

Eastern Regional Power Committee

MINUTES OF 67TH OCC MEETING HELD ON 17.10.11 AT ERPC, KOLKATA

Sh. A. K. Bandyopadhyaya, Member Secretary I/c, ERPC welcomed all the participants of 67th OCC meeting. He informed that Sh. P. Pentayya, General Manager, ERLDC would shortly proceed to WRLDC on transfer and this would be his last OCC meeting. He requested Sh. Pentayya to Chair the meeting.

Sh. P. Pentayya, GM, ERLDC chaired the meeting. List of participants is at Annexure-A.

Sh. Pentayya conveyed his welcome to the participants. He recollected various memorable achievements of Eastern Grid during his tenure. He cited recent successful reactive capability testing of Eastern Regional generators and black start exercise of Maithon HEP on 14.10.11. He requested Sh. A. K. Bandyopadhyaya, Member Secretary I/c, ERPC to take up the proceedings.

Agenda items were taken up one by one by Sh. Bandyopadhyaya.

ITEM NO. A.1: CONFIRMATION OF MINUTES OF 66th OCC MEETING OF ERPC HELD ON 16.09.11

The minutes were circulated vide letter dated 27.09.11 to all the constituents and also uploaded in ERPC website. Since then no comment was received.

Members may confirm the minutes.

Deliberation in the meeting

Representative of Tala HEP raised observations on the agenda notes given under item no. "E7: Information dissemination from Chukha and Tala hep during grid disturbances" of the 66th OCC. He informed that

"On the day of disturbance, i.e. on 14.09.11, the communication channel at Bhutan end was under breakdown. Only Tala Unit-VI was black started and synchronized using the Tala-Malbase section of 400 kV Tala-Malbase-Binaguri feeder-III after confirming the section is healthy with prior intimation to ERLDC through 400/220 kV Binaguri substation.

The tripping of 400/220 kV, 1 x315 MVA ICT could not be attributed to sudden injection of power from Tala units, as only one unit at Tala was synchronized, and keeping in view that 400 kV feeders were not in service and also the capacity of the 400/220 kV, 200 MVA ICT in Malbase, the load on the unit was restricted. The post-tripping consultation and discussion with ERLDC revealed that the tripping of 220 kV Birpara-Binaguri D/C feeders had diverted the evacuation of entire Tala & Chukha power to 220 kV Birpara-Salakati D/C line resulting in the overloading of the 315 MVA ICT in Bongaingaon, thus tripping 220 kV feeders and Chukha units.

The switching operations at Tala/Chukha HEP are never done without prior intimation of ERLDC. Tala/Chukha HEP acknowledged the difficulty in communicating with ERLDC and sharing of real time information in absence of dedicated voice communication. There is a necessity for improvement in co-ordination between Tala/Chukha and ERLDC in sharing of real time information and any other relevant information.”

In the light of above explanation, members agreed to drop the first paragraph of the above agenda notes.

ER-I, Powergrid vide its letter dated 17.10.11 had pointed out some topographical error in Item no. E4 (iii, iv) and corrected version is given below

- iii. 400 KV FSTPP-KhSTPP-IV first time charged on 31.08.11 at 15:38 hrs*
- iv. 400 KV FSTPP-KhSTPP-III first time charged on 31.08.11 at 15:52 hrs*

Members confirmed the minutes along with above modifications.

PART B :: NEW ISSUES

ITEM NO. B 1: PROLONGED SHUTDOWN OF 400 KV MAITHON -JAMSHEDPUR S/S LINE --- ERLDC

Shut down of 400 KV Maithon-Jamshedpur S/C was allowed from 18/06/11 to 10.08.11 for erection of multi-circuit tower in Dalma hill region. Subsequently the said shut down initially extended up to 30.09.11. However, the line is yet to be restored.

Due to above shutdown, total transfer capability between WR and ER is severely restricted and economy has to be compromised as cheaper power cannot be dispatched. Also, number of other important shut down had to be deferred due to the above said shut down.

Powergrid may share the constraints and submit concrete restoration target.

Deliberation in the meeting

Powergrid shared the topographical constraints and informed that a special team had been formed to complete the work. Powergrid assured the house to bring back the line in service by 31st October 2011.

ITEM NO. B 2: REVIEW OF POWER SUPPLY POSITION DURING PUJA DAYS

ERLDC may please make share the power supply position along with constraints during puja days.

Deliberation in the meeting

ERLDC made a presentation on the subject and thanked every one for extending their help in getting through the puja days without any major disturbances. It was also noted that West Bengal was able to meet the puja

load without any major load shedding. West Bengal had met a peak demand of 6400 MW on the Panchami Day (1st October 2011).

ITEM NO. B 3: ISSUES FROM LAST OCC MEETING

B 3.1: SPLITTING OF 400KV KAHALGAON STPS BUS BY NTPC

Subsequently, the issue was discussed in the last TCC meeting, where in NTPC informed that bus splitting is possible at Kahalgaon STPS and approximate cost involvement would be around Rs. 60-70 crores.

NTPC may share the recommendations of the team that visited Kahalgaon.

Deliberation in the meeting

NTPC informed that their engineering team had suggested that bus splitting is possible at Kahalgaon with an approximate cost involvement of Rs. 60-70 crores. NTPC further added that in order to proceed further, cost approval from beneficiaries would be required and if constituents agree, then they would put up the matter before CERC.

Superintending Engineer (Commercial), ERPC suggested that as beneficiaries of Kahalgaon STPS-I and STPS-II are from diverse regions, the matter should be discussed and vetted in the appropriate levels of other regions also. NTPC agreed.

The issue was referred to Commercial sub-Committee of ERPC for further deliberation.

C 3.2: MOCK BLACKSTART EXERCISES IN EASTERN REGION

- i. OPTCL/OHPC may share their programme for mock black start of Upper Kolab HEP.*
- ii. JSEB may inform the programme for Subarnarekha HEP*
- iii. DVC & OPTCL may submit the islanding schemes of various CPP in their system.*
- iv. All utilities may submit the quarterly report on Crisis Management Plan to ERLDC*
- v. Only Teesta HEP has submitted test run report for September 2011 of existing DG sets meant for black start. For others, DG sets are taken as healthy and the onus of healthiness would lie with the utilities.*

Deliberation in the meeting

- i. OPTCL informed that due to flow problem, Indravati HEP is only running during peak period. Therefore he requested to shift the programme of mock start in the month of November 2011. Members agreed.*

- ii. *It was agreed that JSEB would conduct the mock black start of Subarnarekha HEP within next 15 days and inform ERLDC/ERPC.*
- iii. *OPTCL and DVC agreed to collect & submit the islanding schemes of various CPPs in their systems by next OCC.*
- iv. *Utilities, who have not yet submitted the quarterly report on Crisis Management Plan, were again reminded to furnish the same to ERLDC on urgent basis.*

B 3.3: HIGH VOLTAGE PROBLEM AT 400/220 KV BIHARSHARIFF S/S OF PGCIL

- a. *BSEB may confirm whether high voltage still persists in Biharshariff s/s.*
- b. *BSEB may share the status on closing the 220 kV loop with synchronization of Biharshariff-Bodhgaya and Bodhgaya-Dehri ckt through bus-coupler arrangement.*
- c. *BSEB may also share the development on procurement of synchronization facility at their substations.*

Deliberation in the meeting

- i. *BSEB confirmed that high voltage problems are not persisting in Biharshariff s/s.*
- ii. *BSEB expressed its intent to get 220 kV Biharshariff-Bodhgaya-Dehri-Pusauli synchronously connected very soon. It was also agreed that Member Secretary I/c, ERPC would discuss the matter with CE (Transmission), BSEB for early resolution.*
- iii. *BSEB shared that they were pursuing the procurement of synchronizing facility at various BSEB substations.*
- iv. *ERLDC flagged the non availability of synchronization facilities at other Eastern Regional substations. ERLDC was requested to identify these substations/generating stations and place before the next OCC.*

B 3.4: NON- AVAILABILITY OF SCADA DATA FROM CRITICAL SUB-STATIONS

a) Powergrid substations:

Powergrid may confirm the status in respect of Purnea, Maithon, Patna and Subhashgram substations.

Deliberation in the meeting

Powergrid informed the following status:

- i. *Purnea: Data & voice problems would be solved by next OCC.*

- ii. *Maithon: Once the Maithon-Jamshedpur line is brought into service, data /communication would be restored.*
- iii. *Patna: There is some SAS problem and would be resolved by next OCC.*
- iv. *Subhasgram: There is some PLCC link problem and would be sorted out within next 7 days.*

Regarding all above stations, OCC reiterated that if data is not made available to ERLDC, line shutdown associated with the above substations would not be allowed.

b) New IPPs:

<i>IPP</i>	<i>Status in last OCC</i>	<i>Decision of last OCC</i>
<i>Sterlite Energy</i>	Partial Data which is available to ERLDC is highly instable. No voice facility is available. Regarding commissioning of SAS, SEL informed that they are coordinating with vendors, but no time frame has been furnished by SEL.	SCADA data should be made available to ERLDC by 15 th of November 2011, otherwise ERLDC will be compelled to curtail/stop their injection to the grid to operate the grid in a safe way
<i>MPL</i>	No SCADA data is available. No voice facility is available. MPL informed that they are coordinating with vendors, but no time frame has been furnished by MPL.	
<i>Mejia</i>	Partial data available through SLDC ,DVC. However, data is instable. No voice facility is available .Regarding availability of full data to ERLDC no time frame has been provided.	
<i>DSTPS</i>	Partial data available through SLDC ,DVC. Data is instable. No voice facility is available .Regarding availability of full data to ERLDC no time frame has been provided	
<i>Barh STPS</i>	NTPC informed that the work on NTPC's side is over and balanced portion of PGCIL's work need to be completed.	

Concerned utilities may update the status.

Deliberation in the meeting

- *Sterlite Energy: SEL informed that order has been placed for SAS and would require 2 months for resolving the problem.*
- *MPL: Order for SAS is in the process.*
- *Mejia & DSTPS: DVC informed that voice facility exists. Hope to sort out the data problem by next OCC.*
- *Barh STPS: It was understood that the matter was held up due to non signing of connection agreement by Barh STPS with CTU. NTPC was requested to do the needful at the earliest.*

OCC reiterated its decision that Sterlite Energy, MPL, Mejia and DSTPS, should made SCADA data available to ERLDC by 15th of November 2011, otherwise ERLDC will be compelled to curtail/stop their injection to the grid to operate the grid in a safe way.

c) Apart from SCADA data availability from above substation/generation station, ERLDC has expressed the need for SCADA data availability from following substation/generating stations for better grid management:-

- *Teesta NHPC, Kalabadia(Baripada), Muzaffarpur(Highly Intermittent), Indrāvati(PG)*
- *PPSP Generation, Bidhan Nagar 400kV , Koderma TPS.*

Utilities may submit the latest status.

Deliberation in the meeting

- *Teesta HEP: There is some noise problem at ABB panel. It was agreed that NHPC will tap the services of ABB engineers coming to Farakka for attending Powergrid work and sort out the issue shortly.*
 - *Baripada : There is requirement of more LMU to be replaced. Powergrid agreed to complete the work within 7 days*
 - *Muzzafarpur: Powergrid claimed that data is stable.*
 - *Indravati: OPTCL informed that engineer would shortly visit the site and assured to rectify the problem by next OCC.*
 - *PPSP generation: WBSEDCL assured to rectify the problem by next OCC.*
 - *Bidhanagar: There are some RTU problems and would be sorted out by next OCC.*
 - *Koderma: There are labour related problems. DVC assured to sort out the problem within 7 days*
- c) The Enquiry Committee to analyse grid disturbance in CESC system on 1st July 2010 had recommended real time data telemetry to SLDC, WBSETC

and ERLDC. However, real time data from CESC generators i.e. Budge Budge, Titagarh, Southern, New Cossipore and Substations i.e. Kasba-132 kV, EM 220 kV, EM-132 kV, J adavpur, Chakmir, Majerhat and CESC Belur, are yet to provided at SLDC ,WBSETCL and ERLDC .

CESC may comment.

Deliberation in the meeting

CESC informed that they were sending real time data to ERLDC. ERLDC explained that whatever data CESC is sending to ERLDC & SLDC, WBSETCL are only piece-meal data and not real time. CESC agreed to enquire the matter and get back to ERLDC within 15 days.

B 3.5: STATUS OF GAS TURBINE UNITS IN EASTERN REGION

DVC and WBSEDCL may confirm whether they have communicated with CEA for decommissioning of their GT units.

Deliberation in the meeting

It was noted that WBSEDCL had already initiated the process, while DVC had formed a Committee in this regard.

B 3.6: REACTIVE CAPABILITY TESTING OF GENERATORS IN EASTERN REGION

In last OCC, it was agreed that Kahalgaon STPS, one station from DVC side (preferably Mejia) and one station from NHPC side would be taken up for reactive capability testing in the month of October 2011.

- *Kahalgaon STPS, DVC and NHPC may submit the programme.*
- *Talcher STPS (NTPC), Farakka STPS (NTPC) and Bakreswar TPS (WBPDC) may kindly share their experiences on reactive capability testing conducted during September 2011.*

Deliberation in the meeting

- *After deliberation, following schedule for reactive capability testing was agreed:*

*Kahalgaon STPS--- before next OCC
Teesta HEP--- November 2011
Mejia TPS U#7--- December 2011*

- *It was also noted that Farakka STPS and Talcher STPS, had already submitted the report on reactive capability testing, while Bakreswar TPS would shortly submit the report. These stations were requested to share their experiences so that others could learn from their experiences.*

B 3.7: PLCC PROBLEM IN 400 KV FARAKKA-JEERAT LINE

One channel is permanently out and the other was attended & rectified by ABB. In the last OCC, NTPC was requested to take a lead on restoring the other channel.

NTPC may share the status on the restoration of the other channel.

Deliberation in the meeting

It was noted that the other working channel had also got out. Members expressed their concern over non-availability of both the channels in such an important link.

NTPC informed that the work was being entrusted to Powergrid. Powergrid informed that M/s ABB had been contacted and their engineer would shortly visit Farakka. Powergrid assured to restore the channel within 7 days.

Powergrid also informed that replacement of PLCC channels was also being coordinated with NTPC.

B 3.8: FEEDBACK ON SHUTDOWN APPROVED FOR THE MONTH OF SEPTEMBER' 11

Approved S/D during the month of September 2011 is placed for discussion.

Concerned utilities may check the annexure and submit exception report, if any.

Deliberation in the meeting

Updated feedback is given at Annexure-I.

PART C:: OPERATIONAL PLANNING

ITEM NO. C 1: ANTICIPATED POWER SUPPLY POSITION

A) FOR THE MONTH OF NOVEMBER' 11

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of November'11 were prepared by ERPC Secretariat on the basis of finalized LGBR for 2011-12, keeping in view that the units are available for generation and expected load growth etc. The details are placed for discussion.

Members may confirm.

Deliberation in the meeting

Members deliberated. Modified anticipated power supply position for the month of November 2011 after incorporating constituents' observation is given at Annexure-III.

ITEM NO. C 2: PROLONGED OUTAGE OF POWER SYSTEM ELEMENTS IN ER

Concerned utilities may share the latest status on outage of above elements:

Name	Date of Outage	Reason	Restoration Status	
			Original	Latest
Farakka Unit#4	08/08/11	Planned Maintenance	Planned for 07.08.11 to 20.09.11	Likely to be restored on 20.10.11
220 KV BKTPP-Gokarno-D/C	21/05/11	Tower collapse(loc no-262)	Ckt-II restored on 25/05/11 using part of one ckt of 220 KV Sagardighi-Gokorno D/C. Permanent restoration is expected by Septemeber'11	Restored on 30.09.11
400 kV Maithon-Jamshedpur	10/05/11	Erection of multi circuit tower	Original Planned maintenance upto 10.08.11	Likely to be restored by 31.10.11
220 KV Arrah-Khagaul D/C	21/05/11	Tower collapse(loc no-151)	Ckt-II restored on 26/05/11 using part of 220 KV Fatuah-Khagaul ckt. Permanent restoration expected by September 2011	Permanent restoration is expected by 10.11.11
50MVAR Line Reactor of 400KV KhSTPP-Maithon- II at Maithon	Aug-09	Fire Hazard	Was expected by June 2011	Likely to be restored by 1 st week of Nov'11
400 kV SF ₆ breaker i.r.o bus reactor at Jeerat 400 kV substation	22/04/11	---	400 kV bus tie breaker is now engaged on bus reactor.	Restored on 17 th September 2011
132 kV CT i.r.o. 132 kV NBU (WBSETCL)-Siliguri (PG)#1 at Siliguri end	10/12/10	----	Powergrid informed that action for procurement of CT would be taken. Would take 6 months.	Likely to be restored by Jan'12

Utilities may update the status.

Deliberation in the meeting

Updated restoration status is given in above table.

ITEM NO. C 3: SHUTDOWN PROPOSAL OF TRANSMISSION LINES AND GENERATING UNITS FOR THE MONTH OF NOVEMBER'11.

Shutdown proposals of the generating stations for the month of November'11 as agreed during preparation of LGBR for the year 2011-12 are placed for discussion. Shutdown proposals of transmission elements as received are also placed for discussion. Deviations, if required, may please be intimated along with reasons.

Members may finalize the programme.

Deliberation in the meeting

Approved programme of generating stations and transmission elements during the month of November 2011 is at Annexure-III.

PART D:: OTHER ISSUES

ITEM NO. D 1 : FOLLOW UP ACTION OF LAST OCC MEETING

Status in respect of various decisions of last OCC is given at Annexure-A.

Members may kindly note.

Deliberation in the meeting

Members noted.

ITEM NO. D 2: RESTRICTED GOVERNOR MODE OF OPERATION -ERLDC

Hon'ble CERC issued an order on the subject on 04.10.11 (copy at Annexure-IV), which is self-explanatory. Action in this regard may please be taken on priority basis and same may be communicated.

Concerned generating companies are requested to comply with the order.

Deliberation in the meeting

ERLDC informed that the CERC had issued suo moto order on 04.10.11 asking the various generating stations for furnishing the reasons for not switching to RGMO.

Defaulting generating stations were requested to comply with the above order.

ITEM NO. D 3: NON-COMPLIANCE OF DIRECTIONS ISSUED BY SLDC -- ERLDC

ERLDC has not received any comments from any of the ER constituents for the month of September '11.

Members may note.

Deliberation in the meeting

Members noted.

ITEM NO. D 4: UFR OPERATION DURING THE MONTH OF SEPTEMBER'11

As system frequency remained above 48.5 Hz, no UFR operation took place in ER grid during the month.

Members may note.

Deliberation in the meeting

Members noted.

ITEM NO. D 5: IMPORTANT EVENTS DURING THE MONTH OF SEPTEMBER'11

- i. Commercial operation of Santaldih unit#6 TPS (250 MW) of WBPDC started from 30.09.11

Members may note.

Deliberation in the meeting

Members noted

ITEM NO. D 6: REVIEW OF GRID PERFORMANCE DURING THE MONTH OF SEPTEMBER 2011

ERLDC may kindly present the salient features of grid along with grid disturbances (list of grid disturbances are at Annexure-V).

Deliberation in the meeting

ERLDC presented the grid performance (Annexure-V(a)). Members also discussed various grid disturbances.

ITEM NO. D 7: NOMINATION FOR SCADA TRAINING—ERLDC

Seven Batches of EMS -SCADA Training module was approved in 15th Board meeting from PSDF fund. Already two batches of training have been completed. For conducting the other batches, we are not getting proper nomination from constituents.

Nominations are requested from constituents for following trainings to be conducted by M/s Areva T & D:

- o EMS Application (10 days) 14/11/11 - 25/11/11(two from each const.)
- o Dispatcher Training (03 days) 12/12/11 - 14/12/11(two from each const.)

Deliberation in the meeting

All state utilities were requested to send their nominations by end of October 2011.

ITEM NO. D 8: FURNISHING OF DETAILS OF GRID CONNECTED RENEWABLES—ERLDC

All members are required to submit details of grid connected renewable as per following RRF format:

FORMAT I:

**Generation Schedule/ Actual given by Wind Farms/ Solar Generating Plants
Name of SLDC/ Control center**

Revision No:

Date:

Time Block	Name of Gen. Plant 1		Name of Gen. Plant 2		Name of Gen. Plant 3	
	Schedule*	Actual	Schedule*	Actual	Schedule*	Actual
1						

2						
..						
..						
95						
96						

* Schedule to be declared on day ahead basis

FORMAT II:

Deviations (Actual-Schedule) of Generation in different blocks as percentage of schedule given by Wind Farms/Solar Generating Plants								
Name of SLDC/Control center					Date:			
Time Block	Name of Gen. Plant 1				Name of Gen. Plant 2			
	below 30 % block	+/- 30% block	+30 % to 50 % block	above 50 % block	below 30 % block	+/- 30% block	+30 % to 50 % block	above 50 % block
1								
2								
..								
..								
95								
96								

Deliberation in the meeting

All concerned utilities were requested to submit the information as per desired format.

The meeting ended with thanks to the Chair.

ANNEXURE- I

Feedback on Maintenance Of Transmission Lines and Generating Units for September '11

(A) GENERATING UNITS :

Agency	Station	Unit no.	Capacity (MW)	Approved Programme in LGBR	Reason of S/d	Actual
NTPC	Kahalgaon	6	500	01.09.11 to 05.10.11	Boiler OH	01.09.11-03.10.11

(B) TRANSMISSION ELEMENTS:

Organization	Name of the Element	From		To		Remarks
		Date	Time hrs	Date	Time hrs	
Kahalgaon, NTPC						
400 kV	Kahalgaon-Biharshariff line-1	14.09.11	OCB	15.09.11	OCB	14.09.11-15.09.11
400 kV	Kahalgaon- Biharshariff line-2	21.09.11	OCB	22.09.11	OCB	21.09.11 (ODB)
132 kV	Kahalgaon-Lalmatia line	28.09.11		28.09.11		28.09.11

CB: On Continuous basis, ODB: On Daily Basis

REVISED ANTICIPATED POWER SUPPLY POSITION FOR THE MONTH OF NOV-11

SL.NO	PARTICULARS	PEAK DEMAND MW	ENERGY MU
1	BIHAR		
	i) NET MAX DEMAND	1940	1115
	ii) NET POWER AVAILABILITY- Own Source	139	51
	- Central Sector	1362	878
	iii) SURPLUS(+)/DEFICIT(-)	-439	-187
2	JHARKHAND		
	i) NET MAX DEMAND	1060	610
	ii) NET POWER AVAILABILITY- Own Source	560	240
	- Central Sector	421	249
	iii) SURPLUS(+)/DEFICIT(-)	-79	-121
3	DVC		
	i) NET MAX DEMAND (OWN)	2200	1274
	ii) NET POWER AVAILABILITY- Own Source	2450	1403
	- Central Sector	100	58
	Long term Bi-lateral	350	252
	iii) SURPLUS(+)/DEFICIT(-)	0	-64
4	ORISSA		
	i) NET MAX DEMAND	3615	2120
	ii) NET POWER AVAILABILITY- Own Source	2510	1167
	- Central Sector	981	631
	iii) SURPLUS(+)/DEFICIT(-)	-124	-322
5	WEST BENGAL		
5.1	WBSEDCL		
	i) NET MAX DEMAND (OWN)	4250	2018
	ii) CESC's DRAWAL	600	80
	iii) TOTAL WBSEDCL's DEMAND	4850	2059
	iv) NET POWER AVAILABILITY- Own Source	3278	1753
	- Import from DPL	-31	-37
	- Central Sector	904	567
	v) SURPLUS(+)/DEFICIT(-)	-699	225
5.2	DPL		
	i) NET MAX DEMAND	260	198
	ii) NET POWER AVAILABILITY	229	161
	iii) SURPLUS(+)/DEFICIT(-)	-31	-37
5.3	CESC		
	i) NET MAX DEMAND	1640	740
	ii) NET POWER AVAILABILITY - OWN SOURCE	1040	670
	FROM WBSEDCL	600	80
	iii) TOTAL AVAILABILITY	1640	750
	iv) SURPLUS(+)/DEFICIT(-)	0	10
6	WEST BENGAL (WBSEDCL+DPL+CESC) (excluding DVC's supply to WBSEDCL's command area)		
	i) NET MAX DEMAND	6750	2956
	ii) NET POWER AVAILABILITY- Own Source	4547	2585
	- Central Sector	904	567
	iii) SURPLUS(+)/DEFICIT(-)	-1299	196
7	SIKKIM		
	i) NET MAX DEMAND	105	46
	ii) NET POWER AVAILABILITY- Own Source	16	5
	- Central Sector	130	72
	iii) SURPLUS(+)/DEFICIT(-)	41	31
8	EASTERN REGION At 1.03 AS DIVERSITY FACTOR		
	i) NET MAX DEMAND	15213	8121
	Long term Bi-lateral	350	252
	ii) NET TOTAL POWER AVAILABILITY OF ER (INCLUDING C/S ALLOCATION)	14119	7905
	iii) PEAK SURPLUS(+)/DEFICIT(-) OF ER (ii)-(i)	-1444	-467

ANNEXURE- III**Final Programme of Maintenance Of Transmission Lines and Generating Units for November '11****(A) GENERATING UNITS :**

Agency	Station	Unit no.	Capacity (MW)	Approved Programme in LGBR	Reason of S/d	Agreed Programme
WBPDC	Santal Dih	5	250	01.11.11 to 20.11.11	Boiler license	Not proposed
WBPDC	Bakreswar	4	210	01.11.11 to 20.11.11	Boiler license	05.11.11 to 24.05.11
WBPDC	Sagardighi	2	300	20.11.11 to 10.12.11	Overhauling	Not proposed
WBPDC	Kolaghat	3	210	----	Annual OH	20.11.11 to 14.12.11
NTPC	Kahalgaon	2	210	01.11.11 to 25.11.11	Boiler OH	Not proposed
NTPC	Talcher **	2	500		Annual OH	05.11.11 to 09.12.11

Note:

** NTPC had requested for deferring the shutdown after March 2011. However, constituents objected to it and requested NTPC to avail shutdown during November -December period. NTPC agreed to it. Therefore, the shutdown is provisionally agreed w.e.f. 05.11.11 to 09.12.11 with a provision that NTPC could defer the shutdown by one month.

(B) TRANSMISSION ELEMENTS:

Organization	Name of the Element	From		To		Remarks
		Date	Time hrs	Date	Time hrs	
Farakka, NTPC						
	400 kV Farakka-Durgapur line#2	10.11.11	ODB	10.11.11	ODB	Relay testing
Kahalgaon, NTPC						
	400 kV Kahalgaon-Maithon line -2 *	11.11.11	OCB	12.11.11	OCB	Preventive maintenance and testing
	400 kV Kahalgaon- Biharshariff line-4	17.11.11	OCB	17.11.11	OCB	
	400 kV Kahalgaon-Barh line-1	24.11.11	OCB	24.11.11	OCB	
Talcher, NTPC						
	400 kV Bus-1	02.11.11	ODB	02.11.11	ODB	

400 kV Bus-2	09.11.11	ODB	09.11.11	ODB	Testing
400 kV Bus-3	16.11.11	ODB	16.11.11	ODB	
400 kV Bus-4	23.11.11	ODB	23.11.11	ODB	
400 kV Bus-5	30.11.11	ODB	30.11.11	ODB	
ER-I, PGCIL					
315 MVA ICT-I at Jamshepur	09.11.11	ODB	10.11.11	ODB	Bay construction work of Durgapur line
132 kV Purnea-Purnea-I	10.11.11	1000	10.11.11	1600	Annual Maintenance
132 kV Purnea-Purnea-II	11.11.11	1000	11.11.11	1600	Annual Maintenance
132 kV Purnea-Purnea-III	12.11.11	1000	12.11.11	1600	Annual Maintenance
132 kV Arah-Kisanganj	13.11.11	1000	13.11.11	1600	Annual Maintenance
ER-II, PGCIL					
315 MVA ICT-1 at Maithon	18.10.11	OCB 0800	19.10.11	OCB 1800	ISO alignment
315 MVA ICT-II at Maithon	08.11.11	OCB 0800	09.11.11	OCB 1800	Construction of Gaya tie bay
Bus-II at Maithon	10.11.11	ODB 0800	10.11.11	ODB 1800	ISO alignment
Bus-I, Maithon-Kahalgaon-II at Maithon	11.11.11	ODB 0800	11.11.11	ODB 1800	ISO alignment
400 kV Malda-Farakka -I line @	14.11.11	ODB 0900	14.11.11	ODB 1700	Annual Maintenance
400 kV Malda-Farakka -II line @	15.11.11	ODB 0900	15.11.11	ODB 1700	Annual Maintenance
50 MVA ICT-II at Malda	18.11.11	ODB 0900	19.11.11	ODB 1500	Annual Maintenance
50 MVA ICT-IV at Malda	22.11.11	ODB 0900	23.11.11	ODB 1500	Annual Maintenance
400 kV Jeypore-Meeramundali line with LT at Jeypore end	02.11.11	ODB 0900	02.11.11	ODB 1400	Arresting oil leakage
105 MVA ICT-II at Indravati of OHPC @@	--				

Note:

* Subject to grid condition

@ Subject to ERLDC clearance

@@ In principle cleared by OHPC. However, consent of OHPC and ERLDC need to be taken before availing actual s/d.

OCB: On Continuous basis, ODB: On Daily Basis

Annexure-A

Latest Status on decisions taken in 66th OCC meeting

Item	Decision/Discussion	Latest status
B	<i>NIT for conversion of 220 kV Tenughat substation to Powergrid is expected to be floated by Powergrid in October 2011</i>	Status remains same
B	<i>A meeting was scheduled to be held between WBSETCL & Powergrid to discuss various issues pertaining to lending of ICT by WBSETCL to Powergrid for early installation of ICT at Siliguri.</i>	No communication has been received regarding the meeting.
C1	<i>A separate meeting with Teesta Urja, Teesta-V (NHPC), ERLDC and ERPC Secretariat would be organized to finalize the SPS and other issue.</i>	The meeting would be convened shortly.
C3.2	<i>NTPC informed that the recommendations of the team is not yet ready and agreed to place the same in the next OCC</i>	The issue will be further discussed in the OCC
C3.3	<i>Mock black start exercise in ER</i>	The issue will be further discussed in the OCC
C3.4	<i>It was agreed that ERPC Secretariat would take up with BSEB's higher-ups for procurement of synchronization facility at BSEB substations.</i>	ERPC Secretariat has pursued the matter with Member (Tech), BSEB vide letter dated 29.09.11
C3.6	<i>WBSEDCL and DVC were requested to take necessary action for decommissioning of their GT units.</i>	The issue will be further discussed in the OCC

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Suo Motu Petition No. 191/2011

**Coram: Dr. Pramod Deo, Chairperson
Shri S.Jayaraman, Member
Shri V.S.Verma, Member
Shri M.Deena Dayalan, Member**

Date of Order: 4.10.2011

In the matter of:

Compliance with the Regulation 5.2.(f) of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 regarding restricted governor mode of operation by the generating stations.

And In the matter of:

- 1 NTPC Ltd., New Delhi
- 2 NHPC Ltd. Faridabad
- 3 North Eastern Electric Power Corporation Ltd, Shillong
- 4 Neyvelli Lignite Corporation Ltd., Chennai
- 5 Tehri Hydro Development Corporation India Ltd., Rishikesh
- 6 NTPC Sail Power Corporation Ltd., New Delhi
- 7 Satluj Jal Vidyut Nigam Ltd. (SJVNL), Shimla
- 8 Haryana Power Generation Corporation Ltd. (HPGCL)
- 9 Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.
- 10 TEESTA Urja Ltd., New Delhi Kerala State Electricity Board, Kerala
- 11 Gujarat State Electricity Generation Company (GSEC)
- 12 Kerala State Electricity Board, Kerala
- 13 Uttarakhand Power Generation Ltd.
- 14 Karnataka Power Trading Company Ltd, Karnataka
- 15 Power Development Department, J & K
- 16 Damodar Valley Corporation, Kolkata
- 17 Jharkhand State Electricity Board, Ranchi
- 18 Orissa Power Generation Company Ltd, Bhubaneshwar
- 19 West Bengal Power Development Corporation Ltd., Kolkata
- 20 Central Electricity Supply Company Ltd., Kolkata
- 21 Orissa Hydro Electricity Corporation Ltd., Bhubaneshwar
- 22 Meghalya Electricity Corporation Ltd., Shillong
- 23 Assam State Electricity Board, Guwahati
- 24 M.P. Power Generating Company Ltd. (MPPGCL)
- 25 Chattisgarh State Power Generating Company Ltd.
- 26 Andhra Pradesh Generation Company Ltd., Hyderabad.
- 27 Maharashtra State Power Generating Co. Ltd. (Mahagenco)
- 28 Punjab State Power Corporation Ltd., Patiala



- 29 Rajasthan Rajya Vidyut Utpadan Nigam Ltd. , Jaipur
- 30 Maha TATA Ltd., Mumbai
- 31 Maha Rel, Mumbai
- 32 Jindal Power Ltd., New Delhi
- 33 LANCO Ltd., Gurgaon
- 34 Narmada Control Authority, Indore
- 35 JSW Ltd., Mumbai
- 36 APCL Ltd., Tamil Nadu

.....Respondents

ORDER

Regulation 5.2.(f) of the of the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 (hearing after “Grid Code”) provides that all thermal generating units of 200 MW and above and all hydro units of 10 MW and above which are synchronized with the grid, irrespective of their ownership, shall be required to have their governors in operation at all time in accordance with the provisions in sub-clauses (i) to (iii) of the said Regulation. The provisions of governor action is extracted as under :-

“Governor Action

- i) Following Thermal and hydro (except those with upto three hours pondage) generating units shall be operated under restricted governor mode of operation with effect from the date given below:
 - a) Thermal generating units of 200 MW and above,
 - 1) Software based Electro Hydraulic Governor (EHG)system : 01.08.2010
 - 2) Hardware based EHG system 01.08.2010
 - b) Hydro units of 10 MW and above 01.08.2010
- ii) The restricted governor mode of operation shall essentially have the following features:
 - a) There should not be any reduction in generation in case of improvement in grid frequency below 50.2 Hz. (for example if grid frequency changes from 49.3 to 49.4 Hz. then there shall not be any reduction in generation). Whereas for any fall in grid frequency, generation from the unit should increase by 5% limited to 105 % of the MCR of the unit subject to machine capability.



- b) Ripple filter of +/- 0.03 Hz. shall be provided so that small changes in frequency are ignored for load correction, in order to prevent governor hunting.
 - c) If any of these generating units is required to be operated without its governor in operation as specified above, the RLDC shall be immediately advised about the reason and duration of such operation. All governors shall have a droop setting of between 3% and 6%.
 - d) After stabilisation of frequency around 50 Hz, the CERC may review the above provision regarding the restricted governor mode of operation and free governor mode of operation may be introduced.
- iii) All other generating units including the pondage upto 3 hours Gas turbine/Combined Cycle Power Plants, wind and solar generators and Nuclear Power Stations shall be exempted from Sections 5.2 (f) ,5.2 (g), 5.2 (h) and ,5.2(i) till the Commission reviews the situation."

2. It has been brought to the notice of the Commission by the National Load Despatch Centre that out of the 700 generating stations / units, about 560 generating stations have not yet switched over to the operation under restricted governor mode. The list of such generating stations / units is enclosed as **Appendix** to this order. NLDC has submitted that adequate response is not coming from generating units which has declared themselves in RGMO. The fluctuation in system frequency also occurs at system boundary due to load change over or sudden increase in generation due to change in schedule. With all the units operating with RGMO the fluctuation in system frequency would have been restricted to large extent.

3. As all the generating stations are not on the RGMO mode, fluctuation in system frequency is adversely affecting the power system and the generating stations. Non-operation of the generating stations under the restricted governor mode after 1.8.2010 amounts to non compliance of the provisions of the Grid Code.

4. All the respondents are directed to explain by 10.10.2011 the reasons for not switching over to the restricted governor mode of operation and to show cause as to



why appropriate action under the Electricity Act, 2003 should not be initiated against the respondents for non-compliance of the provisions of the Grid Code.

Sd/-

**(M. DEENA DAYALAN)
MEMBER**

Sd/-

**(V.S.VERMA)
MEMBER**

Sd/-

**(S. JAYARAMAN)
MEMBER**

Sd/-

**(DR. PRAMOD DEO)
CHAIRPERSON**



Sr No	Utility/ Generator	Power Station to be under RGMO as per regulation	Hydro(H)/ Thermal(T)	Unit No	Effective Capacity in MW				
71	UTTARAKH AND	RAMGANGA HEP	HYDRO	1	66.00				
72				2	66.00				
73				3	66.00				
74	J&K	BALIGHAR HEP	HYDRO	1	150.00				
75				2	150.00				
76				3	150.00				
77	TEESTA	TEESTA	HYDRO	1	170				
78				2	170				
79				3	170				
80	DVC	CHANDRAPURA TPS	THERMAL	7	250				
81		BOKARO 'B'		THERMAL	1	210			
82					2	210			
83					3	210			
84		MEJIA			THERMAL	1	210		
85						2	210		
86						3	210		
87						4	210		
88		MAITHON HPS				HYDRO	5	250	
89							6	250	
90		PANCHET HPS	HYDRO				1	20	
91				2			20		
92				3			20		
93		WARIA		THERMAL			1	40	
94					2		40		
95		JSEB			TENUGHAT		THERMAL	4	210
96	SUBARNREKHA							HYDRO	1
97					2				210
98	SUBARNREKHA				HYDRO	1			65
99		2				65			

Sr No	Utility/ Generator	Power Station to be under RGMO as per regulation	Hydro(H)/ Thermal(T)	Unit No	Effective Capacity in MW
100	OPGC	IBTPS	THERMAL	1	210
101				2	210
102	OHPC	BURLA	HYDRO	1	49.5
103				2	49.5
104				3	24
105				4	24
106				5	37.5
107				6	37.5
108				7	37.5
109				CHIPLIMA	1
110		2			24
111		3			24
112		BALIMELA		1	60
113				2	60
114				3	60
115				4	60
116				5	60
117				6	60
118				7	75
119				8	75
120		UPPER KOLAB		1	80
121				2	80
122				3	80
123				4	80
124		RENGALI		1	50
125				2	50
126				3	50
127				4	50
128				5	50
129		INDRAWATI		1	150
130				2	150
131				3	150
132				4	150
133		OHPC		BAKRESHWAR	THERMAL
134	2		210		
135	3		210		
136	4		210		
137	5		210		
138	KOLAGHAT		1	210	
139			2	210	
140			3	210	
141			4	210	
142			5	210	
143		6	210		

Sr No	Utility/ Generator	Power Station to be under RGMO as per regulation	Hydro(H)/ Thermal(T)	Unit No	Effective Capacity in MW	
144	WBPDC	BANDEL	HYDRO	5	210	
145		SANTALDIH		5	250	
146		DPL		7	300	
147		SAGARDIGHI		1	300	
148				2	300	
149		RAMMAM		1	12.5	
150				2	12.5	
151				3	12.5	
152				4	12.5	
153				PPSP	1	225
154					2	225
155					3	225
156		4			225	
157	CESC	BUDGE-BUDGE	1	250		
158		2	250			
159		3	250			
160		RBPH	3	200		
161			5	200		
162		CHPH	1	50		
163			2	50		
164			3	50		
165			4	50		
166			5	50		
167			UKAI	1	75	
168				2	75	
169				3	75	
170	4	75				
171	GUJARAT	KADANA	1	60		
172			2	60		
173			3	60		
174			4	60		
175		GANDHINAGAR	3	210		
176		WANAKBORI	4	210		
177		5	210			
178		PENCH	1	80		
179			2	80		
		BARGI	1	45		
			2	45		
180		BIRSINGPUR	1	20		
181			3	125		
182			4	125		
183		INDIRASGR	5	125		
184			8	125		
185			1	15		
186	BANSAGAR-III	2	15			
187		3	15			

Grid Disturbances in Eastern Region

a) Disturbance in BSEB(Biharsariff) System

Date & Time of occurrence: 07/09/11 at 12:16 hrs
 Load loss in BSEB system: 577 MW

Incidence of events:

At around 12:16hrs power supply failed at 220/132kV Biharsariff S/s in BSEB due to tripping of all three 400/220kV,315MVA ICTs on back up over current protection at Biharsariff(PG) end. 220kV Biharsariff–Fatuha, 220kV Biharsariff–Bodhgaya lines were also tripped. Disruption of traction power is reported in the area of Gaya, Bodhgaya, Sonenagar and Jahanabad Area.

Restoration:

Fatuha availed power form Patna (PG) at 12:27hrs
 400/220kV, 315MVA ICT-I, II & III charged at 12:51, 13:13 & 13:39hrs respectively.
 220/132kV, 150MVA ICT-II was charged at 12:54hrs
 220/132kV, 150MVA ICT-III was charged at 13:02hrs
 Fatuha made off from Patna(PG) at 13:58hrs & 220kV Biharsariff-Fatuha-I & II charged at 14:00hrs
 220kV Biharsariff-Bodhgaya-I & II charged at 13:05hrs & 13:28hrs respectively.
 220kV Biharsariff-Begusarai charged at 13:15hrs.
 132kV Biharsariff-Hatidah-I & II charged at 12:59 & 13:23hrs respectively
 132kV Biharsariff-Bariparai-I & II charged at 12:55hrs.

This disturbance is categorized as GD-I

b) Disturbance in BSEB System on 12/09/11

At around 19:20 Hrs on 12.09.11, 2 x 100 MVA , 220/132 KV ICT I& II tripped on W.T.I at 220 KV Purnea S/S(POWERGRID). Load on 3 x 100 MVA ICT I , II & III was approx. 300 MW. Subsequently ICT III was hand tripped. Power flow was disrupted at 132 KV Purnea & Kisanganj S/Ss of BSEB. Power flow to Nepal through 132 KV Purnea -Kataiya -Duhabi also got interrupted. Total load loss was 300 MW(approx).

Restoration :

1) ICT III restored at 21:20 hrs

- 2) ICT II restored at 21:25 hrs.
- 3) ICT I restored at 21:32 hrs.
- 4) 132 KV Duhabi- Kataiya- Purnea restored at 21:50 hrs.
- 5) Present Load on ICTS approx. 150 MW.

This disturbance is categorised as GD-1

c) Disturbance in BSEB system

Date & Time of occurrence: 13/09/11 at 11:01 hrs.

Generation loss : NIL

Load Loss : 650 MW

System frequency prior to incidence: 49.60 Hz

System frequency after incidence: 49.87 Hz

Incidence of events:

At around 11:01 Hrs due to some problem all three 400/220 KV 315 MVA ICTs at Biharsariff (POWERGRID) tripped due to operation of over current protection at Biharsariff (as verbally informed by Biharsariff, POWERGRID). Power Supply affected in Bodhgaya, Hatidah, Barhi, Baripahari, Rajgir areas.

Restoration :

315 MVA ICT – I	11:35 Hrs
315 MVA ICT –II	11:30 Hrs
315 MVA ICT- III	11:30 Hrs

18:50

This disturbance is categorized as GD-I

d) Preliminary Report on Trippings on 13-09-11 of Talcher –Kolar Pole –I

- 1) Date & Time of occurrence: 13-09-11 at 13:39 Hrs.
- 2) System frequency prior to the incident was 49.30 Hz
- 3) . System frequency prior to the incident was 49.88 Hz
- 4) Incidence of events: At 13:39 Hrs. Talcher- Kolar Pole – I tripped and Pole –II went into ground return mode.
- 5) Bipole setting was at 1813 MW towards SR.
- 6) Gazuwaka setting was at 350 MW towards ER.
- 7) SPS at Talcher successfully operated and Unit # 6 tripped.

- 8) Post disturbance position: SR is taking 110 MW from Gazuwaka.
9) NEW grid not affected. No overloading in any other lines.

This tripping is categorized as GI-I

e) **Report on Disturbance at 400 KV Binaguri S/S on 14.09.11.**

Date & Time of occurrence: 14/09/11 at 00:29 Hrs.

Incidence of events:

Following lines tripped at 400 KV Binaguri S/S along with TALA HPS units 1-6 (170x6) during heavy lightning and storm.

- 400 KV Tala-Binaguri I DT receipt at Binaguri(reported O/V stg I actuation at Tala)
- 400 KV Tala-Binaguri II DT receipt at Binaguri(reported O/V stg I actuation at Tala)
- 400 KV Tala-Malbase-Binaguri D.P : Y-B, E/F at Binaguri
- 400 KV Tala-Binaguri IV D.P : YN, E/F,Z-I,99 KM at Binaguri
- 400 KV Bongagoan-Binaguri I O/V stg I at Binaguri

Loss of generation was approx..1100 MW of Tala HEP.

- System Frequency before the incident was 49.7 HZ; after the incident Frequency dipped to 49.15 HZ.
- Situation aggravated further with tripping of all 4 units of Chukha HPS (4x84) along with associated lines at . 02:27 Hrs (separate report)

Restoration process:

- Unit V at Tala blackstarted with DG set
- 400 kv Purnea-Binaguri I,II & III Opened to regulate voltage
- 400 kv Tala-Binaguri I closed and synchronized with Unit V at 03:50 hrs.
- 400 kv Purnea-Binaguri I closed at 03:55
- Unit IV synched at 04:30 hrs (Tala faced problem to synch due to persistent highvoltage around 440 kv)
- 400 KV Tala-Malbase-Binaguri closed at 04:35
- Unit III & VI synched at 05:10 hrs
- 400 kv Tala-Binaguri IV closed at 05:37 hrs
- Unit I & III cannot be put to bar due to bearing problem.
- Now 750MW is being evacuated at Binaguri point from Tala

This disturbance is categorized as GD-I

f) **Report on Disturbance at 220 KV Birpara S/S on 14.09.11.**

10) Date & Time of occurrence: 14/09/11 at 02:27 Hrs.

11) Incidence of events:

Following lines tripped from **220 KV Birpara S/S** along with Chukha HPS units 1-4(4x84)

- 220 KV Chukha Birpara-I..... 3PH-N,ZI
- 220 KV Chukha Birpara-I I..... 3PH-N,ZI
- 220 KV Chukha -Malbase- Birpara..... 3PH-N,ZI
- 220 KV Birpara-Binaguri II..... R-B-N

12) Loss of generation was approx..300 MW of CHUKHA HEP.

- System Frequency before the incident was 49.97 HZ; post incident change is marginal.

Restoration process:

- 220 KV Chukha Birpara-I closed at 03:38 hrs
- 220 KV Chukha –Malbase- Birpara closed at 4:00 hrs
- 220 KV Chukha Birpara-I closed at 4:15 hrs
- Presently generation at Chukha HEP is 290 MW

This disturbance is categorized as GD-I

g) Report on Disturbance at 220 KV Birpara S/S on 15.09.11.

13) Date & Time of occurrence: 15/09/11 at 18:05 Hrs.

14) Incidence of events:

Following lines tripped from **220 KV Birpara S/S** along with Chukha HPS units 2,3 & 4 tripped reportedly due to operation of Bus Differential Protection of Bus –II at Birpara.

- 220 KV Chukha Birpara-I
- 220 KV Chukha Birpara-I I
- 220 KV Birapara – Siliguri - II
- 220 KV Birpara- salakati –II
- 50 MVA ICT- II at Birpara S/s

15) Loss of generation was approx..250 MW of CHUKHA HEP.

- System Frequency before the incident was 49.95 HZ; post incident change is marginal.

Restoration process:

- 220 KV Chukha Birpara- I 19:23 hrs
- 220 KV Chukha – Birpara – II 19:27 hrs.
- 220 KV Birpara – Siliguri – II 18:52 hrs.
- 220 KV Birpara- Salakati –II 19:29 hrs.

- 50 MVA ICT – II at Birpara S/s 18:52 hrs.
- Presently generation at Chukha HEP is 190 MW (Birapara Receipt.)
- All units of Chukha HEP synchronized by 20:25 hrs.

This disturbance is categorized as GD-I

h) Disturbance in OPTCLT system

(1) Date & Time of Occurrence: 21.09.11, 12:23 hrs

(2) Name of the Sub Station/ Generating Station: Jayanagar

(3) Details of Occurrence: On 21.09.11 at 12:23 hrs all the 220 kV lines emanating from Theruvali S/S and Jaynagar S/S tripped.

Sequence of Trippings with relay indication:

Time Hrs	Details of tripping	Relay indication
12:23	220 kV Theruvali-Bhanjanagar Ckt-I tripped at Theruvali.	At Theruvali-E/F
	220 kV Theruvali-Bhanjanagar Ckt-II tripped at both ends.	At Theruvali-‘B’ ph, E/F, Dist-22.87 km At Bhanjanagar-D/P, ‘Y’ ph, ‘B’ ph, Zn-II, dist-163.47 km
	220 kV Theruvali-Indravati Ckt-II & III tripped at Indravati end. (220 kV Theruvali-Indravati Ckt-I & IV were not in service.) 400 kV Indravati PH-Indravati PG tripped at Indravati PH on overvoltage. #2 at Indravati PH tripped. (#1,3 & 4 remained on bus)	
	220 kV Theruvali-U.Kolab Ckt tripped at U.Kolab PH.	Bus bar protection
	220 kV Jaynagar-U.Kolab Ckt-I tripped at U.Kolab PH.	O/V, Bus bar protection
	220 kV Jaynagar-U.Kolab Ckt-II tripped at U.Kolab PH. (There was no running units at U. kolab PH prior to tripping)	O/V, Bus bar protection, Pole discrepancy
	220 kV Jaynagar-Balimela Ckt-I, II & III tripped at Balimela PH.	
	All the running units i.e. #2,6,7 & 8 tripped at Balimela PH. 400 kV bus at Jeypore PG was dead as ascertained from Jeypore PG. So 220 kV bus at U. Kolab PH, Balimela PH, Jaynagar and Theruvali become dead.	

(4) Restoration:

At 12:40 hrs 220 kV Theruvali-Bhanjanagar Ckt-I charged from Bhanjanagar.

At 12:41 hrs 220 kV Theruvali-Indravati Ckt-III charged from Theruvali..

At 12:42 hrs 220 kV Theruvali-Jaynagar Ckt-I charged from Theruvali.
 At 12:57 hrs 220 kV Theruvali-U. Kolab Ckt charged from Theruvali.
 At 12:59 hrs 220 kV Jaynagar-Balimela Ckt-II charged from Jaynagar.
 At 13:00 hrs 220 kV Theruvali-Bhanjanagar Ckt-II charged.
 At 13:02 hrs 20 kV Theruvali-Jaynagar Ckt-II charged.
 At 13:12 hrs 132 kV Jaynagar-Theruvali Ckt- I &II tripped at Theruvali end on E/F relay indication due to bursting of 'B' ph PT at Jaynagar end Jaynagar 220 kV bus become dead..
 At 13:17 hrs 220 kV Theruvali-Narendrapur Ckt-I charged.
 At 13:45 hrs 220 kV Theruvali-Jaynagar Ckt-I charged from Theruvali.
 At 13:49 hrs 220 kV Jaynagar-Balimela Ckt-II charged from Jaynagar.
 At 13:55 hrs 220 kV Jaynagar-Jeypore PG Ckt-II charged.
 At 13:57 hrs 220 kV Jaynagar-U. Kolab Ckt-I charged from Jaynagar.
 At 14:12 hrs 400 kV Indravati PH-Indravati PG Ckt charged.
 At 14:29 hrs 220 kV Jaynagar-Jeypore PG Ckt-I charged.
 At 14:32 hrs #2 at Indravati PH synchronized to grid.
 At 15:20 hrs #7 at Balimela PH synchronised to grid.
 At 15:52 hrs 220 kV Balimela PH-Balimela Grid charged.
 At 18:16 hrs 220 kV Jaynagar-Balimela Ckt-III charged.
 At 23:48 hrs 220 kV Jaynagar-Balimela Ckt-I charged.
 On 22.08.11 at 12:37 hrs 220 kV Jaynagar-U. Kolab Ckt-II charged.

This disturbance is categorized as GD-I

I) Disturbance in OPTCL system

(1) Date & Time of Occurrence: 22.09.11,14:00 hrs

(2) Name of the Sub Station/ Generating Station: Balasore

(3) Details of Occurrence: On 22.09.11 at 14:00 hrs all the 220 kV lines emanating from Balasore tripped. **Sequence of Trippings with relay indication:**

Time Hrs	Details of tripping	Relay indication
14:00	Power flow through 220 kV Baripada PG- Balasore Ckt-I & II become zero due to tripping of 400 kV Rengali - Baripada-Kolaghat Ckt at both ends.	O/C, 'B' ph, Master trip, Auto reclose relay
	220 kV Duburi- Duburi (New) Ckt tripped at Duburi end due to overloading.	O/C, 'B' ph, Master trip, Auto reclose relay
	Power supply interrupted to Bhadrak, Bhadrak(T), Soro , FACOR, Balasore, Balasore (T), Jaleswar, Jaleswar(T), Ispat Alloys, Emami, Birla Tyre	

(4) Restoration:

At 15:20 hrs 220 kV Balasore-Baripada PG Ckt-II charged.

At 15:25 hrs 220 kV New Duburi-Duburi Ckt charged from Duburi through bus coupler as there was some relay problem.

At 15:26 hrs 220 kV Balasore-Baripada PG Ckt-I charged.

At 15:32 hrs 220 kV Duburi-New Duburi Ckt made through.

At 15:51 hrs 220 kV New Duburi-Balasore charged.

This disturbance is categorized as GD-I