H/s	Tf >	1	1. Tarkera 160MW (E) or Korba 2,3 (100 MW) (I) for Load shedding to 132 KV side 2. Tarkera 180MW (E) or Korba 2,3 (140 MW) (I) for Generator shedding to Vedanta + IB Thermal (Band 1) 3.Tarkera 200 MW (E) or Korba 2,3 (150 MW) (I) for forced Generator shedding to Vedanta + IB Thermal (Band 2)without any frequency condition	Load Shedding
f <	48.7	f >	51.8		Generator Shedding

Note :- 1.Tarkera 160MW (E) , for outage of Tarkera, LADR ready with logic for forced tripping of Vedanta system.
2. Korba 2,3 (100MW) (I), for outage of Korba, LADR ready with logic for forced tripping of Raigarh.
3.. Korba 2,3 (150MW) (I), for outage of Korba, LADR ready with logic for forced tripping of Raigarh + Katapali.

FINAL RECOMM … Contd….

Note	Setting	Not	Sett	Load Condition	Remarks
V <	195	Tv >	5.0	SIMILAR LOAD CONDITION AS DESCRIBED IN BEFORE SLIDE	87.5 % (Island)./ Load shedding
V <	198	Tv >	5.0		90 % voltage, 5.0 sec (Alarm).
V >	258	Tv >	5.0		120 % (Island)./ Gen. Shedding
V >	245	Tv >	5.0		111.3 % voltage, 5.0 sec (Alarm).
f <	48	Tf >	5.0		95.5% Island)./ Load Shedding
f <	48.5	Tf >	3.0		96% frequency (Alarm).
f >	52	Tf >	3.0		Alarm
f >	/52	Tf	5.0		Island/ Generator Shedding

Example as per situation

❖Example-1.(Tripping of flexible feeder) Suppose Tarkera 1,2 tripped due to fault in the system, suddenly 320 MW will be thrown and flexible feeder Korba ties will take care the extra to certain limit. During this limited allowable time and load available in Bus Coupler, LADR will act as per the monitoring of dI/dt from the target loads and generators and accordingly send command for shedding of the generators or forced outage of the said scheme. in the system.

❖Example-2.(Tripping of Generator Link) Similarly for withdraw of generators, suddenly load will be deficit in the system. The flexible feeders will try to take care the cushion up to allowable time. This time also LADR will act according to the dI/dt and available load in Bus Coupler and send command for shedding the loads on 132 KV side as per the demand.

Example as per situation Contd..

Example-3 (Abnormality in system parameters) :- Suppose abnormality in electrical parameters demands the islanding of the generators, then all the target generators will be isolated as per the gradation of the parameters except Ib system. So IB system will remain with the radial available loads at B.Padar Bus and system will be survived from abnormality.

CONCLUSION

Present un-wanted and cascade tripping could be avoided by this LADR scheme. The basic concept of the LADR has only been explained in these slide.

Note 1:- The actual application needs detail power flow study of the system and load availability at both low hydro and high hydro condition.

Note 2 :- This concept can also be used for any interconnected grid system.

THANKS

Annexure-V

Schedule for testing of special energy meters in Eastern Region

Sl.No.	Agency	Utility	Meter make	TYPE OF METERS TYPE-A (1Amp)	Date of calibration start	Duration of calibration in Days	Date of calibration finish	Coordinating station	Name of the Co-ordinating Officer from PGCIL	
									Name	Mobile No
Team 1										
1	Muzaffarpur (PG)	POWERGRID	L&T	10	15-Apr-13	7	22-Apr-13			
2	Kanti(BSEB)	BSEB	L&T	2	22-Apr-13	1	23-Apr-13			
3	Purnea(PG)	POWERGRID	L&T	6	23-Apr-13	4	27-Apr-13			
4	Purnea(BSEB)	BSEB	L&T	3	27-Apr-13	2	29-Apr-13			
5	Kishanganj(BSEB)	BSEB	L&T	2	29-Apr-13	1	30-Apr-13			
6	Kahalgaon NTPC	NTPC	L&T	41	30-Apr-13	27	28-May-13			
7	Sultanganj BSEB	BSEB	L&T	2	29-May-13	1	30-May-13			
8	Sabour BSEB	BSEB	L&T	1	30-May-13	1	31-May-13			
9	Biharshariff(PG)	POWERGRID	L&T	8	1-Jun-13	5	6-Jun-13			
10	Biharshariff(BSEB)	BSEB	L&T	5	6-Jun-13	3	9-Jun-13			
11	Rajgir(BSEB)	BSEB	L&T	1	9-Jun-13	1	10-Jun-13			
12	ARA(PG)	POWERGRID	L&T	5	11-Jun-13	3	14-Jun-13			
13	ARA(BSEB)	BSEB	L&T	1	14-Jun-13	1	15-Jun-13			
14	Khagual(BSEB)	BSEB	L&T	2	15-Jun-13	1	16-Jun-13			
15	Sasaram - PG	POWERGRID	L&T	6	16-Jun-13	4	20-Jun-13			
16	Dehri(BSEB)	BSEB	L&T	2	20-Jun-13	1	22-Jun-13			
17	Karamnasa(BSEB)	BSEB	L&T	2	22-Jun-13	1	23-Jun-13			
18	Mohania(BSEB)	BSEB	L&T	1	23-Jun-13	1	24-Jun-13			
19	Sonnagar(BSEB)	BSEB	L&T	2	24-Jun-13	1	25-Jun-13			
Team 2										
1	Farakka NTPC	NTPC	L&T	22	15-Apr-13	15	29-Apr-13			
2	Malda(PG)	POWERGRID	L&T	5	30-Apr-13	3	4-May-13			
3	Malda(WBSETCL)	WBSETCL	L&T	2	5-May-13	1	6-May-13			
4	Binaguri (PG)	POWERGRID	L&T	16	7-May-13	11	18-May-13			
5	Siliguri(PG)	POWERGRID	L&T	6	19-May-13	4	23-May-13			
6	NBU(WBSETCL)	WBSETCL	L&T	2	24-May-13	1	25-May-13			
7	Birpara(PG)	POWERGRID	L&T	7	26-May-13	5	31-May-13			
8	Birpara(WBSETCL)	WBSETCL	L&T	2	1-Jun-13	1	2-Jun-13			
9	Rabangla(Sikkim)	SIKKIM	L&T	1	3-Jun-13	1	4-Jun-13			
10	Melli(Sikkim)	SIKKIM	L&T	4	5-Jun-13	3	7-Jun-13			
11	Kalimpomg(WB)	WBSETCL	L&T	1	8-Jun-13	1	9-Jun-13			
12	Gangtok(PG)	POWERGRID	L&T	6	10-Jun-13	4	14-Jun-13			
13	Rangit(NHPC)	NHPC	L&T	6	15-Jun-13	4	19-Jun-13			
14	Teesta(NHPC)	NHPC	L&T	7	20-Jun-13	5	25-Jun-13			
15	Malbase	BHUTAN	L&T	8	26-Jun-13	5	1-Jul-13			
16	Tala	BHUTAN	L&T	3	2-Jul-13	2	4-Jul-13			
1	Durgapur(PG)	POWERGRID	L&T	6	6-Jul-13	4	10-Jul-13			
2	Parulia(DVC)	DVC	L&T	1	10-Jul-13	1	11-Jul-13			
3	Waria(DVC)	DVC	L&T	1	12-Jul-13	1	12-Jul-13			
4	Bidhannagar(WBSTCL)	WBSTCL	L&T	3	12-Jul-13	2	14-Jul-13			
5	Subhashgram(PG)	POWERGRID	L&T	1	14-Jul-13	1	15-Jul-13			
6	Jeerat(WBSETCL)	WBSETCL	L&T	2	15-Jul-13	1	16-Jul-13			
7	Maithon(PG)	POWERGRID	L&T	4	16-Jul-13	3	19-Jul-13			

Annexure-V

Schedule for testing of special energy meters in Eastern Region

Sl.No.	Agency	Utility	Meter make	TYPE OF METERS TYPE-A (1Amp)	Date of calibration start	Duration of calibration in Days	Date of calibration finish	Coordinating station	Name of the Co-ordinating Officer from PGCIL	
									Name	Mobile No
8	Kalyaneshwari(DVC)	DVC	L&T	1	19-Jul-13	1	20-Jul-13			
9	Baripada(PG)	POWERGRID	L&T	8	20-Jul-13	5	25-Jul-13			
10	Baripada(GRIDCO)	GRIDCO	L&T	1	25-Jul-13	1	26-Jul-13			
11	Balasore(GRIDCO)	GRIDCO	L&T	2	26-Jul-13	1	27-Jul-13			
12	Rourkella(PG)	POWERGRID	L&T	8	27-Jul-13	5	1-Aug-13			
13	Rourkella(GRIDCO)	GRIDCO	L&T	1	1-Aug-13	1	2-Aug-13			
14	Rairangpur(GRIDCO)	GRIDCO	L&T	1	2-Aug-13	1	3-Aug-13			
15	Budhipadar(GRIDCO)	GRIDCO	L&T	3	3-Aug-13	2	5-Aug-13			
16	Joda(GRIDCO)	GRIDCO	L&T	4	5-Aug-13	3	7-Aug-13			
17	Rengali(PG)	POWERGRID	L&T	5	7-Aug-13	3	11-Aug-13			
18	Talcher(NTPC) stage-I	NTPC	L&T	26	27-Jun-13	17	14-Jul-13	ER1 region TEAM 1 start this		
19	Talcher(NTPC) stage-II	NTPC	L&T	9	14-Jul-13	6	20-Jul-13			
20	Jeypore(PG)	POWERGRID	L&T	8	20-Jul-13	5	26-Jul-13			
21	Jeynagar(GRIDCO)	GRIDCO	L&T	2	26-Jul-13	1	27-Jul-13			
22	Indravati(GRIDCO)	GRIDCO	L&T	1	27-Jul-13	1	28-Jul-13			

Annexure-VI

Details of disturbance report received from constituent						
Sl no	Disturbance	Date	Time	Agency involved	Report received	Received Date
Apr-13						
1	Total Power failure occurred at 220/132kV Chandil s/s due to tripping of 220kV Ranchi-Chandil ckt on earthfault.All the 220kV & 132kV feeders tripped & traction supply inturepted in Golmuri,Manique & Rajkharswan area.	02.04.13	10:29	JSEB	Not Yet	n/a
2	Due to tripping of 220kV Kasba-Subhasgram(direct) on C-Ph fault, power flow through 220kv Jeerat-kasba-I & II increased.As a result B-Ph conductor of 220kV Jeerat-Kasba-II snapped. Consequently 220Kv Jeerat-Kasba-I also tripped.CESC system got separated from central grid.	02.04.13	12:30	WBSETCL	Yes	03.04.13
3	Due to thunder and stormy weather in Baripada ,Kolaghat & Meramundali area several lines tripped. No tower collapse reported.	03.04.13	1:40	OPTCL/GRIDCO, ER-II	Not Yet	n/a
4	Due to fire hazard occurred at Tenughat thermal Power Station, 220 kV Tenughat-Biharshariff line tripped along with Unit#2 of Tenughat.Patratu U#4 & 10 also tripped at the same time.	07.04.13	12:56	JSEB/BSPHCL	Not Yet	n/a
5	Due to tripping of 400kV Jeerat-Subhasgram(direct) on R-Y-Ph fault, power flow through 220kv Jeerat-kasba-I & II increased.As a result R-Ph CT jumper of 220kV Jeerat-Kasba-II snapped. Consequently 220Kv Jeerat-Kasba-I also tripped.CESC system got separated from central grid.	08.04.13	15:44	WBSETCL	yes	09.04.13
6	At around 11:37 hrs, 132 kV Purnea-Purnea-I, II & III & 132 kV Purnea-Kishanganj-S/C tripped also all the ckts from BSPHCL Purnea tripped due to fault in 132 kV Purnea-Naugachiya & Purnea-Khagariya. 132 kV Forbesgaunj-Kataiya-Duhabi also got interrupted.	10.04.13	11:37	BSPHCL/ER-I	Not Yet	n/a
7	Due to stormy weather condition power supply at Chandil Complex become zero. Traction supply inturepted in Golmuri,Manique & Rajkharswan area.	12.04.13	14:56	JSEB	Not Yet	n/a
8	At 1135 Hrs 400kV Maithon-Mejia -B D/C line tripped on single phase to ground fault. Later on at 1150 Hrs 400 kV DSTPS - Jamshedpur line tripped on single phase to ground fault along with DSTPS#2	13.04.13	11:35	DVC, ER-II	Not Yet	n/a
9	Due to stormy weather, all 220kV lines emanating from Budhipadar tripped along with IB thermal #1& 2, Sterlite #2 and Burla #1 tripped.	13.04.13	21:52	OPTCL/GRIDCO	Yes	14.04.13
10	Due to stormy weather 220kV Chukha - Birpara -I&II and 220kV Chukha - Malbase tripped along with Chukha unit # 1&2	14.04.13	15:50	BPC, ER-II	Not Yet	n/a
11	Due to Storm, rain & lightning, CESC system which was synchronised at Kasba point, got islanded due to tripping of 220kV E.M.Bypass-Budge-Budge-D/C line.	17.04.13	19:29	WBSETCl, CESC	Not Yet	n/a
12	Due to fault in 220 kV Biharshariff-Fatuah-II (B-N fault, Z-II at Biharshariff), 220 kV Biharshariff-Tenughat-S/C and all three 315 MVA ICTs, 150 MVA ICT-I, II & III at Biharshariff got tripped.	21.04.13	3:50	BSPHCL/ER-I	Not Yet	n/a
May-13						
1	At 20:20 Hrs due to bursting of Y-Phase Metering CT of Unit#3 of Mejia al running units of Mejia & 220kV feeders tripped	01.05.13	20:20	DVC	Not Yet	n/a
2	At 15:32 Hrs, All lines emanating from Hatia 220/132 KV Sub-station tripped along with Patratu unit # 4, due to electrical jerk.	06.05.13	15:32	JSEB	Yes,but not in format	07.05.13
3	At 15:48 Hrs, power supply at Chandil complex became zero, due to fault in 132 KV Chandil- Adityapur line	07.05.13	15:48	JSEB	Not Yet	n/a
4	At 11:42 hrs, power supply at Chandil complex became zero due to tripping of all 220 KV & 132 KV lines emanating from Chandil, reportedly due to fault in 220VK Chandil-Santaldih line	10.05.13	11:42	JSEB	Not Yet	n/a
5	At 15:55hrs, due to a sudden nor'wester with heavy shower and thunderstorm, bus fault occurred at 220/132kV Bidhannagar S/s	12.05.13	15:55	WBSETCL	Yes	15.05.13
6	At 16:18 Hrs, due to fault in 220 KV Tenughat- Patratu S/C line, runing units of Tenughat & Patratu tripped.	13.05.13	16:18	JSEB	Not Yet	n/a

7	At 18:55 Hrs due to suspected fault in 132 KV Chandrapura-Purulia-I, running units of CTPS & 132kV feeders tripped	16.05.13	18:55	DVC	Not Yet	n/a
8	At 13:28hrs, all 400kV lines & U#4 of Sterlite tripped.	19.05.13	13:28	Strerlite, POWERGID/ER-II	Not Yet	n/a
9	Due to bursting of breaker (Y phase) of 50 MVAR B/R at Jeerat s/s, bus fault occurred causing tripping of 400KV & 220kV feeders.	21.05.13	14:28	WBSETCL	Not Yet	n/a
10	Due to reported LBB operation at Meeramundali s/s in OPTCL system, 400kV feeders emanating from Meeramundali tripped.	22.05.13	5:52	OPTCL/GRIDCO	Yes	23.05.13
11	At 02:53 hrs, all the lines connected with 220kV Dalkhola S/s tripped.	23.05.13	2:53	WBSETCL/ER-II	Not Yet	n/a
12	At 05:48 hrs Breaker of 220kV PTPS-TTPS and 132kV PTPS-Ramgarh ckt opened from Patratu end due to which running units of Tenughat & Patratu tripped.	25.05.13	5:48	JSEB	Not Yet	n/a
13	Due to stormy weather 220kV feeders along with running units of Tenughat & Patratu tripped.	26.05.13	14:25	JSEB	Not Yet	n/a
14	Due to stormy weather all 220kV feeders along with all units of CHPC tripped.	27.05.13	12:41	BPC, ER-II	Not Yet	n/a
15	Due to problem at 220kV Bidhannagar s/s (WBSETCL), various line emanating from Bidhannagar tripped.	27.05.13	11:00	WBSETCL	Not Yet	n/a
16	At 12:22hrs, all the lines from Rangit HEP except 132kV Rangit- Gangtok ckt tripped. Running units of Chuzachen also tripped due to loss of evacuation path	28.05.13	12:22	Rangit, Sikkim, ER-II, CHEP	Not Yet	n/a
Jun-13						
1	Total Power failure occurred at Hatia, Patratu & Tenughat s/s in JSEB system due to tripping of 220kV Ranchi-Hatia ckt on earthfault.All the 220kV & 132kV feeders tripped & traction supply inturepted in Hatia, Namkum & Kamdara	03.06.13	15:39	JSEB, ER-I	Yes	04.06.13
2	Total power failure occurred in Sikkim system due to tripping of 132kV Rangit-Kureseong-Siliguri line.All the running units of Rangit & Chuzachen got tripped.	03.06.13	21:24	Rangit, Sikkim, ER-II, CHEP	Yes	04.06.13
3	Total power failure occurred in Sikkim system due to tripping of 132kV Rangit-Kureseong-Siliguri line.All the running units of Rangit & Chuzachen got tripped.	04.06.13	2:28	Rangit, Sikkim, ER-II, CHEP	Yes	04.06.13
4	Total power failure occurred in Sikkim system due to tripping of 132kV Rangit-Kureseong-Siliguri line.All the running units of Rangit & Chuzachen got tripped.	04.06.13	5:28	Rangit, Sikkim, ER-II, CHEP	Yes	04.06.13
5	Total Power failure occurred at Hatia, Patratu & Tenughat s/s in JSEB system due to tripping of 220kV Ranchi-Hatia ckt on earthfault.All the 220kV & 132kV feeders tripped & traction supply inturepted in Hatia, Namkum & Kamdara	05.06.13	14:38	JSEB, ER-I	Yes	06.06.13
6	At the time of switching on operation of 132kV Hatia-Kamdara, all the 132kV lines and ICTs of 132kV Hatia s/s in JSEB system tripped on SOTF.	06.06.13	23:25	JSEB	yes	07.06.13
7	Total power failure occurred in Sikkim system due to tripping of 132kV Rangit-Kureseong-Siliguri line.All the running units of Rangit & Chuzachen got tripped.	10.06.13	3:01	Rangit, Sikkim, ER-II, CHEP	Yes	10.06.13
8	Fire hazard occurred at Tenughat s/s in JESB system due to bursting of two nos of CT of 220kV Tenughat-Patratu line. All the running units of Tenughat & Patratu tripped.	08.06.13	17:15	JSEB	Yes,but not in format	08.06.13

Annexure-VII

Status of GT and ICT data received

21-June-2013

Bihar

- Data received for following power station/ substaion

Sl Number	ICT and GT
1	MTPS GT 1 140 MVA, 230/11 KV GT
2	MTPS 2X100 MVA 220/132 KV
3	BTPS GT 6 & 7, 125 MVA, 139/11 KV
4	FATUAH 100 MVA 220/132 KV ATR 2, 3 and 4
5	DARBHANGA 2X100 MVA 220/132 KV ATR
6	BODHGAYA 220/132 KV 3x150 MVA ATR MAKE: ITELK & CROMPTION
7	Begusarai 100 MVA 220/132 KV ATR
8	KHAGAUL 3X100 MVA 220/132 KV ATR
9	GOPALGANJ 2X100 MVA 220/132 KV ATR
10	B SHARIFF 3X150 MVA 220/132 KV ATR, MAKE: CROMPTON
11	DEHRI 3X100 MVA 220/132 KV ATR
12	DEHRI 1X50 MVA 220/132 KV ATR

Bihar

- Incomplete Data :-
  - 2 x 150 MVA 220/132 kV ICT at Sipara
    - Data missing Total number of Tap and voltage variation in each tap
- Data missing
  - ICT at 220/132 kV Hazipur

Jharkhand

- Data Received
  - Nil
- Data missing
  - All GT and ICT data missing

DVC

- Data received
  - Mejia B TPS GT- 1 & 2
  - DSTPS GT- 1 & 2
  - Koderma TPS- 1 & 2
  - Raghunathpur TPS (no GT and ICT)
  - 400/132 kV ICT at TISCO
  - 400/220 kV ICT at Koderma

- Data Received (but current Tap position missing)
  - 220/132 kV ICT at Ramgarh
  - 220/132 kV ICT at Jamsedpur
  - 220/132 kV ICT at Bokaro-B
  - Bokaro-B TPS GT – 1,2 and 3
  - Mejia TPS GT- 1 to 6
  - 220/132 kV ICT at Kalyaneswari

DVC

- Data Missing
  - GT tap details at
    - Chandrapura TPS-A
    - Chandrapura TPS-B
    - Waria TPS
  - ICT tap details at
    - 220 kV Chandrapura
    - 220 kV Waria
    - 220 kV Koderma
    - 220 kV Dhanbad
    - 220 kV Girhidih

Odisha

- Data Received from OHPC (But Voltage change per Tap is missing)
  - UHIP GT and ICT (Voltage Ratio is also missing)
  - Chiplima HEP GT
  - Hirakund HEP GT
  - Rengali HEP
  - U.Kolab HEP
  - Balimela HEP

- Data missing
  - All GT and ICT data missing from OPTCL, OPGC

West Bengal

- Data received
  - Bidhannagar 1x315 MVA 400/220 kV
  - Jeerat 3x315 MVA 440/220 kV
  - Khragpur 2x315 MVA 400/220 kV
  - Kolaghat 2 x315 MVA 400/220 kV
  - Arambag 3x315 MVA 400/220 kV ICT
  - DPL ICT 1x100 +2 x 160 MVA
  - DPL GT 3-7
  - Bandel TPS GT 1-5
  - KTPS GT 1-6
  - Santhaldih TPS GT 4-5
  - TCF HP GT 1-3
  - Jhaldhaka HPS GT
  - Rammam HPS GT

West Bengal

- Data missing
  - GT
    - Bakreswar TPS
    - Purulia PSP
    - Santhaldih TPS GT 1-3
    - Sagardighi TPS GT 1-2
  - ICT
    - 400 kV Bakreswar
    - 400 kV Sagardighi
    - 220 kV Howrah
    - 220 kV Jeerat
    - 220 kV Rishra
    - 220 kV Dhrama
    - 220 kV Domjur
    - 220 kV Krishnanagr
    - 220 kV Asansol
    - 220 kV Arambag
    - 220 kV Gokarno
    - 220 kV Dhalkhola
    - 220 kV Satgachia
    - 220 kV Laxmikantpur
    - 220 kV NJP
    - 220 kV Bidhannagr
    - 220 kV Kasba

CESC

- Data received
  - Budge-Budge 220/132 kV ICT
  - Budge-Budge GT 1-3
  - Titagrah GT 1-4
  - Southern GT
- Data Missing
  - 220 kV EM bypass

Power Grid

- Data missing
  - Birpara 220/132 kV ICT
  - Malda 400/220 kV ICT
  - Malda 220/132 kV ICT
  - Banka 400/132 kV ICT

ISGS

- Data received
  - Farraka GT 1-6
  - Khalgaon GT 1-7
  - TSTPP st-I GT 1-3
  - Teesta HPS GT 1-3
  - Rangit HPS GT- 1-3
  - 400 /220 kV ICT at Farraka
  - 400/220 kV ICT at Talcher
  - 400/132 kv ICT at Khalgaon
- Data missing
  - 400/132 kV ICT at Barh

IPP

- Data received
  - Adhunik PNRL GT 1-2
- Data Missing
  - SEL GT 1-4
  - MPL GT 1-2
  - 400/220 kV ICT at SEL

Annexure-VIII

PARTICIPATING IN RGMO

DVC	MEJIA
WBPDCL	BAKRESWAR
	SANTALDIH unit#5
CESC	BUDGE BUDGE
WBPDCL	DPL
JSEB	SUBARNREKHA

Total no of stations (29)

Implemented (6)

Applied Exemption (13)

Status available (10)

NOT PARTICIPATING IN RGMO

DVC	CHANDRAPURA TPS	RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC.DVC has already applied for exception to Secretary, CERC.
	CHANDRAPURA TPS	Efforts are being made for RGMO mode of operation in the new units of CTPS 7 & 8.
	BOKARO	1. RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC. DVC has already applied for exception to Secretary, CERC.
		2. For unit 4 governing system is proposed to be change during R&M
	MEJIA	1. RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC. DVC has already applied for exception to Secretary, CERC.
		2. Efforts are being made for RGMO mode of operation in the new units 4, 5 & 6.
	MEJIA-B	Efforts are being made for RGMO mode of operation in the new units 7 & 8.
	DSTPS	Units 1 & 2 would put in RGMO within a short period.
	WARIA	RGMO mode of operation would not be possible for units 3 & 4. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC. DVC has already applied for exception to Secretary, CERC.
JSEB	TENUGHAT	Difficulties in implementing RGMO & exemption not applied
OPGC	IBTPS	Not adequate response in RGMO
WBPDCL	KOLAGHAT	Already applied for exception to Secretary, CERC.
	BANDEL	Already applied for exception to Secretary, CERC.
	SANTALDIH unit#6	Could not be implemented because of some technical problem and the issue was refereed to manufacturer BHEL.
	SAGARDIGHI	Could not be implemented because of some technical problem and the issue was refereed to manufacturer Dangfong, china.
DVC	MAITHON HPS	RGMO mode of operation would not be possible for units1, 2 and 3. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC. DVC has already applied for exception to Secretary, CERC.
	PANCHET HPS	RGMO mode of operation would not be possible for units1 & 2. Because of non-availability of electro-hydraulic governor, digital voltage recorder and CMC. DVC has already applied for exception to Secretary, CERC.
OHPC	BURLA	Already applied for exception to Secretary, CERC.
	CHIPLIMA	
	BALIMELA	
	UPPER KOLAB	
	RENGALI	
	INDRAVATI	
WBSEDCL	RAMMAM	Station is not in RGMO. Not yet applied for exemption.
	PPSP	Applied for exception to Secretary, CERC.

Annexure-IX

CENTRAL ELECTRICITY AUTHORITY

DIRECTIONS FOR ENSURING SECURE AND RELIABLE GRID OPERATION DURING SUMMERS

1. CEO, POSOCO will issue necessary directions to all RLDCs, and Member Secretary, RPC will advise the utilities in his region, to take immediate steps to foresee and prepare an action-plan to prevent equipment and line failures.

2. Member Secretary, RPC will issue advisory in respect of the following:

   a. GENCOs & TRANSCOs to keep the spare equipments, which generally fail during summers, in stock at such locations, from where these can be transported to the site of fault within a couple of hours. Necessary arrangements for movement of such equipments also need to be ensured.

   b. States to carry out proper day-ahead planning for meeting its demand without resorting to overdrawal under UI mechanism.

   c. SLDCs to follow all instructions of RLDC without waiting for approval from any other authority.

   d. All generators shall ensure that there is adequate response - manual as well as automatic - for ensuring load generation balance.

3. CEO, POSOCO will also direct the RLDCs to identify appropriate EHV lines / ICTs of the states, which could be got opened to check overdrawal by a state in violation of instructions of RLDC like the arrangement adopted in the Northern Region.

4. Issue of formation of a Standing Committee for investigation of major trippings in each region under the RPC was discussed.It was decided that there was no need to constitute a separate Standing Committee in view of already existing Protection Sub-committees in all the RPCs. It was further decided that whenever any major event takes place requiring an investigation, Member Secretary, RPCwill constitute a Team including a member from POWERGRID to investigate the event. The members of this team would be drawn from the Protection Sub-committee of the region, or from a panel of pre-identified protection experts.This Team's mandate will be to visit the substation / switchyard where major trippings took place, collect relay indications, DR/SERs data, etc. and submit a preliminary report to the Protection Sub-Committeealong with a copy thereof to the head of the concerned utility to enable him take corrective action in the shortest possible time, preferably within 24 hours. Contact details of all members of the investigation teams and panel of experts shall be available with Member Secretary, RPC.

5. RLDCs will report major tripping including tripping of a whole substation or generating station to the Member Secretary, RPC immediately on its occurrence for necessary action by the Protection Team.

6. Protection Sub-Committee will meet at least twice a month to analyse the tripping incident(s) on the basis of data / preliminary reports of the protection team(s) and recommend remedial measures to the owner of the substation where fault had occurred, for taking corrective action with a view to avoid recurrence of such incident. The Sub-committee would also discuss & finalise the time-frame and action-plan for corrective action to be taken by the concerned utility.

7. Copies of the report highlighting lessons learnt will be forwarded by Member Secretary of the RPCs to Member Secretary, NPC for circulation to other RPCs and POSOCO, for benefit of other utilities.

8. The utility immediately on receipt of the report from the Protection Team / Protection Sub-Committee will communicate the corrective action taken by it / planned to be taken by it, to the Protection Sub-Committee and also confirm the same after completion of corrective action.

9. Member Secretary, RPC will send daily reports regarding above kind of trippings and actions thereon to Member (GO&D), CEA.

10. RPCs will also constitute team(s) which will carry out surprise visits at the substations to check healthiness of the protection systems and defense equipment and advise corrective action, if any, to the concerned utility.

11. Above arrangements will be operationalised by the RPCs within next 10 days and details sent to Chairperson, CEA; Member (GO&D), CEA and CEO, POSOCO.

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Annexure-X

Changes Made in Operating Procedure of ER

Rev- 8 (2013)

Changes

- Chapter 2 : Frequency Management
  - Feeder disconnection in case of over drawl at 49.7 Hz or below is introduced.
    - As per provisions 5.4.2 (a) & 5.4.2 (b) In case repeated warning massages from ERLDC to curb over drawal does not yield any results, ERLDC will instruct the defaulting constituents to disconnect identified radial feeders within their respective systems for reduction of over drawl. Concerned constituents should send compliance report to ERLDC in this regard after taking necessary action.
- Chapter 3 : Voltage Control
  - When voltage control action should be initiated (e.g. voltage of 400 kV bus going beyond 415 kV and have rising trend) is specified.

Changes (Cont..)

- Chapter 4 : Outage Planning
  - Modification in this chapter has been proposed keeping in view of Present requirement.

- Chapter 5: Switching Coordination
  - A new chapter is introduced
  - It deals with
    - Switching of system Elements for First time
    - Switching of Important elements
    - Precaution to be taken during switching

Changes (Cont..)

- Chapter 7: Network Security and congestion Management
  - Flow gate are reviewed
    - Monsoon flow gate which leads to high loading of 400kV Talcher-Rourkela D/C and 400 kV Baripada –Kharagpur-Kolaghat in case of High injection from SR and low drawl from odisha is deleted as this condition does not arises in last 3-4 years.
    - Winter and Summer flow gate of high loading of 400 kV Rourkela-Talcher D/C and 400 kV Jamsedpur-TISCO-Baripada is documented.
  - Procedure for Relieving Congestion in real time is modified as per CERC order on congestion management dated 22nd April 2013

Changes (Cont..)

- Chapter 10: Metering and Settlement system
  - Operation of Congestion Chagres account by ERPC secretariat is introduced
- Chapter on Water supply system at ERLDC is deleted
- All annexures are Updated
  - Installed Capacity
  - Tie Lines
  - UFR quantum
  - Power Maps
  - Compensation shut and series… etc.

Annexure-XI

Anticipated Power Supply Position for the month of
Jul-13

SL.NO		PARTICULARS	PEAK DEMAND MW	ENERGY MU
1		**BIHAR**		
	i)	NET MAX DEMAND	2650	1230
	ii)	NET POWER AVAILABILITY- Own Source	176	124
		- Central Sector	1716	1042
	iii)	SURPLUS(+)/DEFICIT(-)	-758	-64
2		**JHARKHAND**		
	i)	NET MAX DEMAND	1140	710
	ii)	NET POWER AVAILABILITY- Own Source	413	228
		- Central Sector	742	440
	iii)	SURPLUS(+)/DEFICIT(-)	15	-42
3		**DVC**		
	i)	NET MAX DEMAND (OWN)	2635	1635
	ii)	NET POWER AVAILABILITY- Own Source	4339	2573
		- Central Sector	404	290
		Long term Bi-lateral (Export)	1400	1041
	iii)	SURPLUS(+)/DEFICIT(-)	709	187
4		**ORISSA**		
	i)	NET MAX DEMAND	3500	2260
	ii)	NET POWER AVAILABILITY- Own Source	2700	1620
		- Central Sector	1050	689
	iii)	SURPLUS(+)/DEFICIT(-)	250	49
5		**WEST BENGAL**		
5.1		**WBSEDCL**		
	i)	NET MAX DEMAND (OWN)	5290	3265
	ii)	CESC's DRAWAL	729	258
	iii)	TOTAL WBSEDCL's DEMAND	6019	3523
	iv)	NET POWER AVAILABILITY- Own Source	3855	2083
		- Import from DPL	0	21
		- Central Sector	2879	2142
	v)	SURPLUS(+)/DEFICIT(-)	715	723
5.2		**DPL**		
	i)	NET MAX DEMAND	310	201
	ii)	NET POWER AVAILABILITY	310	222
	iii)	SURPLUS(+)/DEFICIT(-)	0	21
5.3		**CESC**		
	i)	NET MAX DEMAND	1799	980
	ii)	NET POWER AVAILABILITY - OWN SOURCE	1070	722
		FROM WBSEDCL	729	258
	iii)	TOTAL AVAILABILITY	1799	980
	iv)	SURPLUS(+)/DEFICIT(-)	0	0
6		**WEST BENGAL (WBSEDCL+DPL+CESC)**		
		(excluding DVC's supply to WBSEDCL's command area)		
	i)	NET MAX DEMAND	7399	4446
	ii)	NET POWER AVAILABILITY- Own Source	5235	3027
		- Central Sector	2879	2142
	iii)	SURPLUS(+)/DEFICIT(-)	715	724
7		**SIKKIM**		
	i)	NET MAX DEMAND	90	40
	ii)	NET POWER AVAILABILITY- Own Source	16	4
		- Central Sector	147	94
	iii)	SURPLUS(+)/DEFICIT(-)	73	58
8		**EASTERN REGION**		
		At 1.03 AS DIVERSITY FACTOR		
	i)	**NET MAX DEMAND**	16907	10320
		Long term Bi-lateral	1400	1041
	ii)	**NET TOTAL POWER AVAILABILITY OF ER**	17881	11231
		(INCLUDING C/S ALLOCATION)		
	iii)	**PEAK SURPLUS(+)/DEFICIT(-) OF ER**	974	912
		(ii)-(i)		

Annexure-XII

Tentative Maintenance Programme of Generating Units for July'13

Agency	Station	Unit no.	Capacity (MW)	Proposed programme (As per LGBR)	Reason of S/d	Remarks
DVC	Mejia TPS	2	210	01.07.2013 to 05.08.2013	Capital Overhauling	
WBPDCL	BKTPP	1	210	17.07.2013 to 19.07.2013	Boiler Maintenance	
WBPDCL	BKTPP	4	210	25.07.2013 to 29.08.2013	BTG capital overhauling	
WBPDCL	BTPS	3	60	15.07.2013 to 14.08.2013	Boiler Licence	
DPL	DPL	3	70	01.07.2013 to 28.02.2014	As a standby	
NTPC	TTPS	3	60	11.07.2013 to 25.07.2013	Boiler Overhaul	
NTPC	TTPS	6	110	27.07.2013 to 15.08.2013	Boiler Overhaul	
OPGC	IB TPS	2	210	01.07.2013 to 20.07.2013	Minor Repair	01.07.2013 to 25.07.2013
NTPC	TSTPP Stg-II	3	500	01.07.2013 to 25.07.2013	Boiler Maint.	
SEL	SEL	3	600	12.07.2013 to 12.09.2013	Annual Overhauling	
MPL	MPL	1	525	15.07.2013 to 15.08.2013	Annual Overhauling	
NTPC	FSTPP	2	200	01.06.2013 to 10.07.2013	Unit Overhauling	20.06.2013 to 29.07.2013
NTPC	KhSTPP	1	210	15.06.2013 to 19.07.2013	Unit Overhauling	01.07.2013 to 04.08.2013

EASTERN REGIONAL LOAD DESPATCH CENTRE
KOLKATA

TRANSMISSION ELEMENTS SHUTDOWN APPLIED IN IN 86TH OCC MEETING OF ERPC

	S/D APPROVED IN OCC								
Sr. No	NAME OF THE ELEMENTS	DATE	TIME	DATE	TIME	REMARKS	S/D availed BY	Reason	SUBJECT TO CONSENT FROM AGENCY
1	400kV Sagardighi-Subhasgram Line	6/22/2013	8:00	6/22/2013	16:00	ODB	**POWERGRID ER-2**	Line jumper tightening / Line Reactor LA replacement at S'Gram S/S	WBSEB
2	765 KV GAYA - FATEHPUR	6/22/2013	8:00	6/22/2013	16:00	ODB	**POWERGRID ER-1**	FOR BALANCE ERECTION & INTERCONNECTION WORK OF AUX. BUS ISLOATOR IN 710 LINE REACTOR BAY	NLDC
3	400 KV Maithon-Maithon RB - I & II	6/22/2013	7:00	6/27/2013	18:00	OCB	**POWERGRID ER-2**	Shifting of temporary Loc. No. 62 on Pile foundation at R2	MPL
4	80 MVAR LINE REACTOR OF 400 KV RNC - SIPAT - II AT RANCHI	6/24/2013	8:00	6/25/2013	18:00	OCB	**POWERGRID ER-1**	FOR B - PH BUSHING REPLACEMENT WORK. FOR TAKING & RETURNING L/R S/D 15 MIN RNC-SIPAT-2 LINE OUTAGE REQUIRED	NLDC
5	400 KV MAIN BAY OF 400 KV BSF - BANKA - II AT BIHARSHARIFF	6/24/2013	10:00	6/25/2013	16:00	OCB	**POWERGRID ER-1**	FOR LEAKAGE CHECKING /EVACUATION OF SF6 AND DISMANTLING OF CONNECTING AL PIPE BUS BAR	
6	132 KV Main Bus at Gangtok	6/24/2013	9:00	6/24/2013	15:00	ODB	**POWERGRID ER-2**	AMP and to attend alert zone recorded in the thermo vision scanning of Switchyard elements	SIKKIM & Power interruption
7	315 MVA ICT - II AT ARMBAG	6/24/2013	7:00	6/24/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
8	400 kv Gaya - Biharsariff	6/24/2013	10:00	6/24/2013	12:00	ODB	**POWERGRID ER-1**	STRINGING WORK RELATED TO 11 KV LINE	BSEB
9	400 KV BSF - BANKA - II	6/25/2013	10:00	6/25/2013	16:00	**ODB**	**POWERGRID ER-1**	FOR DISMANTLING AND ERECTION OF CB WITH THE HELP OF HYDRA CRANE	NLDC
10	220 KV GAYA - BODHGAYA D/C	6/25/2013	8:00	6/26/2013	18:00	ODB	**POWERGRID ER-1**	STRINGING WORK OF 400 KV GAYA - MTN LINE	BSEB
11	220 KV GAYA - DEHRI D/C	6/25/2013	8:00	6/26/2013	18:00	ODB	**POWERGRID ER-1**	STRINGING WORK OF 400 KV GAYA - MTN LINE	BSEB
12	765KV GAYA-FATEHPUR	6/25/2013	9:00	6/25/2013	17:00	ODB	**POWERGRID ER-1**	FOR BALANCE ERECTION & INTERCONNECTION WORK OF AUX BUS ISOLATOR IN 710R LINE REACTOR BAY	NLDC
13	220kV Subashgram - Subashgram -I	6/25/2013	8:00	6/25/2013	14:00	ODB	**POWERGRID ER-2**	Hot spot rectification	WBSEB
14	400 KV MAIN BUS-II BOLANGIR	6/25/2013	9:00	6/25/2013	17:00	ODB	**POWERGRID ER-2**	jumpering work of IV side of ICT-I	NO POWER INTERUPTION
15	400 KV Rourkela-Jharsuguda - Raigarh - 2	6/25/2013	8:00	6/26/2013	17:00	OCB	**POWERGRID ER-2**	Isolator Checking for remote operation, Relay sheme checking	NLDC
16	400 kV Farakka-Jeerat	6/25/2013	8:00	6/25/2013	20:00	ODB	**POWERGRID ER-2**	For opening of PG clamp and charging of substation	WBSEB
17	315 MVA IBT - I AT KTPP	6/25/2013	7:00	6/27/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
18	400 KV BUS - II ALONGWITH 125MVAR B/REACTOR-II AT PATNA S/S	6/26/2013	8:00	6/28/2013	18:00	ODB	**POWERGRID ER-1**	FOR ERECTION OF EQUIPMENTS OF 125 MVAR BUS REACTOR - I BAY EXTENSION WORK AT PATNA (NEW CONSTRUCTION.)	
19	400 KV MAIN BAY OF 315 MVA ICT - I AT BIHARSHARIFF	6/26/2013	10:00	6/27/2013	16:00	OCB	**POWERGRID ER-1**	FOR LEAKAGE CHECKING /EVACUATION OF SF6 AND DISMANTLING OF CONNECTING AL PIPE BUS BAR	BSEB
20	400kV Jeerat - Farakka Line	6/26/2013	6:00	6/27/2013	17:00	ODB	**POWERGRID ER-2**	Tan Delta violated CT replacement at Jeerat	WBSEB
21	66 KV Main Bus Gangtok	6/26/2013	9:00	6/26/2013	15:00	ODB	**POWERGRID ER-2**	AMP and to attend alert zone recorded in the thermo vision scanning of Switchyard elements	SIKKIM
22	400 kv Bus Reactor at Rourkela	6/26/2013	9:00	6/26/2013	14:00	ODB	**POWERGRID ER-2**	LA Replacement	
23	220 KV ARA - KHAGAUL - I	6/26/2013	9:00	6/26/2013	14:00	ODB	**POWERGRID ER-1**	FOR RELAY RETROFITTING WORK AT KHAGAUL END	BSEB
24	220 KV ARA - KHAGAUL - II	6/27/2013	9:00	6/27/2013	14:00	ODB	**POWERGRID ER-1**	FOR RELAY RETROFITTING WORK AT KHAGAUL END	BSEB
25	400 KV SSRM - BSF - I	6/27/2013	8:00	6/28/2013	18:00	ODB	**POWERGRID ER-1**	FOR CONSTRUCTION WORK OF 400 KV SSRM - DALTANGANJ - II TG TOWER AND EQUIPMENT ERECTION WORKS	NLDC
26	125 MVAR BUS REACTOR AT RANCHI	6/27/2013	8:00	6/27/2013	19:00	ODB	**POWERGRID ER-1**	FOR JUMPERING WORK OF LINE EQUIPMENTS OF 400 KV RNC - RAGHUNATHPUR - III (NEW LINE) AT RNC END	
27	315 MVA ICT - I AT BSF	6/27/2013	10:00	6/27/2013	16:00	**ODB**	**POWERGRID ER-1**	FOR DISMANTLING AND ERECTION OF CB WITH THE HELP OF HYDRA CRANE	BSEB
28	220 KV Malbase-Birpara TL	6/27/2013	9:00	6/27/2013	17:00	ODB	**POWERGRID ER-2**	CVT replacement under ADDCAP	NLDC
29	132 kV Rangit-Kurseong	6/27/2013	7:30	6/28/2013	17:30	ODB	**POWERGRID ER-2**	Broken Insulator replacement damaged by Miscreants	WBSEB
30	400KV ROURKELA - SEL-1	6/27/2013	9:00	6/27/2013	17:00	ODB	**POWERGRID ER-2**	AMP	NLDC
31	125 MVAR Bus reactor-II & Bus reactor-III at Angul	6/27/2013	8:00	6/28/2013	16:00	ODB	**POWERGRID ER-2**	To Extend 10 " AL Bus-1 to reactor Bus-1 bay	
32	400 KV Rourkela-Jharsuguda -Raigarh - 1	6/27/2013	8:00	6/28/2013	17:00	OCB	**POWERGRID ER-2**	Isolator Checking for remote operation, Relay sheme checking	NLDC
33	400 KV BUS BAR - I AT RANCHI	6/28/2013	8:00	6/28/2013	19:00	ODB	**POWERGRID ER-1**	FOR JUMPERING WORK OF LINE EQUIPMENTS OF 400 KV RNC - RAGHUNATHPUR - III (NEW LINE) AT RNC END	
34	220 KV Chukha-Birpara-I	6/28/2013	9:00	6/28/2013	17:00	ODB	**POWERGRID ER-2**	CVT replacement under ADDCAP	NLDC
35	315 MVA ICT - III AT ARMBAG	6/28/2013	7:00	6/28/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
36	220KV Bianguri Birpara-II	6/29/2013	8:00	6/29/2013	18.00	ODB	**POWERGRID ER-2**	CVT replacement under ADDCAP	
37	400 KV BOLANGIR-ANGUL-MERAMUNDALLI	6/29/2013	8:00	6/30/2013	16:00	ODB	**POWERGRID ER-2**	Replacement of Wavetrap	NLDC
38	315 MVA ICT - I AT ARMBAG	6/29/2013	7:00	6/29/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
39	220kV Subashgram - Subashgram -I	6/30/2013	8:00	6/30/2013	14:00	ODB	**POWERGRID ER-2**	Hot spot rectification	WBSEB

40	220KV Bianguri Birpara-I	6/30/2013	8:00	6/30/2013	18.00	ODB	**POWERGRID ER-2**	PLCC related retrofiting work under NTAMC	
41	132 kV Rangit-Gangtok	6/30/2013	7:30	6/30/2013	17:30	ODB	**POWERGRID ER-2**	Broken Insulator replacement damaged by Miscreants	SIKKIM
42	400 KV RANCHI - MAITHON - I	7/1/2013	8:00	7/15/2013	18:00	ODB	**POWERGRID ER-1**	OPGW STRINGING UNDER ULDC PROJECT	
43	400 KV PATNA - BARH - III	7/1/2013	8:00	7/15/2013	18:00	ODB	**POWERGRID ER-1**	OPGW STRINGING UNDER ULDC PROJECT	NLDC
44	400KV Maithon-Mejia-#1	7/1/2013	9:00	7/1/2013	17:00	ODB	**POWERGRID ER-2**	Tighting of jumper and fixing of missing Nuts & Bolts	DVC
45	132 KV Birpara-Birpara-I	7/1/2013	9:00	7/1/2013	17:00	ODB	**POWERGRID ER-2**	Retrofittng of Numerical Relays	WBSEB
46	400 KV TALCHER - RENGALI - I	7/1/2013	9:00	7/3/2013	17:00	OCB	NTPC	RETROFITTING AND COMMISSIONING OF PLCC SYSTEM	
47	400KV Maithon-Mejia-#2	7/2/2013	9:00	7/2/2013	17:00	ODB	**POWERGRID ER-2**	Tighting of jumper and fixing of missing Nuts & Bolts	DVC
48	220KV Siliguri-Dalkhola-II	7/2/2013	8:00	7/2/2013	19.00	ODB	**POWERGRID ER-2**	CT Replacement	
49	125MVAr Bus reactor-II at New Siliguri	7/2/2013	8:00	7/2/2013	18.00	ODB	**POWERGRID ER-2**	for balance retrofitting work	
50	132 KV Birpara - Birpara-II	7/2/2013	9:00	7/2/2013	17:00	ODB	**POWERGRID ER-2**	Retrofittng of Numerical Relays	WBSEB
51	132 kV Siliguri-Melli	7/2/2013	7:30	7/2/2013	17:30	ODB	**POWERGRID ER-2**	Broken Insulator replacement damaged by Miscreants	SIKKIM
52	220KV Siliguri-Dalkhola-I	7/3/2013	8:00	7/3/2013	19.00	ODB	**POWERGRID ER-2**	CT Replacement	
53	400 KV BOLANGIR-ANGUL-MERAMUNDALLI	7/4/2013	8:00	7/5/2013	16:00	ODB	**POWERGRID ER-2**	Extension of 10" AL Bus-2 to Talcher- Meramundalli LILO	NLDC
54	400 KV ARAMBAG - DURGAPUR	7/3/2013	7:00	7/3/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
55	765KV GAYA-FATEHPUR	7/4/2013	9:00	7/4/2013	17:00	ODB	**POWERGRID ER-1**	FOR BALANCE ERECTION & INTERCONNECTION WORK OF AUX BUS ISOLATOR IN 710R LINE REACTOR BAY	NLDC
56	220KV Siliguri-New siliguri-I	7/4/2013	8:00	7/4/2013	19.00	ODB	**POWERGRID ER-2**	CT Replacement	
57	400 KV TALCHER - RENGALI - II	7/6/2013	9:00	7/8/2013	17:00	OCB	NTPC	RETROFITTING AND COMMISSIONING OF PLCC SYSTEM	
58	220KV Siliguri-New siliguri-II	7/6/2013	8:00	7/6/2013	19.00	ODB	**POWERGRID ER-2**	CT Replacement	
59	125 MVAR BUS REACTOR-I, II at Angul	7/6/2013	8:00	7/7/2013	16:00	ODB	**POWERGRID ER-2**	Construction of Road & Drain	
60	315 MVA ICT - I AT JERAT	7/6/2013	7:00	7/6/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
61	220KV ROURKELA - TARKERA-I	7/7/2013	9:00	7/7/2013	17:00	ODB	**POWERGRID ER-2**	AMP	OPTCL
62	400 kV Indravati-UIHEP	7/7/2013	9:00	7/7/2013	17:00	ODB	**POWERGRID ER-2**	Numerical relay retrofitting	
63	400KV Maithon-Mejia-#3	7/8/2013	9:00	7/8/2013	17:00	ODB	**POWERGRID ER-2**	Broken Insulator replacement damaged by Miscreants	DVC
64	220KV ROURKELA - TARKERA-II	7/8/2013	9:00	7/8/2013	17:00	ODB	**POWERGRID ER-2**	AMP	OPTCL
65	400 KV BUS TIE BREAKER AT JERAT	7/8/2013	7:00	7/9/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
66	400 kV Indravati-Rengali	7/9/2013	9:00	7/9/2013	17:00	ODB	**POWERGRID ER-2**	Numerical relay retrofitting	
67	400kv Kahlgaon - Banka -1	7/9/2013	9:00	7/9/2013	17:30	ODB	NTPC	PM & Relay Testing	NLDC
68	132 kV Siliguri-Kurseong	7/10/2013	8:00	7/10/2013	14.00	ODB	**POWERGRID ER-2**	AMP	WBSEB
69	400 KV TALCHER - ROURKELA - I	7/10/2013	9:00	7/11/2013	17:00	ODB	NTPC	RETROFITTING AND COMMISSIONING OF PLCC SYSTEM	NLDC
70	315 MVA ICT - II AT JERAT	7/10/2013	7:00	7/10/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
71	400 SSRM - BSF - III	7/11/2013	8:00	7/11/2013	18:00	ODB	**POWERGRID ER-1**	FOR BAY CONSTRUCTION WORK OF 400 KV SSRM - DALTANGANJ - I AT SSRM END	NLDC
72	400 KV BSF - GAYA	7/12/2013	10:00	7/12/2013	16:00	**ODB**	**POWERGRID ER-1**	CONNECTOR MODIFICATION OF WAVE TRAP (FROM TWIN MOOSE TO QUAD MOOSE)	
73	132 kV Siliguri-Melli	7/12/2013	8:00	7/12/2013	14.00	ODB	**POWERGRID ER-2**	AMP	SIKKIM
74	400 KV B/R AT ARAMBAG	7/12/2013	7:00	7/12/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
75	400 KV SSRM - BALIA	7/13/2013	8:00	7/13/2013	18:00	ODB	**POWERGRID ER-1**	FOR BAY CONSTRUCTION WORK OF 400 KV SSRM - DALTANGANJ - I AT SSRM END	NLDC
76	400 KV MAIN BUS - I AT BKTPP	7/13/2013	7:00	7/13/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
77	132 KV Main Bus at Birpara	7/14/2013	9:00	7/14/2013	17:00	ODB	**POWERGRID ER-2**	Balance work of ERSS-IV Pkg	**WBSEB AND ICT-I&II shall be out of service**
78	315 MVA ICT - III AT JERAT	7/14/2013	7:00	7/14/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
79	132 kV Malda - MaldaL-I	7/15/2013	9:00	7/15/2013	17:00	ODB	**POWERGRID ER-2**	AMP of by equipments	WBSEB
80	400 KV TALCHER -ROURKELA - II	7/15/2013	9:00	7/16/2013	17:00	ODB	NTPC	RETROFITTING AND COMMISSIONING OF PLCC SYSTEM	NLDC
81	400 KV SUBHASGRAM - JERAT	7/15/2013	9:00	7/30/2013	17:00	ODB	**POWERGRID ER-2**	OPGW STRINGING UNDER ULDC PROJECT	WBSEB
82	400 KV TALCHER -MERAMUNDALI & GMR - MERAMUNDALI	7/17/2013	9:00	7/23/2013	17:00	ODB	**POWERGRID ER-2**	FOR ERECTION OF TWO NO OF TOWERS FOR LILO OF 400 KV TALCHER - MERAMUNDALI AT ANUGUL	NLDC
83	100 MVA ICT-1 at Siliguri	7/16/2013	8:00	7/16/2013	19.00	ODB	**POWERGRID ER-2**	CT Replacement	WBSEB
84	400 KV TALCHER - ROURKELA - I	7/10/2013	9:00	7/10/2013	14:00	ODB	**POWERGRID ER-2**	AMP	NLDC
85	200KV Rengali- Rengali -I	7/16/2013	8:00	7/16/2013	17:00	ODB	**POWERGRID ER-2**	For Replacement of CTs	
86	400kv Kahalgaon - Maithon -2	7/16/2013	9:00	7/16/2013	17:30	ODB	NTPC	PM & Relay Testing	
87	132 kV Malda - WBSETCL-II	7/17/2013	9:00	7/17/2013	17:00	ODB	**POWERGRID ER-2**	AMP of by equipments	WBSEB
88	400 KV ARAMBAG - KTPP	7/17/2013	7:00	7/17/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
89	315 MVA ICT-2 at UIHEP	7/18/2013	9:00	7/20/2013	17:00	OCB	**POWERGRID ER-2**	For taking repaired 1-ph ICT into service	OPTCL
90	200KV Rengali- Rengali -I	7/18/2013	8:00	7/18/2013	17:00	ODB	**POWERGRID ER-2**	For Replacement of CTs	
91	400 kV Malda-Purnea-II	7/19/2013	9:00	7/19/2013	17:00	ODB	**POWERGRID ER-2**	Relay retrofitting	NLDC
92	400 KV MAIN BUS - II AT BKTPP	7/20/2013	7:00	7/20/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
93	315 MVA ICT - IV AT JERAT	7/21/2013	7:00	7/21/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
94	132kv Kahalgaon - kahalgaon	7/23/2013	9:00	7/23/2013	17:30	ODB	NTPC	PM & Relay Testing	
95	315 MVA IBT - II AT KTPP	7/23/2013	5:30	7/25/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
96	400 KV ARAMBAG - PPSP - I	7/26/2013	5:30	7/26/2013	16:00	ODB	WBSETCL	MAINTENANCE WORK	
97	400 KV FARAKKA - MALDA - I	7/30/2013	9:30	7/30/2013	16:30	ODB	NTPC	PM & Relay Testing	NLDC

Annexure -XIII

POWER GRID CORPORATION OF INDIA Ltd. पावरग्रिड

EASTERN REGION TRANSMISSION SYSTEM - II

AGENDA POINT FOR 86th OCC MEETING OF ERPC - Dt. 21.06.2013

1.0 Procurement of Emergency Restoration System (ERS Towers) for Eastern Region constituents :

The EHV transmission lines are prone to natural calamities like storms, cyclone, flood, landslides etc. Hence failure of transmission line towers due to natural calamities and also due to sabotage cannot be ruled out. The normal restoration of damaged towers can take months together depending upon the severity of damage. Since in the vast power system network, there may be wide spread effect of failure of any transmission line, it is of utmost importance to restore the same in the minimum possible time to maintain system reliability, security and the power supply to the consumers. As a strategy to disaster management, one of the State-of-Art technique being adopted worldwide is to deploy emergency restoration system for restoration of collapsed towers. This technique is also used to bypass critical/damaged towers/foundations.

Its application is effective and economically viable especially for power systems where redundancies of transmission system are lacking. The ERS structure requires no special foundation and can be used for any voltage level. ERS towers can be used in any kind of terrain i.e. plain, hilly, marshy, sandy/river bed etc. due to ease in transportation.

POWERGRID, ER is having 02 sets of ERS for disaster management which is quite old. POWERGRID had been deploying the ERS not only for restoration of their own transmission lines but also for other Electricity Boards and Power Utilities. Particularly during super cyclone in Orissa POWERGRID had deployed their ERS for quick restoration of damaged transmission lines, which were widely appreciated by all.

Hence it seems prudent to have four sets of ERS, one each for Bihar, Jharkhand, Orissa and West Bengal for utilizing in the state network. (One set of ERS contains 12 towers)

The cost of above 04 Sets of ERS would be around approximately Rs 32 crores.

The modality of procurement and strategic Location for storage of the ERS may please be discussed and finalized before taking up the matter for procurement by POWERGRID.

Kind attention of Constituent members are invited towards concurrence of the subject proposal.

2.0 Procurement of Circuit Breaker, Current Transformer, Capacitive Voltage Transformer and Lightening Arrestor for Eastern Region as O&M spare – Cost sharing by beneficiary constituents :

The EHV class equipment is meant for expected life span of about 25 years, it has been felt on the basis of operating experience, some of the equipment's are failing prematurely and resulting in losses to the power utility. As per our earlier experience, in case of failure of Circuit Breaker the time consumed in repair/supply of new CB takes minimum one year time which severely affects the downstream power supply.

Failure of ageing EHV equipments can not be ruled out due to system surges, delayed fault on secondary side etc. Under the circumstances, it is apprehended that , in case of

failure of EHV Equipment's, concerned utility may have to bear with the delay up to one and half years and may have to resort to contingency load management. The situation shall continue to grow more demanding. Sensing this, it was felt that we should be prepared to handle such contingency by keeping provision for minimum redundancy. This is also an essential measure towards disaster management plan. Maintaining a standby/spare unit for a certain population of EHV Equipments shall be highly beneficial for the system to tide over the long unavailability during repair at shop floor.

In view of the above it is proposed to procure Circuit Breaker, Current Transformer, Capacitive Voltage Transformer and Lightening Arrestor for Eastern Region as O&M spare and to be kept in strategic location as decided by ER Constituent so that in case of any failure fast restoration is ensured. . It is proposed that ERPC constituents may kindly agree for procurement of following spares and capitalization of its expenditure.

1. Circuit Breaker – 20 Sets (10 sets each for 400KV and 220KV)
1. Current Transformer – 20 Sets (10 sets each for 400KV and 220KV)
2. Capacitive Voltage Transformer – 20 Sets (10 sets each for 400KV and 220KV)
3. Lightening Arrestor of different rating – 50 Sets (25 sets each for 400KV and 220KV)

With above considerations, it is proposed to procure above EHV Equipments as O&M spare at an estimated cost of Rs. 9 Crore.

3.0 Frequent tripping of 220KV D/C Birpara – CHPC and 220KV S/C Birpara – Malbase line on Transient Earth Fault during monsoon.

In view of frequent tripping of 220KV D/C Birpara – CHPC and 220KV S/C Birpara – Malbase , POWERGRID had already carried out the following measures in Indian jurisdiction to avoid tripping :

i. PID scanning of Insulators and replacement of defective insulators based on PID

ii. Providing additional earthing

iii. Thoermovision scanning of jumpers of all tension type towers and its rectification.

However, considering no of tripping reported in Bhutan Jurisdiction, CHPC may please also carry out the above measures to avoid tripping of the said line to ensure smooth evacuation of CHPC power.