

EASTERN REGIONAL POWER COMMITTEE

14, GOLF CLUB ROAD, TOLLYGUNGE
KOLKATA-700033

MINUTES OF 42nd OCC MEETING HELD AT ERPC, KOLKATA ON 14.09.2009 (MONDAY) AT 11:00 HRS

The meeting was chaired by Shri Ankan Bandyopadhyaya, Member Secretary I/C, ERPC. List of participants is at Annex-A.

Sh. Bandyopadhyaya welcomed all the participants of 42nd OCC meeting. He informed that Sh. R. K. Grover, Member Secretary, ERPC had gone to Bhubaneswar for attending Standing Committee Meeting on Power System Planning for Eastern Region, which incidentally was also to be held today. He dismayed that in spite of repeated discussion in various forums of ERPC on coal shortage problem faced by the Eastern Region power stations, there seemed to be no end to it. He informed that coal shortage was also kept as agenda in this meeting and hoped that some solution would be arrived at. He then requested representatives of M/s Bengal Aerotropolis Project Ltd. to give a presentation.

Sh. Kaushik Banerjee from M/s Bengal Aerotropolis Project Ltd. gave a brief presentation on "Relocation of existing power lines due to proposed Airport at Andal". He informed that existing 2 lines of DVC and 3 lines of WBSETCL needed to be relocated and cost of relocation for existing line would be borne by his company. He further mentioned that proposed 400 kV D/C lines by PGCIL and 400 kV LILO by DVC near the airport also needed to be relocated. Representative of PGCIL informed that that construction works for proposed 400 kV D/C lines by PGCIL had already been started. Superintending Engineer (Commercial), ERPC pointed out that most of the PGCIL lines were linked with generation evacuation and relocation of lines might take time which would eventually hamper generation evacuation. He further opined that sharing of additional cost due to line relocation for partly constructed lines should also be addressed. After detailed deliberation, it was decided that M/s Bengal Aerotropolis Project Ltd. would discuss the matter with PGCIL and fix up issues which would need deliberation in the RPC forum.

Agenda items were then taken up.

ITEM NO. 1: CONFIRMATION OF MINUTES OF 41st OCC MEETING OF ERPC HELD AT ERPC, KOLKATA ON 18.08.2009

The minutes were circulated vide letter no. ERPC/SE(OPRN)/OPERATION/2009/4648-95 dated 21.08.09.

No comment is received from the constituents. Members may kindly confirm the minutes of the meeting.

Deliberation in the meeting

The minutes as circulated was confirmed without any modification.

ITEM NO. 2: REVIEW OF GRID PERFORMANCE DURING AUGUST, 2009

Details of Power Supply Position, Frequency, Energy Exchange, UFR operation, Voltage Condition during the month of August'09 are given at Annex-I.

ERLDC may kindly brief the members on ER grid performance during August 2009.

Deliberation in the meeting

- *Representative of ERLDC made a presentation of ER Grid performance during August'09 [Copy at Annex-I(c)].*
- *The issue of sustained overdrawal by DVC was flagged by ERLDC.*
- *Representative of DVC informed -*
 - ✓ *Overdrawal was mainly due to underperformance of Mejia Stations due to internal operational problems;*
 - ✓ *Internal operational problems at Mejia were already sorted out;*
 - ✓ *From September onwards PLF of the Mejia Station is expected to be improved with a considerable reduction of issuance of category C Message by ERLDC;*
 - ✓ *Details of generation plan for the next one month will be furnished by one week;*

ITEM NO. 3: REVIEW OF COAL STOCK POSITION IN VARIOUS THERMAL GENERATING STATIONS IN EASTERN REGION

As on 31.08.09, out of 23 coal based thermal stations in Eastern Region, 13 stations were critical with less than 7 days coal stock and 8 stations were super-critical with less than 4 days coal stock (Source: CEA website). Coal stock position to various power stations in ER is as below:

Sl No.	Power Station	Capacity MW	Daily Coal Required '000 MT	Present Coal Stock '000 MT as 31.08.09	Linked Mines	Mode of transport
<u>NTPC</u>						
1	Farakka STPS	1600	26.112	0	Rajmahal (ECL)	Pithead
2	Kahalgaoon STPS	2340	47.736	5	Rajmahal (ECL)	Pithead
3	Talcher STPS	3000	57.600	87	Lingaraj (MCL)	Pithead
<u>DVC</u>						
4	BTPS-B	630	10.500	142	CCL: Jharia & Kargail BCCL: Jharia	Rail
5	Chandrapur	750	6.500	375	CCL: Jharia BCCL: Jharia	Rail
6	Durgapur	350	5.460	71	ECL: Raniganj-Non-Rj BCCL: Jharia	Rail
7	Mejia	1340	22.500	41	ECL: Raniganj-Non-Rj BCCL: Jharia , Adra	Rail
<u>BSEB</u>						
8	Barauni	320	0.6	33	ECL, BCCL, CCL	Rail
9	Muzzafarpur	220	1.0	8	ECL, BCCL, CCL	Rail
<u>JSEB</u>						
10	Patrattu	840	4.0	6	CCL	Rail
11	Tenughat	420	6.6	8	CCL: Pareh, Tapin, Kalyani, Kedla	Road
<u>Orissa</u>						
12	IB TPS	420	8.0	104	MCL: Lakhanpur	Pithead
13	Talcher Old	470	8.3	157	MCL	Pithead

WBPDCCL						
14	Kolaghat TPS	1260	17.85	104	BCCL, ECL, MCL	Rail
15	Bakreswar TPS	840	10.80	22	ECL	Rail
16	Santalalih TPS	730	6.235	52	BCCL, ECL	Rail
17	Bandel TPS	450	4.970	4	ECL	Rail
18	Sagardighi	600	7.200	12	ECL	Rail
DPL						
19	DPL TPS	690	9.6	36	BCCL, ECL, MCL	Rail
CESC						
20	Budge-Budge	500	6.3	79	BCCL, ECL	Rail
21	Titagarh	240	3.1	21	ECL	Rail
22	Southern REPL	135	2.2	23	ECL	Rail
23	New Cossipore	130	1.2	8	ECL	Rail

List of Super-critical Stations as on 31.08.09 with less than 4 days coal stock are given below :-

Sl No.	Station	Coal Stock in days
1	Farakka STPP (NTPC)	0
2	Kahalgaon STPP (NTPC)	0
3	Talcher STPP (NTPC)	1
4	Patratu TPS (JSEB)	1
5	Tenughat TPS (TVNL)	1
6	Mejia TPS (DVC)	2
7	Bakreswar TPS (WBPDCCL)	2
8	Sagardighi TPS (WBPDCCL)	2

Further, it has been observed from ERLDC daily report on 07.09.09 that following units were out due to shortage of coal.

Sl No	Units	Capacity	Date of outage
1	Kahalgaon U#5	500 MW	10.08.09
2	Mejia U#2	210 MW	28.08.09
3	Farakka U#4	500 MW	29.08.09
4	Kahalgaon U#1	210 MW	02.09.09

Following stations have reported loss of generation in the month of August'09 due to shortage of coal.

Sl No	Station	Loss of generation (MU)
1	Farakka	302.567
2	Kahalgaon	634.925
3	Talcher Stage-I	4.537

M/s Coal India Limited (CIL) is also invited in the meeting.

In view of above and Scheduled peak generation during Ensuing Durga Puja festivals (details in Annex-II), concerned Organisations are requested to highlight their problems along with remedial measures taken by them.

Deliberation in the meeting

Representative of CIL made a brief presentation on Coal supply to power stations in Eastern Region (Copy at Annex-II(A)).

It was informed that-

- *On all India basis, 306 MMT of coal was allocated to existing power stations during the year 2009-10 and additional 7 MMT was kept as allocation for upcoming power stations.*
- *Against annual coal requirement of 27 MMT (Million Metric Tonnes), (according to NTPC), Farakka and Kahalgaon have Fuel Supply Agreement (FSA) with Coal India Ltd. (CIL) for 15 MMT (CIL, NTPC).*
- *Inadequate coal linkage was mainly due to non- development of schedule coal mines at “Hurrah C” and “Super Beta”, which would take another 2-3 years for commissioning and lower allocation of coal considering only stage one of Kahalgaon by CEA (CIL).*
- *Against a requirement of 21 rakes per days for full load generation, CIL planned to supply coal during the period from 15th September’09 to 14th October,09 to Farakka and Kahalgaon to the tune of 14.5 rakes per day including 2 rakes per day under contingency/swapping. However, the coal supply would depend on movement of coal from ECR (East Central Railway) and SER (South Eastern Railway) to these stations and faster unloading at these stations (CIL).*
- *CIL planned to supply coal during the period from 15th September’09 to 14th October,09 to Talcher STPS to the tune of 16.3 rakes per day (including 9.3 rakes per day through MGR) against committed quantity of 13.3 rakes per day provided adequate and timely placement of MGR rakes is done. Members hoped that with this coal supply, Talcher STPS would not face coal shortage problem (CIL).*
- *Problems of supply of BOBR rakes to Sagardighi, WBPDCCL were already sorted out at higher level meeting (CIL).*
- *Generation at WBPDCCL stations was affected due to supply of poor quality coal having specific consumption more than 0.9 (WBPDCCL, DPL, DVC, NTPC)*
- *CIL planned to supply coal during the period from 15th September’09 to 14th October, 09 to Mejia PS of DVC to the tune of 4.54 rakes per day, including one additional rake from ECL (CIL).*
- *CIL planned to supply coal during the period from 15th September’09 to 14th October, 09 to the tune of 11.6 rakes per day to WBPDCCL stations (CIL)*
- *CIL planned to supply coal during the period from 15th September’09 to 14th October, 09 to the tune of 2.5 rakes per day to DPL stations (CIL).*
- *NTPC’s bid for import of coal would open on 15th September’09 and it would take another 2 months to start import of coal (NTPC).*
- *It is apprehended that since these stations are pit head stations railway could not supply more than 7-8 rakes per day to these stations (NTPC).*
- *As imported coal needs to be mixed with domestic coal at a certain percentage, import of coal alone would not solve the problem (NTPC).*

Members agreed-

- i) *Unless new linked-coal mines are developed and allocation by CEA considering Stage-II of Kahalgaon is not raised, Farakka and Kahalgaon stations of NTPC would have to live with coal shortage problems.*
- ii) *With the planned supplies Talcher STPS would not face coal shortage problem and generation of the station will be improved in the concerned period.*
- iii) *With the planned supplies DVC would not face coal shortage problem and generation of the stations will be improved in the concerned period.*
- iv) *With the planned coal supply, stations of WBPDCCL and DPL would not face coal shortage problem and generation of the station will be improved in the concerned period. As bulk of the coal supply would be*

- from MCL, WBPDCCL was requested to tie up with both MCL and railways. WBPDCCL agreed to do so for improvement of generation.
- v) DPL was requested to intimate plan for generation and to enter into commercial arrangement for the said coal supply. Representative of DPL agreed to do so and assured to generate full with said coal supply.
- vi) Coal related problems faced by ER power stations could be grouped into three categories, viz shortage of coal, poor quality of coal and inadequate unloading infrastructure. Each category needs separate attention, and therefore in future generating stations are requested to state specific reasons, as far as practicable, for coal related problems for effective addressing of the problem.

ITEM NO. 4: MAJOR GENERATING UNIT AND TRANSMISSION LINES/ELEMENTS OUTAGES IN ER GRID

Sl	Description	Date of Outage	Reason	Remarks
Generating Units				
1	Mejia U#6 (210 MW)	04.07.09	Tube leakage	<i>Restored on 12.09.09</i>
2	Kahalgaon U#5(500 MW)	10.08.09	Coal shortage and turbine vibration	<i>Depends on coal supply</i>
Lines / Elements under outage				
1	400 kV Tala - Binaguri-IV	25/05/09	CB problem at Tala end	<i>Expected by November'09.</i>
2	400 kV Malda-Purnea D/C	24/07/09	Tower collapse at Loc.71	<i>Expected by 30th November'09.</i>
3	220 kV Meramundali-Bhanjanagar D/C	21/07/09	Tower collapse	<i>One circuit is restored on ERS. Tentative schedule for completion of works is by end of November'09</i>
4	FSC/TCSC of 400 kV Jeypore-Gazuwka I&II	25/06/09	Problem in Control panel	<i>Expected by 20th September 09</i>

Members may kindly update expected date of restoration of generating units and transmission elements.

Deliberation in the meeting

Members updated the status.

ITEM NO. 5: GRID INCIDENCES IN ER SYSTEM DURING AUGUST 2009

I. Loss of Tala HPS and Teesta HPS generation on 12.08.09

- On 12th August 2009, Eastern Region suffered loss of around 1600 MW generation at around 07:01 hrs due to tripping of all the running units at Tala and Teesta HPS.
- However, generation from Chukha HPS and connectivity of Binaguri 400 kV S/s with NER and rest of ER were not affected.
- The incident originated with lightning stroke at 400 kV Tala-Binaguri line I & II and subsequent tripping of Tala-Malbase-Binaguir lines resulting into loss of evacuation path for Tala HPS. Details of the incident are at **Annex-III (A)**.



➤ Tripping of Tala units resulted in reduction of fault levels at Binaguri which coupled with unloading along 400 KV Binaguri-Purnea-Muzzaffarpur section resulted in high voltages and tripping of Teesta-Binaguri D/c and loss of Teesta units.

It was observed that had the Single phase Auto Reclosure feature kept operative at Tala end, complete loss of Tala generation could have been avoided.

ERLDC may kindly explain the relay indication and members may kindly discuss.

Deliberation in the meeting

Representative of ERLDC briefly explained the incident. It was opined that

- *Had the Single phase Auto Reclosure feature kept operative at Tala end, complete loss of Tala generation could have been avoided (ERLDC).*
- *Teesta HEP which is also connected with 400 kv lines, is equipped with Auto -Reclosure feature and it was operating successfully (Teesta HEP).*
- *DR & EL printouts and relay indications for the incidents were not submitted by Tala HEP (ERLDC).*

Members agreed

- i) *Feasibility of providing Auto Reclosure feature kept operating at Tala end needed to be studied. Representative of Tala HEP informed that the matter would be taken up with the Tala management and decision in this regard would be intimated by next OCC meeting.*
- ii) *PGCIL was requested by Tala HEP to check tower footing resistance in Indian part of the Tala-Siliguri lines.*
- iii) *Tala HEP was requested by ERLDC requested to submit DR & EL printouts and relay indications at the earliest preferably by e_mail.*

II) Tripping of lines from Biharshariff/Bodhgaya on 17/08/09

➤ At 21:50 Hrs of 17/08/09, 315MVA ICT-III at Biharshariff (PG) and 150MVA ICT-II and III at Biharshariff (BSEB) tripped.

- 220 kV Biharshariff-Bodhgaya-I and 220 kV Biharshariff-Tenughat also tripped.
- It was reported that WT jumper at Biharshariff end of 220 kV Biharshariff-Bodhgaya-I got cut, initiating the disturbance.

BSEB may kindly furnish details of the disturbance.

Deliberation in the meeting

Representative of BSEB submitted a report on the incident [Copy at Annex-III (B)]. Members noted the same.

III) Tripping of 220 KV lines from Parulia(PG) and Waria on 21/08/09

- The weather condition prior to the incident was stormy accompanied by lightning.
- The incident occurred at 17:04 Hrs of 21/08/09 with tripping of following lines
 - ✓ 220 kV Bidhanagar-Waria D/c
 - ✓ 220 kV Bidhannagar-Bakreshwar D/c
 - ✓ 220 kV Bidhannagar-Parulia S/c
 - ✓ 220 KV Bidhannagar-DPL D/C
 - ✓ 220 KV Parulia(PG)-Parulia(DVC) D/C
 - ✓ 220 kV Parulia(DVC)-DSP(T/C)
 - ✓ 220 kV Parulia(DVC)-Muchipara
 - ✓ Both 400/220 kV ICTs at Parulia(PG)
- The tripping of lines led to complete failure of power at 220 kV Parulia(PG) and Parulia(DVC).
- All running units at DPL (generation 320MW) tripped.
- It was later informed by DVC and Powergrid that 220 kV Bus fault at Parulia (PG) and Parulia(DVC) had occurred.

With respect to above incident, following needs to be deliberated :-

- Tripping details of above lines (PGCIL, DPL and WBSETCL may submit the same)
- Reason for bus fault at Parulia (PG) and Parulia (DVC)
- Reason for tripping of DPL units

Deliberation in the meeting

Representative of WBSETCL submitted a report on the incident [Copy at Annex-III (C)]. The members referred the matter to Protection Committee meeting of ERPC for further deliberation.

IV) Repeated tripping of lines from Chandil on 22/08/09 and 31/08/09

- At 15:25 Hrs of 22/08/09, all 220 kV outgoing lines from Chandil s/s tripped and 220 kV & 132 kV bus at Chandil became dead. Jumper snapping of 220 kV Chandil-Ranchi at Chandil end was reported.
- The above incident occurred again at 13:03 Hrs of 31/08/09 when 220 kV & 132 kV Bus at Chandil became dead on tripping of all outgoing lines due to fault in 220 kV Ranchi-chandil line.

JSEB may explain the following

- Why fault in 220 kV Chandil-Ranchi was not cleared?
- What are the steps taken by JSEB to prevent such repeated cascaded tripping of lines?

Deliberation in the meeting

Representative of JSEB was requested to submit a report on the same.

V) Tripping of 220 kV lines in South Orissa system

- Starting from 15:53 Hrs of 31/08/09 staggered tripping of 220 kV lines from NALCO, TTPS, Meramundali, Rengali occurred. 220 kV Ramchandrapur-Joda, 220 kV Rengali-Nalco, 220 kV TSTPP-TTPS were amongst the lines which had tripped.
- Inclement weather was reported and the faults were all transient in nature.
- The restoration process was delayed due to great difficulty being faced in synchronizing 220 kV TSTPP-TTPS section due to heavy voltage difference of around 20 kV between the ends.
- 220 kV Rengali-NALCO and 220 kV TSTPP-TTPS could only be charged at 20:26 Hrs and 20:28 Hrs respectively.

With respect to above incident following needs to be deliberated:-

- Tripping details in Orissa System (OPTCL may furnish the same)
- Heavy difference in 220 kV voltages between two near ends
- A faster restoration process which could be followed in future.

Deliberation in the meeting

Members felt that occurrences of such a heavy difference in 220 kV voltages between two NTPC ends i.e. TTPS and TSTPP needed further deliberation. Therefore the matter was referred to Protection Committee meeting of ERPC.

VI) Disturbance in South Orissa system on 03.09.09

The following trippings/events occurred starting from 12:24 hrs of 03/09/09:

- **12:24 hrs** :: 220 kV Theruvelli-Bhanjanagar-I tripped on R-Ph Zone-I fault (Bhanjanagar end) & Distance Protection R, B Ph (Theruvelli end)
- **12:24 Hrs**:: 220 kV Theruvelli-Bhanjanagar-II tripped on Y-Ph Zone-II fault(Bhanjanagar end) & E/F(Theruvelli end)
- **12:26 Hrs**:: Only running Balimela #3 was isolated from the grid due to voltage dip of 180 kV at Balimela PH. 220 kV Jeynagar Bus became dead simulataneously.
- **12:26 Hrs**:: Due to above tripping the entire section along Indravati(PG)-Indravati(OHPC)-Theruvelli got unloaded resulting in high voltages and tripping of 400 kV Indravati(PG)-Indravati(OHPC) on overvoltage and tripping of 400/220 kV ICTs at Indravati on Overflux.

- **12:26 Hrs::** Above tripping resulted in high voltages at 400 kV Rengali, Indravati(PG), Jeypore S/s resulting in tripping of 400 kV Jeypore-Gazuwaka-I on overvoltage Stage-I initiation at Jeypore
- **12:27 Hrs::** 400 kV Jeypore-Gazuwaka-II and 400 KV Jeypore-Meramundali tripped on over-voltage Stage-I initiation at Jeypore and both poles of HVDC Gazuwaka got blocked.
- **12:28 Hrs::** Consequently, 400 kV Rengali-Indravati-Jeypore section became floating and 400 kV Rengali-Indravati and 400 KV Indravati-Jeypore tripped.

From above sequence of events, it is felt that the disturbance originated due to fault in 220 kV Theruvali - Bhanjanagar sections.

With respect to above incident, following may be deliberated:-

- It has been observed that due to any line fault in upstream 220 kV system, units at Balimela trip on voltage dip and there are cascade line tripping in rest of the 220 kV system.
- Recommendations of the committee formed to investigate the cascade trippings in South Orissa system may also be implemented at the earliest.

Deliberation in the meeting

Representative of ERLDC briefly explained the incident. Members felt the need for detailed deliberation on the following issues

- *Whenever one circuit of Theruvelli-Bhanjanagar D/C goes out, the other circuit also goes out.*
- *Reason for low voltage at Balimela due to any line fault in upstream 220KV system*
- *Implementation of recommendation of the Committee to investigate frequent tripping of South Orissa system*

Members agreed

- i) *The incident was referred to Protection Committee meeting of ERPC for further deliberation.*
- ii) *OPTCL might explore installing one numerical relay in Theruvelli-Bhanjanagar line, which would give lot of insight into these incidents.*
- iii) *A Committee, comprising of representatives from OPTCL, PGCIL, ERLDC and ERPC would visit Meeramundali to ascertain the status of installation of remaining tie breakers. OPTCL, PGCIL and ERLDC were requested to submit their nomination to ERPC within a week.*
- iv) *PGCIL and OPTCL would bilaterally decide program for shifting of ICT-II at Meeramundali from bus-II to bus-I*

ITEM NO. 6: OPERATIONAL PLANNING

(A) SHUTDOWN PROPOSAL OF TRANSMISSION LINES AND GENERATING UNITS FOR THE MONTH OF OCTOBER'09.

The shut down proposals which are received by ERPC for the month of October' 09 are placed before the members. Members may please discuss and finalize the proposed programme.

Deliberation in the meeting

Approved shutdown programme is placed at Annex-IV.

(B) ANTICIPATED POWER SUPPLY POSITION FOR THE MONTH OF SEPTEMBER'09 AND OCTOBER'09

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the months of September'09 and October'09 were prepared by ERPC Secretariat on the basis of finalized LGBR for 2009-10, keeping in view that the units are available for generation and expected load growth etc. The details are shown at **Annex- V**.

Members may please discuss.

Deliberation in the meeting

Members noted the same.

ITEM NO. 7: DECLARING OF PEAK HOURS FOR SCHEDULING PURPOSES UNDER FUEL SHORTAGE CONDITIONS --- ERLDC

For purposes of scheduling under fuel shortage conditions prior declaration of peak hours needs to be done on a month ahead basis. Based on existing demand curve , ERLDC has proposed that peak Hours for the month of October'09 may be considered from 18:30 hrs to 21:30 hrs.

ERLDC may like to show the demand curve of ER and members may kindly decide on timing of peak hours during October'09.

Deliberation in the meeting

Members agreed to the above ERLDC proposal.

ITEM NO. 8: RESTRICTION ON DVC POWER SUPPLY TO DSP - DSP

Durgapur Steel Plant (DSP) informed that load restriction was imposed on them for 317 hrs 45 minutes in month of July'09 and 548 hrs 15 min in month of August'09 respectively. This load restriction has affected the plant production.

DSP may like to elaborate further and members may kindly discuss.

Deliberation in the meeting

Members requested DVC and DSP to bilaterally settle the issue.

ITEM NO. 9: ANY OTHER POINT

Representative of M/s Manikaran Power Limited (MPL), Member of Indian Energy Exchange made a detailed presentation on nitty-gritty of collective transactions done through IEX and services provided by M/s MPL to its clients.

ITEM NO. 10: DATE AND VENUE OF THE NEXT (43rd) OCC MEETING OF ERPC.

Date and Venue of the 43rd OCC meeting would be intimated in due course.

The meeting ended with thanks to the Chair.

ANNEXURE- IV**Approved Programme of Maintenance Of Transmission Lines And Generating Units as proposed for the Month of OCTOBER, 2009**

Organization	Name of the Element	From		To		Remarks
		Date	Time hrs	Date	Time hrs	
NTPC						
Farakka						
	400 kV Farakka-Kahalgaon line 2	16.09.09	0930	16.09.09	1630	Relay testing
	400 kV Farakka-Durgapur line 1	28.10.09	0930	28.10.09	1630	Relay testing
Kahalgaon						
	400 kV Kahalgaon -Farakka-2	16.09.09	ODB	16.09.09	ODB	For Preventative Maintenance & testing
	132 kV Kahalgaon-Lalmatia	07.10.09	ODB	07.10.09	ODB	For Preventative Maintenance & testing
	132 kV Kahalagaon -Sabour	28.10.09	ODB	28.10.09	ODB	For Preventative Maintenance & testing
Chukha HEP						
	Unit # IV	22.10.09	0830	22.10.09	1630	Monthly maintenance
	Unit # III	23.10.09	0830	23.10.09	1630	
	Unit # II	24.10.09	0830	24.10.09	1630	
	Unit # I	25.10.09	0830	25.10.09	1630	
Teesta-V						
	All units	17.09.09	OCB	18.09.09	OCB	Reservoir flushing
ER-II, PGCIL						
	400 kV Malda-Farakka line 2	20.10.09	ODB	21.10.09	ODB	Annual Maintenance Work
	400 kV Malda-Farakka line 1	12.10.09	ODB	13.10.09	ODB	
	315 MVA ICT at Farakka	22.10.09	ODB	23.10.09	ODB	
ER-I, PGCIL						
	50 MVAR bus reactor at Jamshedpur S/s	09.10.09	ODB	10.10.09	ODB	Annual Maintenance
	80 MVAR bus reactor at Patna S/s	12.10.09	ODB	13.10.09	ODB	

400 kV Kahalgaon-Patna line 2	03.10.09	OCB	15.10.09	OCB	For PLCC work at Kahalgaon, Barh and Patna for commission of LILO of the line at Barh under construction
Talcher, NTPC					
TTPS 220 kV Bus coupler	03.10.09	ODB	03.10.09	ODB	R&M activity
400 kV TSTPP-Meramundali line 1	06.10.09	OCB	08.10.09*	OCB	Planned Maintenance
400 kV TSTPP-Meramundali line 2	13.10.09	OCB	15.10.09*	OCB	,,
400 kV TSTPP-HVDC 1	20.10.09	ODB	20.10.09	ODB	,,
400 kV TSTPP-HVDC 2	23.10.09	ODB	23.10.09	ODB	,,
400 kV TSTPP-HVDC 1	27.10.09	ODB	27.10.09	ODB	,,
400 kV TSTPP-HVDC 4	30.10.09	ODB	30.10.09	ODB	,,
WBDCL					
Kolaghat Unit #1	1 st week of Oct'09	OCB	For ten days	OCB	
TALA HEP					
UNIT # 6	05.10.09	1000	05.10.09	1700	Monthly Maintenance Work
UNIT # 2	12.10.09	1000	12.10.09	1700	
UNIT # 4	16.10.09	1000	16.10.09	1700	
UNIT # 3	22.10.09	1000	22.10.09	1700	
UNIT # 5	26.10.09	1000	26.10.09	1700	
UNIT # 1	30.10.09	1000	30.10.09	1700	

OCB: On Continuous basis, ODB: On Daily Basis

* Duration of maintenance on last day will be on daily basis

Note: All shutdowns are cleared on tentative basis and concurrence from ERLDC needs to be taken before availing actual shutdown.