**Central Electricity Authority**
**System Planning & Project Appraisal Division**
**Sewa Bhawan, R.K. Puram, New Delhi – 110066.**

**No. 26/10/2009-SP&PA/** **Date: 1st Sept, 2009**

**To**

1 The Member (PS),
Central Electricity Authority,
Sewa Bhawan, R. K. Puram,
New Delhi-110066

2 The Member Secretary,
Western Regl. Power Committee,
MIDC Area, Marol, Andheri East,
Mumbai
***Fax 022 28370193***

3 The Executive Director (Engg.),
Powergrid Corp. of India Ltd.,
"Saudamini", Plot No. 2, Sector-29,
Gurgaon-122001
***Fax 95124-2571760***

4 Chairman and Managing Director,
MPPTCL, Shakti Bhawan, Rampur,
Jabalpur-482008
***Fax 0761 2665593***

5 Member (Transmission & Distribution),
Chhatisgarh State Electricity Board,
Dangania, Raipur (CG)-492013
***Fax 0771 4066566***

6 The Managing Director,
GETCO, Sardar Patel Vidyut Bhawan,
Race Course, Baroda-390007
**Fax 0265 2337918 / 2338164**

7 Director (Operation),
MAHATRANSCO, 'Prakashgad', Plot
No.G-9, Bandra-East, Mumbai-400051
***Fax 022 26452868***

9 The Executive Director (Engg.),
NTPC Ltd., Engg. Office Complex,
A-8, Sector-24, NOIDA 201301
***Fax 95120-2410201***

10 The Chief Engineer,
Electricity Department,
The Government of Goa, Panaji
***Fax 0832 222354***

11 Executive Engineer (Projects)
UT of Dadra & Nagar Haveli,
Department of Electricity
Silvassa
***Ph. 0260-2642787***

12 Executive Engineer
Administration of Daman & Diu (U.T.)
Department of Electricity
Moti Daman-396220
***Ph. 0260-2250889, 2254745***

13 GM, WRLDC
Plot no F-3, MIDC Area, Msarol,
Andheri(East) Mumbai-400093
Fax no 022-28202690

**Sub:** **29th** meeting of the Standing Committee on Power System Planning of Western Region - Agenda Note for the meeting.

**Sir,**

29th meeting of the Standing Committee on Power System Planning of Western Region is proposed to be held in the 2nd week of September, 2009. An agenda note of the meeting is available on CEA website (www.cea.nic.in at the following link: Home page-Power Systems-Standing Committee on Power System Planning-Western Region).

The date and venue of the meeting will be intimated shortly. Kindly make it convenient to attend the meeting.

Yours faithfully,

(P. K. Pahwa)
Director

# Agenda Note for 29th Meeting of Standing Committee on Power System Planning in Western Region

## 1. Confirmation of the minutes of 28th meeting of the Standing Committee on Power System Planning in Western Region held on 6th December 2008 at Aurangabad and Special meeting of the Standing Committee on Power System Planning in Western Region held on 18th April 2009 at Mumbai .

1.1 The minutes of the 28th SCM were issued vide CEA letter No.26/10/2002-SP&PA/15-26 dated 23rd December 2008.

Subsequently MPTRANSCO has requested for following amendment to para 3.1 of the minutes vide their letter no. 04-01/PSP/N-171/1417 dated 7th Feb 2009.

*Para 3.1 on page no.3 of the minutes of the 28th SCM ("……WR constituents agreed to share only 25% transmission charges ……") may be amended as under:*

*"……WR constituents (except Madhya Pradesh and Chattisgarh) agreed to share only 25% transmission charges ……"*
The minutes may kindly be confirmed with the above amendment.

1.2 The minutes of the special meeting of SCM were issued vide letter No.26/10/2009-SP&PA/ dated 5th May, 2009.

Subsequent to the issue of special SCM minutes, NTPC vide their letter dated 26.05.2009 have intimated that Rihand-III and Vindhyachal-IV were central sector PPA based regional generation projects and the transmission lines emanating from the above projects should not considered generation specific dedicated lines. Accordingly, corrigendum to the minutes was issued vide CEA letter no.26/10/2009/SP&PA/518-529 dated 8th June 2009.

The minutes issued along with corrigendum may be confirmed.

## 2.0 Review of Progress on Earlier Agreed Transmission Schemes

## 2.1 Status of under construction / approved schemes

The latest status of earlier agreed schemes as obtained from PGCIL is at Annex-I

(a) Availability of land for 400/220 kV GIS at Mumbai New Location: In the 28th SCM, MSETCL had informed that they were trying to get land in Bhiwandi District. MSETCL may provide the status on land availability.

## 3.0 Transmission system associated with IPPs located in Orissa, Jharkhand, West Bengal, Madhya Pradesh and Chattishgarh.

3.1 During the 28th meeting of the SCM of WR held on 6th December 2008, comprehensive transmission system associated with Tilaiya UMPP (4000 MW), Nabinahgar (1000 MW) of Railways and NTPC, Barh-II (1320 MW), Rihand-III (1000 MW) Vindhyachal-IV (1000 MW) and Mauda (1000 MW) of NTPC and IPPs in Jharkhand , Orrissa , MP Chhattisgarh and Maharastra was deliberated and generation specific , System Strengthening Common to WR and NR and System Strengthening for WR were evolved and agreed. From the evolved transmission system, transmission elements to be associated with Vindhyachal-IV and Rihand-III were subsequently agreed along with its phasing during the Special meeting of the SCM held on 18th April 2009. It was also decided that based on latest status of various IPP projects, phasing of transmission works would be worked out.

3.2 The latest status of IPP projects which are likely to materialize by end of 11th Plan and early 12th is as follows:

**A. Orissa Generation Projects:**

| Sl no | Projects | Generation Developer/ Open Access Applicant | Date of Commissioning | Installed Capacity (MW) | LTOA Required (MW) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | NR | WR | ER | SR | Total |
| 1 | Sterlite | Sterlite Energy Ltd | Jun-09 | 2400 | 200 | 200 | - | - | 400 |
| 2 | GMR | GMR Kamalanga Energy Ltd | Sept -11 | 1050 | 600 | - | - | 200 | 800 |
| 3 | Navbharat | Navabharat Power Pvt. Ltd | Jul - 11 | 1050 | 465 | 255 | - | - | 720 |
| 4 | Monnet | Monet Power Company Ltd | June-12 | 1050 | 300 | 375 | 225 | - | 900 |
| 5 | Jindal | Jindal India Thermal Power Ltd | March-11 | 1200 | 834 | 210 | - | - | 1044 |
| 6 | Lanco Babandh | Lanco Babandh Power Pvt Ltd | Dec-13 | 2640 | 650 | 950 | - | - | 1600 |
| 7 | Ind Barath | Ind Barath Energy(Utkal) Ltd | Sept-11 | 700 | 266 | 350 | - | - | 616 |
| | | **Subtotal(Orissa)** | | **10090** | **3315** | **2340** | **225** | **200** | **6080** |

The following transmission system is proposed to be associated with IPP projects of Orissa:

- **System strengthening, common for WR and NR associated with Orissa IPP projects**:

  i. Establishment of 765kV switching substation at Dharamjaygarh
  ii. Establishment of 2x1500 MVA, 765/400kV Jabalpur Pooling Station
  iii. Jharsuguda Pooling Station – Dharamjaygarh (WR) 765kV D/c
  iv. LILO of Ranchi – Sipat (Bilaspur) PS 765kV S/c line at Dharamjaygarh
  v. Dharamjaygarh – Jabalpur Pool 765kV D/c line
  vi. Jabalpur Pooling station – Jabalpur 400 kV D/c (high capacity)
  vii. Jabalpur Pooling station – Bina 765kV D/c line
  viii. Bina – Gwalior 765kV S/c (3rd circuit)

- **System strengthening in WR associated with Orissa IPP projects**
  i. Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station *( Implementation through private sector)*
  ii. Jabalpur Pooling station – Bhopal 765kV S/c *( Implementation through private sector)*
  iii. Bhopal – Indore 765kV S/c *( Implementation through private sector)*
  iv. Bhopal New substation – Bhopal (M.P.) 400kV D/c (high capacity) *( Implementation through private sector)*

- **System strengthening in NR associated with Orissa IPP projects.**
  i. Gwalior - Jaipur 765kV S/c line
  ii. Jaipur - Bhiwani 765kV S/c line

- **Dedicated transmission System up to pooling point under the scope of Project Developer**

| | |
|---|---|
| Sterlite (2400 MW) | (i) Sterlite- Jharsuguda Pooling station 400 kV D/C line with associated bays |
| Ind- Barath(700 MW) | (i) Ind-Barath- Jharsuguda Pooling station 400 kV D/C line with associated bays |

| | |
|---|---|
| Jindal Thermal (1200 MW) | (i) Jindal Thermal- Angul Pooling station 400 kV D/C line with associated bays |
| Monnet (1050 MW) | (i) Monet- Angul Pooling station 400 kV D/C line with associated bays |
| GMR (1050 MW) | (i) GMR- Angul Pooling station 400 kV D/C line with associated bays |
| Lanco Babandh (2640 MW) | (i) Lanco Babandh- Angul Pooling station 400 kV 2XD/C line with associated bays |
| Navbharat Phase-I (1050 MW) | (i) Navbharatl- Angul Pooling station 400 kV D/C line with associated bays |

**B. Jharkhand and West Bengal (WBSEDCL) Generation Projects**

| Sl No | Projects | Developer/Applicant | Time Frame | Ins. Cap | LTOA | Allocation | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | NR | WR | ER | Total |
| **A** | **Jharkhand Projects** | | | | | | | | |
| 1 | Adhunik | Adhunik Thermal Energy Ltd | Mar-12 | 1005 | 910 | 500 | | 350 | 850 |
| 2 | Corporate | Corporate Power Ltd | Mar-12 | 660 | 594 | 594 | | | 594 |
| 3 | ESSAR | Essar Power (Jharkhand) Ltd. | Dec-11 | 1200 | 1100 | 400 | 400 | 300 | 1100 |
| 5 | Dumka | CESC Ltd.(Dumka) | Jun-12 | 600 | 540 | 270 | 270 | 0 | 540 |
| | | | **Subtotal** | **3465** | **3144** | **1764** | **670** | **650** | **3084** |
| **B** | **West Bengal Projects** | **WBPDCL/WBSEDCL** | **2011-12** | **2000** | **2000** | **1200** | **800** | **-** | **2000** |
| | | | **Total** | **5465** | **5144** | **2964** | **1470** | **650** | **5084** |

The following transmission system is proposed to be associated with IPP Projects of Jharkhand and West Bengal (WBSEDCL):

- **System strengthening, common for WR and NR associated with IPP Projects in Jharkhand and West Bengal Generation projects:**
  i. Ranchi - Dharamjayagarh 765kV S/c
  ii. Dharamjaygarh – Jabalpur 765kV D/c (2nd line) *( Implementation through private sector)*

**C. Madhya Pradesh Generation Projects and Chattishgarh Generation Projects (pooled at Bilaspur Pooling Point)**

| Sl. No. | Applicant | Gen. Project Capacity (MW) | LTOA Applied for (MW) | Location | Time Frame | Quantum allocated in the region | |
|---|---|---|---|---|---|---|---|
| | | | | | | WR | NR |
| 1. | Maruti Clean Coal | 300(1x300) | 300 | Near Bilaspur | Jun'12 | 222 | 78 |
| 2. | PTC (Dheeru) | 600(3x350) - part | 600 | Near Bilaspur | Sep'12, Dec'12, Mar'13 | 300 | 300 |
| 3. | Dheeru Power Gen | 450(3x350) - part | 450 | Near Bilaspur | Sep'12, Dec'12, Mar'13 | 367.5 | 82.5 |
| | **Total** | **1350** | **1350** | | | **889.5** | **460.5** |

| Sl. No. | Applicant | Gen. Project Capacity (MW) | LTOA Applied for (MW) | Location | Time Frame | Quantum allocated in the region | |
|---|---|---|---|---|---|---|---|
| | | | | | | WR | NR |
| 1. | Jaiprakash Power | 1320(2x660) | 1320 | Near Nigri | May'13, | 908 | 412 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Ventures Ltd. | | | | Nov'13 | | |
| 2. | Aryan Coal Benefications | 1200(4x300) | 1200 | Near Sidhi | Mar'13, Mar'14, Dec'14, Mar'15 | 900 | 300 |
| | **Total** | **2520** | **2170** | | | **1485** | **635** |

- **System strengthening common for WR associated with above generation projects**
  i. Indore - Vadodara 765kV S/c
  ii. Vadodara – Pirana 400kV D/c(Quad)
  iii. Establishment of 765/400kV 2x1500MVA Vadodara substation

- **Dedicated transmission System up to pooling point under the scope of Project Developer**

| | |
|---|---|
| Maruti Clean Coal & Power Ltd. (300 MW) | (i) Maruti – WR Pooling Station(Bilaspur) 400 kV D/c<br>(ii) Two nos of 400kV bays at WR Pooling Station ( Bilaspur) |
| Dheeru Powergen (450MW) and PTC India(600MW) | (i) Dheeru Power Gen – WR Pooling Station (Bilaspur) 400 kV D/c (high capacity)<br>(ii) Two nos of 400kV bays each at WR Pooling Station(Bilaspur) |
| Jaiprakash Power Ventures Ltd. (1320MW) | (i) Jaiprakash – Satna 400kV D/c (high capacity)<br>(ii) Two nos of 400kV bays at Satna(POWERGRID) |
| Aryan Coal Benefications Pvt. Ltd. (1200MW) | (i) Aryan Coal – Vindhyachal Pooling Station 400kV D/c (high capacity)<br>(ii) Two nos of 400kV bays at Vindhyachal Pooling Station |

## 4.0 New IPP projects in Chattishgarh and the associated transmission system

4.1 A review of progress of IPPs in Chhattisgarh was done in various review meetings held on 18.07.09 at CSPTCL, Raipur, 04.08.09 at CEA, New Delhi. Out of the comprehensive list of generation projects only 12 no IPPs which have shown some progress and are likely to materialize during end of XI Plan and early 12th Plan have been considered. The list is as under:

| S.N | Developer | Capacity (MW) | LTOA (MW) | Unitwise comm schedule | Target Allocation-Region (MW) | | | |
|---|---|---|---|---|---|---|---|---|
| | **RAIGARH COMPLEX** | | | | **WR*** | **NR** | **SR** | **TOTAL** |
| **1** | RKM Powergen Ltd.(4x360) | 1440 | 1440 | Mar'11,Jun'11,Sep'11,Dec'11 | 840 | 300 | 300 | 1440 |
| **2** | Athena Chhattisgarh Power Ltd.(2x600) | 1200 | 1200 | Mar'12, Aug'12 | 823 | 377 | | 1200 |
| **3** | Jindal Power Ltd.(4x600) | 2400 | 2400 | Mar'12,Jul'12,Nov'12,Mar'13 | 1610 | 790 | | 2400 |
| **4** | Jindal Power Ltd.(1x500) | 500 | 500 | Existing | 500 | | | 500 |
| **5** | SKS Ispat & Power Ltd.(4x300) | 1200 | 1200 | Nov'11,Dec'11,Mar'12,Mar'12 | 800 | 400 | | 1200 |
| **6** | Korba West Power Co. Ltd.(1x600) | 600 | 600 | Jul'12 | 600 | | | 600 |
| **7** | DB Power Ltd.(2x600) | 1200 | 1200 | Nov'11,Feb'12 | 818 | 382 | | 1200 |
| | **sub-total** | **8540** | **8540** | | **5991** | **2249** | **300** | **8540** |
| | **JANJGIR-CHAMPA COMPLEX** | | | | | | | |
| **1** | Wardha Power Co. Ltd (6x600) | 3600 | 3600 | Feb'12,Jun'12,Oct'12,Feb'13, Jun'13,Oct'13 | 3600 | | | 3600 |
| **2** | BALCO(4x300) | 1200 | 900 | Jun'10, Sep'10, | 450 | 450 | | 900 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Dec'10, Mar'11 | | | | |
| **3** | Vandana Vidyut Ltd.(2x135+1x270) | 540 | 540 | Apr'11,Dec'11,Mar'12 | 440 | 100 | | 540 |
| **4** | Lanco Amarkantak Power Pvt. Ltd.(2x660) | 1320 | 1320 | Mar'12,Jun'12 | 462 | 858 | | 1320 |
| **5** | Chhattisgarh Steel & Power Ltd.(1x35+1x250) | 285 | 285 | Existing, Dec'11 | 200 | 85 | | 285 |
| | **sub-total** | **6945** | **6645** | | **5152** | **1493** | **0** | **6645** |
| | ***Total*** | ***15485*** | ***15185*** | | ***11143*** | ***3742*** | ***300*** | ***15185*** |

*** WR allocation also includes Chhattisgarh Share (3600 MW) @35% on a/c of FRR*

4.2 Based on the review of progress it is seen that IPP projects of capacity 15485 MW capacity are likely to materialize by 2013-14. Out of this capacity 11143 MW has been indicated for beneficiaries within WR and about 3742 MW has been indicated for beneficiaries in NR. For evacuation of power from various IPP projects in Chhattisgarh studies were presented by PGCIL during the Long term Open access meeting held on 6th December 2008. Based on further studies and refinement considering the progress of various IPPs in Chhattisgarh, pooling stations and transmission corridors have been proposed for evacuation and transfer of power within WR and to NR beneficiaries as under:

Pooling Stations

(1) 765/400 kV pooling stations at Raigarh ( Kotra), Raigarh (Tanmar), Champa, Raipur

Corridor for transfer to WR beneficiaries

(1) 765 kV Raipur pooling station- Wardha-Aurangabad- Phadge / Dhule-Vadodara
(2) $\pm$ 600 kV 4000 MW HVDC corridor from Champa pooling station to Vadodra

Corridor for transfer to NR beneficiaries

(1) $\pm$ 800 kV , 3000 MW HVDC bipole line from Champa pooling station to Kurushetra in NR or a suitable location in NR with a provision to upgrade it to 6000 MW at a later date

4.3 Based on the transmission corridors identified the following transmission system is proposed for the above IPP projects in Chhattisgarh proposed to be connected to Champa pooling station, Raigarh ( Kotra) pooling station, Raigarh (Tanmar) pooling station, and Raipur pooling station.

**I. Transmission system associated with the IPPs**

**A. Transmission System within WR**

(1) Establishment of 765/400 kV pooling stations at Raigarh (near Kotra), Raigarh (near Tamnar), Champa, and at Raipur ( the pooling stations will be initially at 400 kV and later upgraded to 765/400 kV )
(2) Raigarh Pooling Station (Kotra) - Raigarh existing 400 kV D/C (to be kept open at a later date).
(3) Raipur Pooling Station – Raipur existing 400 kV D/C (to be kept open at a later date).
(4) Raipur Pooling station- Wardha 765 kV 2x D/C ( initially 1$^{st}$ D/c line to be operated at 400 kV)
(5) Wardha- Aurangabad(PG) 765 kV 2X D/C (initially 1$^{st}$ D/c to be operated at 400 kV )
(6) Aurangabad(PG)-Khargar 400 kV D/C (quad)
(7) Aurangabad- Padge(PG) 765 kV D/C
(8) Aurangabad- Dhule (New) (PG) 765 kV S/C *( Implementation through private sector)*
(9) Dhule (New) – Vadodara (PG) 765 kV S/C *( Implementation through private sector)*
(10) Establishment of 765/400 kV 2x1500 MVA substations at Dhule (New) *( Implementation through private sector)*

(11) Dhule (New) – Dhule (MSETCL) 400 kV D/C (quad) *( Implementation through private sector)*
(12) Padghe(PG)- Padghe 400 kV D/C (Quad)
(13) Establishment of 765/400 kV 2x1500 MVA substations at Aurangabad and Padghe
(14) ± 600 kV 4000 MW HVDC bipole between Raigarh pooling station (Kotra) – Vadodra
(15) 4000 MW , 600 kV HVDC bipole terminal each at Raigarh pooling station (Kotra) and Vadodra
(16) Vadodra-Asoj 400 kV D/C (Quad)
(17) Vadodra- Karamsad (GETCO) 400 kV D/c (Quad)

**B. Common transmission System for WR and NR**

(1) Raigarh Pooling Station (Kotra)- Raipur Pooling station 765 kV D/C ( intially to be operated at 400 kV)
(2) Raigarh Pooling Station (Kotra)- Champa Pooling station 765 kV S/C
(3) Champa Pooling station- Raipur Pooling station 765 kV D/C ( initially to be operated at 400 kV
(4) Raigarh Pooling station (Kotra)- Raigarh Pooling station (Tamnar) 765 kV D/C (initially to be operated at 400 kV )
(5) Champa Pooling station – Dharamjaygarh 765 kV S/C

**C. Transmission System proposed for NR**

(1) ± 800 kV 6000 MW HVDC bipole between Champa Pooling Station – Kurushetra (NR) ( initially to be operated at 3000 MW)
(2) 3000 MW , 800 kV HVDC bipole terminal at Champa pooling station and Kurushetra with provision to upgrade the terminals to 6000 MW
(3) Kurushetra- Jallandhar 400 kV D/C (Quad) ( one ckt via Nakodar S/S)
(4) LILO of Abdullapur- Sonepat 400 kV D/C (triple) at Kurushetra
(5) Establishment of 400/220 kV , 2x315 MVA substation at Kurushetra

The estimated cost of the above schemes as indicated by PGCIL is of the order of Rs 23500 crores.

**II. Generation specific Scheme for the IPPs**

**A. Raigarh Complex**

| | |
|---|---|
| RKM Powergen Ltd.(4x360MW) | (i) RKM Powergen – Raigarh Pooling Station(near Kotra) 400kV D/c(Quad) |
| Athena Chhattisgarh Power Ltd. (2x600MW) | (i) Athena Chhattisgarh – Raigarh Pooling Station(near Kotra) 400kV D/c(Quad) |
| Jindal Power Ltd.(4x600MW + 1x500MW) | (i) Jindal Power – Raigarh Pooling Station (near Tamnar) 400kV 2xD/c (Quad) along with 765/400kV 3x1500MVA transformers at Raigarh Pooling station (Tanmar) |
| SKS Ispat & Power Ltd.(4x300MW) | (i) SKS Ispat - Raigarh Pooling Station (near Kotra) 400kV D/c(Quad) |
| Korba(West) Power Ltd.(1x600MW) | (i) LILO of Athena Chhattisgarh – Raigarh Pooling Station 400kV D/c at Korba(W) |
| DB Power Ltd.(2x600MW) | (i) DB Power – Raigarh Pooling Station (near Kotra) 400kV D/c (Quad) |

**B. Champa Complex**

| | |
|---|---|
| Wardha Power Ltd.(6x600MW) | (i) Wardha Power – Champa Pooling Station 400kV 2xD/c (Quad) along with 765/400kV 3x1500MVA transformers at Champa Pooling Station. |
| Balco Ltd.(4x300MW) | (i) Balco – Champa Pooling Station 400kV D/c |
| Vandana Vidyut Ltd. | (i) Vandana Vidyut – Champa Pooling Station 400kV D/c |

| | |
|---|---|
| (2x135 + 1x270MW) | |
| Lanco Amarkantak Power(2x660MW) | (i) Lanco - Champa Pooling Station 400kV D/c (Quad) |
| Chhattisgarh Steel & Power Ltd. (1x35+1x250MW) | (i) CSPL – Vandana Vidyut 400kV D/c |

**C. Interim arrangement for connectivity of projects coming prior to availability of transmission**

| | |
|---|---|
| Balco Ltd. | (i) LILO of Korba - Birsinghpur 400kV D/c at Balco |
| RKM Powergen Ltd. | (i) LILO of Rourkela- Raigarh 400kV D/c at RKM Powergen |
| Vandana Vidyut Ltd | (i) LILO of Korba – Bhatapara 400kV S/c at Vandana Vidyut |

The above interim arrangement is purely a temporary transmission arrangement to be carried out by the respective IPP and power transfer may takes place on short-term open access basis. The LILO shall be removed and the line shall be restored in its original configuration, after interconnection of the generation project at the identified Pooling Station.

Members may deliberate and decide.

4.4 From the commissioning schedule of various proposed IPPs in Chhattisgarh it is noted that IPP projects would be coming in phases starting from June 10 to Oct 13. The transmission system would need to be build in phases and an interim arrangement for connectivity/ evacuation of power from projects which are likely to come before readiness of the transmission system. An exercise in this regard has been carried out by PGCIL in consultation with CEA and the proposed phasing of transmission works along with interim arrangements for evacuation based on their present commissioning schedule is as per Annexure II. Based on the exercise it is proposed that transmission works pertaining to WR could be taken up in three stages as under:

**Stage - 1 (Tentatively by September 2012)**

1. Raigarh Pooling Station (Near Kotra) – Raigarh (existing) 400kV D/c (temporary arrangement)
2. Raipur Pooling Station – Raipur (existing) 400kV D/c (temporary arrangement)
3. Raigarh Pooling Station (Near Kotra) – Raipur Pooling Station 765kV D/c (initially to be operated at 400kV)
4. Champa Pooling Station – Raipur Pooling Station 765kV D/c(initially to be operated at 400kV)
5. Raigarh Pooling station(near Kotra) – Raigarh pooling station(near Tamnar) 765kV D/c(initially to be operated at 400kV)
6. Raipur Pooling Station – Wardha 765kV D/c (initially to be operated at 400kV).
7. Wardha – Aurangabad (PG) 765kV D/c (initially to be operated at 400kV)
8. Aurangabad(PG) – Khargar 400kV D/c (Quad)
9. Establishment of 400kV Raigarh Pooling Station (near Kotra) [provision to upgrade at 765kV level]
10. Establishment of 400kV Raipur Pooling Station (provision to upgrade at 765kV level)
11. Establishment of 400kV Champa Pooling Station (provision to upgrade at 765kV level)
12. Establishment of 400kV Raigarh Pooling Station (near Tamnar) [provision to upgrade at 765kV level]

**Stage - II (Tentatively by March 2013)**

1. Raipur Pooling Station – Wardha 765kV D/c(2nd).
2. Wardha – Aurangabad (PG) 765kV D/c(2nd).
3. Padghe – Padghe(PG) 400kV D/c (Quad)
4. Aurangabad (PG) – Padghe(PG) 765kV D/c
5. Raigarh Pooling Station (near Kotra) – Champa Pooling Station 765kV S/c
6. Champa Pooling Station – Dharamjaygarh 765kV S/c
7. Upgradation of 400kV Raigarh Pooling station (near Kotra) to 765/400kV 4x1500MVA capacity, Raipur pooling station to 765/400kV 1x1500MVA capacity, Champa pooling station to 765/400kV 3x1500MVA capacity, Raigarh pooling station(near Tamnar) to 765/400kV 3x1500MVA capacity for charging of terminating 765kV lines at 765kV level
8. Establishment of 765/400kV 2x1500MVA Aurangabad (PG) S/s for charging of 765kV lines at 765kV level:
9. Establishment of 765/400kV 2x1500MVA Padghe (PG) S/s
10. Aurangabad- Dhule (New) (PG) 765 kV S/C *(Implementation through private sector).*
11. Dhule (New) – Vadodara (PG) 765 kV S/C *(Implementation through private sector)*
12. Establishment of 765/400 kV 2x1500 MVA substations at Dhule (New) *(Implementation through private sector)*
13. Dhule (New) – Dhule (MSETCL) 400 kV D/C (quad) *(Implementation through private sector)*

**Stage – III (Tentatively by December 2013)**

1. A ±600kV/660kV, 4000MW HVDC bipole between Raigarh Pooling Station (Kotra) – Vadodara
2. Vadodara – Asoj 400kV D/c (Quad)
3. Vadodara – Karamsad(GETCO) 400kV D/c(Quad)
4. Establishment of 4000MW 660KV HVDC bipole terminal each at Raigarh Pooling station (near Kotra) and Vadodara respectively.

**Stage - IV (Tentatively by March 2014)**

1. ±800kV, 6000MW HVDC bipole between Champa Pooling Station – Kurukshehtra (NR) [initially to be operated for 3000MW).
2. Establishment of 3000MW 800KV HVDC bipole terminal each at Champa Pooling station and Kurukshetra(NR) respectively (provision to upgrade the terminals at (6000 MW at a later date)
3. Kurukshetra(NR) - Jallandhar 400kV D/c(Quad) one ckt. via 400/220kV Nakodar S/s.
4. LILO of Abdullapur – Sonepat 400kV D/c(triple) at Kurukshetra
5. Establishment of 400/220kV 2x500 MVA S/s at Kurukshetra

Members may deliberate

## 5.0 Transmission system associated with Mauda (2X500 MW) generation project of NTPC.

5.1 In the 28th SCM of WR held on 06.12.2008 the following transmission system was agreed for Mauda generation project:

- Mauda – Nagpur South (Butibori) 400kV D/C (Quad)
- Mauda – Khaperkheda (MSETCL) 400kV D/C (Quad)

In addition the following transmission elements were also agreed by the WR constituents as a part of System Strengthening in WR:

- Nagpur South (Butibori) – Wardha 400kV D/c (Quad)
- Establishment of 400/220kV 2x500MVA S/s at Nagpur South (Butibori) ( with 220kV interconnectivity under preview of MSETCL)

5.2 PGCIL has intimated that availability of land for new substation in Nagpur South near Butibori is difficult. The distance between Nagpur South and Wardha is about 50 km it would be desireable that line from Mauda is directly taken to Wardha instead of via Nagpur South. The issue has also been discussed with MSETCL and they are also in agreement for terminating the line at Wardha instead of Butibori. The revised associated Transmission system for Mauda generation project is as given below:

- Mauda – Wardha 400kV D/C (Quad)
- Mauda – Khaperkheda (MSETCL) 400kV D/C (Quad)

As a result, Nagpur South –Wardha 400kV D/c (Quad) line along with 400/220 kV S/s at Nagpur South is not required as a part of System Strengthening in WR.

Members may deliberate.

## 6.0 Transmission System associated with Vindhyachal-IV (1000MW) and Rihand-III (1000MW) generation projects of NTPC

6.1 The transmission system for Vindhyachal-IV (1000MW) and Rihand-III (1000MW) generation projects of NTPC was agreed in the 28th SCM of WR and the Special SCM held on 18.04.2009. Under phasing of transmission works the Vindyachal Pooling-Satna-Gwalior 765 kV line was initially to be is charged at 400 kV level and 765 kV operation was planned with commissioning of all the generators at Vindhyachal-IV, Rihand-III and Aryan Coal. It was also decided that the transmission system associated with Vindhyachal-IV and Rihand-III could be implemented as separate project.

6.2 The transmission system associated with Vindhyachal-IV and Rihand-III was taken up with the NR constituents in the 27th SCM of Northern Region held on 30.05.2009 and the following transmission system has been agreed by them.

**Part-I: Generation specific transmission system (to be implemented by PGCIL)**

A : Rihand-III: For NR only
- Rihand-III – Vindhyachal Pooling Station 765kV 2xS/c (initially to be operated at 400kV)

B : Vindhyachal-IV: For WR only
- Vindhyachal-IV – Vindhyachal Pooling Station 400kV D/c (Quad)

**Part-II: Common System: For both WR and NR**
- Vindhyachal Pooling Station – Satna 765kV 2xS/c
- Satna – Gwalior 765kV 2xS/c
- Sasan – Vindhyachal Pooling Station 765kV S/c
- Sasan – Vindhyachal Pooling Station 400kV D/c
- Establishment of 765/400kV 2x1500MVA S/s at Vindhyachal Pooling Station

**Part-III: NR Strengthening in Regional pool**
- Gwalior – Jaipur (South) 765kV S/c

6.3 Regarding 400 kV connectivity between Sasan and Vindhyachal Pooling Station, during the last Special meeting of SCM it was decided that PGCIL would carry out a study in association with NTPC. In case studies justified interconnection at both 400 kV & 765 kV level, it would be considered. PGCIL has carried out the studies. Details of the same are at Exhibit- II (A&B).

6.4 Regarding initial charging of Vindyachal Pooling-Satna-Gwalior 765 kV link at 400 kV, PGCIL has intimated that there is space constraint , at existing 765/400kV Gwalior S/s, to accommodate both 400kV & 765kV line bays. They have proposed the following phasing of the transmission system:

a) With the initial 1st unit of Vindhyachal (2x500MW) and Rihand-III (2x500MW) generation, Vindhyachal Pooling Station – Satna- Gwalior 765kV link is charged at 400kV level. (same as agreed earlier).

b) With the coming up of 2nd unit of Vindhyachal-IV and Rihand-III Vindhyachal Pooling Station – Satna – Gwalior-Jaipur(RRVNL) 765kV link can be directly operated at 765kV level along with suitable reactive compensation in the form of line/bus reactors.

Member may discuss.

**7.0 Connectivity of proposed 400 kV substation of CSPTCL at Bilaspur with 765/400 kV Bilaspur Pooling Station (WR Pooling Station).**

PGCIL has informed that CSPTCL has proposed establishment of 400kV substation at Bilaspur which will be upgraded to 765kV level in future. CSPTCL have requested POWERGRID for provision of 2 nos. 400kV bays and 2 nos. 765kV bays at 400/765kV Bilaspur Pooling Station for interconnection with the proposed 400kV CSPTCL S/s at Bilaspur.

With interconnections of a number of generation projects (3500MW capacity through LTOA) at) in addition to 2980MW from Sipat generation project for onward transfer power, the short circuit level at 765kV Pooling Station bus become critical. The interconnection proposed by CSPTCL at 765/400kV WR Pooling Station (Bilaspur) would further aggravate the situation and is not desirable.

CSPTCL may give the details of the proposal for establishment of 400 kV substation at Bilaspur (upgradable to 765 kV) and the transmission arrangement.

Members may discuss.

**8.0 Connectivity of proposed 220 /132 kV at Raigarh and Kumhari of India Railway with existing Raigarh and Raipur substation of PGCIL for wheeling of power from Nabinagar generation project in ER to their traction substations in Chhattisgarh.**

PGCIL has informed that Railway Electrification, Bhubaneshwar has proposed to wheel power from Railways 1000 MW generation project at Nabinagar in ER, being developed by Bharat Rail Bijli Co. Ltd. (BRBCL) to Chhattisgarh through ISTS network. The power supply would be availed at 220 kV level by constructing 220/132 kV substations one each at Raigarh and Raipur and connecting it to PGCIL 220kV Raigarh and Kumahari(Raipur) S/s respectively.

Long term open access has been granted to Bharat Rail Bijli Co. Ltd. (Nabinagar generation project) for transfer of 990 MW. Target beneficiaries Indian Railways (ER: 355 MW, WR: 485 MW, NR: 50 MW) and BSEB (100 MW). The target drawal of 130 MW in Maharashtra, 95 MW in Chhattisgarh, 185 MW in Madhya Pradesh and 75 MW in Gujarat has been indicated by Indian Railways in WR.

Members may discuss.

**9.0 Transmission System at 400kV and 765kV in Maharashtra**: Proposal of STU for Evacuation of power from new generating stations (MSPGCL, MAHADISCOM and IPPs) and Intra state system strengthening**.**

9.1 MSETCL has suggested some modifications w.r.t to the Intra state Transmission scheme which was noted and concurred for the connectivity with Regional grids, by the WR constituents, in the 28$^{th}$ SCM. In the revised intra-state transmission proposed, MSETCL has

included Bhiwandi (PG) – Phadge-II 400 kV D/c line. This involves connectivity with the regional grid.

Members may discuss.

9.2 The modified Transmission scheme is as given below.

A) Intrastate system strengthening and common system for the comprehensive evacuation system :

1) 7 X 500 MVA, 765/400 kV S/s at Koradi-III.
2) LILO of 400 kV Satpura – Koradi-I S/c at Koradi-III.
3) 7 X 500 MVA, 765/400 kV S/s at Akola-II.
4) Akola-II – Akola-I 400kV quad D/C line.
5) Koradi-III – Akola-II 765kV 2xS/C lines.
6) Akola-II – Aurangabad (PG) 765kV 2xS/C lines.
7) New 7X167 MVA, 400/220 kV substations at: Lonikand-II, Chakan,Hinjewadi, Kesurdi, Nasik, Nanded, Malharpeth (Karad-II), Padghe-II.

The above 400kV substations would have the following transmission connectivity:

(i) LILO of both ckts of Parli (PG) – Pune (PG) 400 kV D/c at Lonikand-II.
(ii) LILO of one ckts of Lonikand-I – Pune (PG) 400 kV at Chakan.
(iii) LILO of both ckts of Koyna – Jejuri/Lonikand-I 400 kV D/c at Kesurdi.
(iv) Lonikand-II – Kesurdi 400 kV quad D/c line.
(v) Kesurdi – Hinjewadi 400 kV quad D/c line.
(vi) LILO of both ckts of Navsari – Bhiwandi 400 kV D/c at Nasik.
(vii) LILO of Chandrapur-I – Parli 400kV S/C at Nanded
(viii) LILO of both circuits of New Koyna – Karad-I 400kV D/C at Malharpeth (Karad-II).
(ix) LILO of both circuits of Tarapur – Padghe-I 400kV D/C at Padghe-II.
(x) Chakan – Pune(PG) 400 kV S/C line.
(xi) Karad-II (Malharpet) – Kesurdi 400 kV D/c line.
(xii) Bhiwandi (PG) – Phadge-II 400 kV D/c line.
(xiii) South Solapur (PG) – Solapur 400 kV D/c quad line.

B. Intrastate transmission system for generation specific evacuation up to grid points:

MSPGCL Generation

| | |
|---|---|
| **Bhusawal II** | (i) Bhusawal-II – Bhusawal-I 400kV D/C line<br>(ii) Bhusawal-II – Aurangabad-I 400kV D/C line<br>(iii) 7X167 MVA, 400/220 kV S/s at Bhusaval-II |
| **Khaperkheda** | (i) Khaperkheda – Koradi-III 400kV quad D/C line<br>(ii) LILO of Chandrapur – Koradi –I 400 kV S/C line at Khaperkheda<br>(iii) 7X167 MVA, 400/220 kV S/s at Khaperkheda |
| **Koradi-II** | (i) Koradi-II – Koradi–III 400 kV quad D/C line<br>(ii) LILO of 400 kV Koradi-I – Bhusawal-I S/c at Koradi-II.<br>(iii) 7X167 MVA, 400/220 kV S/s at Koradi-II |
| **Chandrapur-II** | (i) LILO of both circuits of Chandrapur - Parli 400kV D/C at Chandrapur-II (that is LILO of 2 circuits out of 3)<br>(ii) Chandrapur-II – Warora – Wardha PG 400kV quad D/C with switching station at Warora<br>(iii) 7X167 MVA, 400/220 kV S/s at Chandrapur-II |

Mahadiscom

| | |
|---|---|
| **Dhopave** | (i) Dhopave – Padghe-II 400kV quad D/C line<br>(ii) LILO of both circuits of Jaigarh-New Koyna 400kV quad D/C at Dhopave |
| **Dhule-II** | (i) Dhule-II – Dhule-I 400kV quad D/C line<br>(ii) Dhule(PG) - Dhule-II 400 kV D/C line<br>(iii) 7X105 MVA, 400/220 kV S/s at Dhule-II |
| **Aurangabad-II** | (i) LILO of both circuits of Aurangabad-I – Bhusawal-II 400kv D/C line at Aurangabad-II<br>(ii) LILO of both ckts of Wardha (PG) – Aurangabad-I at Aurangabad(PG)<br>(iii) 7X105 MVA, 400/220 kV S/s at Aurangabad-II |

IPPs

| | |
|---|---|
| **M/s JSW Energy Ltd.** | (i) Jaigarh – New Koyna 400kV quad D/C<br>(ii) Jaigarh – Karad-I 400kV quad D/C |
| **M/s Wardha Power Co.** | (i) Wardha Plant – Warora 220 kV D/C line |
| **Reliance Ind. Shirur** | (i) Shirur –Lonikhand-II 400kV quad D/C line<br>(ii) Shirur –Chakhan 400kV quad D/C line |
| **Reliance Ind. Talegaon** | (i) Talegaon – Hinjewadi 400kV quad D/C line<br>(ii) Talegaon – Chakhan 400kV quad D/C line |
| **India Bulls, Sinnar (Nasik)** | (i) Sinnar – Nasik 400kV D/C<br>(ii) Sinnar – Bableshwar 400kV quad D/C line |
| **Sophia Power Co., Nandgaonpet** | (i) Nandgaonpet –Akola-II 400kV D/C line<br>(ii) LILO of Akola-I – Koradi-I 400 kV S/C line at Nandgaonpet |
| **M/s Adani - Gondia** | (i) Gondia – Koradi-II 400kV quad D/C line<br>(ii) Gondia – Warora 400kV quad D/C |

## 10.0 MSETCL proposal of connectivity of 400 kV Sholapur with South Solapur (PG) under central sector.

MSETCL vide their letter dated 17.06.2009 have requested for consideration of South Solapur (PG) – Solapur 400 kV D/c quad line as a Regional line for providing connectivity to Maharastra at South Solapur.

Members may discuss.

## 11.0 Provision of 400/220 kV substation to Union territory of DNH (Dadar and Nagar Haveli) and Daman & Diu

11.1 In the 28th SCM, WR constituents had agreed for provision of 400/220 kV 2x315 MVA substation at a suitable location in DNH as a second 400 kV feed, to be established by LILO of Navsari-Mumbai new location 400 kV D/C line along with underlying network interconnectivity. It was also decided the location of the substation and interconnectivity would be evolved by PGCIL and DNH in consultation with CEA.

PGCIL and DNH may give the details of the location identified for the 400/220 kV substation along with the 220 kV level connectivity planned.

11.2 In the 28$^{th}$ SCM Daman & Diu had requested for a 400/220 kV substation to meet their load growth requirements. It was decided that PGCIL will put up the proposal in next SCM.

11.3 PGCIL has proposed establishment of 400/220 kV substation in Daman and Diu by LILO of Vapi-Navi Mumbai 400 kV D/C line. The identification of suitable land for the substation is under process.

11.4 PGCIL and Daman& Diu may give the details of the location identified for the 400/220 kV substation along with the 220 kV level connectivity planned.
Members may deliberate

## 12.0 Evacuation of power from generation projects coming up in Sikkim and Bhutan

12.1 The list of generation projects in Sikkim and phasing of the comprehensive transmission system matching with generation schedule was informed during the 28th SCM meeting held on 06.12.2008. A review of the generation projects in Sikkim, Bhutan and NER along with comprehensive transmission system has been carried out and the latest schedule of generation projects envisaged to come by the year 2014 is as under:

(a) NER : About 4000 MW ( Lower Subansisri HEP: 2000MW, Kameng HEP: 600 MW, Bongaigaon TPS: 750 MW, Pallatana GBPP: 726 MW)

(b) Sikkim : About 2400 MW ( Chujachen: 99 MW, Teesta-III: 1200 MW, Jorethang: 96 MW, Tingting: 99 MW, Rongnichu: 96 MW, Bhasmey: 51 MW, Tashiding: 97 MW, Rangit-II*: 66 MW, Teesta-VI: 500 MW, Rangit-IV: 120 MW)

(c) Bhutan : About 1200 MW (Punatsangchu-I HEP),

Other future projects in Bhutan like Mangdechu (670MW) and Punatsangchu-II (990 MW) are expected to be commissioned by 2016

12.2 In order to evacuate the power from the generation projects in NER, Sikkim and Bhutan, a comprehensive transmission scheme had been evolved which consisted of Bishwanath Chariyali(NER) - Agra(NR), +/-800kV, 6000MW HVDC bipole line with 3000MW HVDC converter stations at Bishwanath Charyiali and Agra proposed under "NER – NR/WR Interconnector-I" initially, which has already been concurred by the constituents of NR and WR. The balance portion of the scheme now consists of 3000MW converter station each at Alipurduar and Agra along with loop-in & loop-out of 6000MW HVDC bipole line at Alipurduar.

12.3 The transmission system for evacuation of the above projects has been divided into three parts. The first part is for evacuation of power from the first two projects in Sikkim i.e. Chujachen (99 MW) and Teesta-III (1200 MW). The 2nd part would be for evacuation of the next 1100MW of power i.e. total 2400MW from Sikkim generation projects. The 3rd part would provide the corridor towards NR/WR with adequate reliability and security for the above generation projects in Sikkim as well as help in evacuation of power from Phunatsangchu-I generation project in Bhutan and also initial evacuation of future generation projects in Bhutan like Punatsangchu-II, Mangdechu etc.

The details of the transmission system are given below.

**(i) By 2011-12, for evacuation of 1300 MW from Sikkim**

**Part-A:** Transmission System for development of pooling station at Kishanganj in Northern part of West Bengal/Bihar

- Establishment of new 2x315 MVA, 400/220kV sub-station at Kishanganj
- LILO of Siliguri (Existing) – Purnea 400kV D/c line(quad) at new pooling station Kishanganj
- LILO of Siliguri (Existing) – Purnea 400kV D/c line(on which reconductoring is being carried out) at Kishanganj with the higher capacity(HTLS) conductor
- LILO of Siliguri – Dalkhola 220kV D/c line at new pooling station at Kishanganj

- LILO of Gangtok-Melli 132kV S/c line upto Rangpo, where Chuzachen-Rangpo 132kV D/c would be connected so as to form Chuzachen-Gangtok and Chuzachen-Melli 132kV S/c lines.

**(ii) By 2012-13, when additional 1100 MW materializes in Sikkim**

**Part-B:** Transmission System for development of pooling substations within Sikkim and transfer of power to a new pooling station Kishanganj in northern Part of West Bengal/Bihar

- Establishment of 220/132kV, 3x100MVA Gas Insulated Substation at Rangpo
- Establishment of 10x167MVA, 1 phase, 400/220kV Gas Insulated substation at New Melli
- LILO of Teesta III – Kishanganj 400kV D/c line at New Melli
- Rangpo – New Melli 220kV D/c line (with twin Moose conductor)
- LILO of Gangtok-Rangit 132kV S/c line at Rangpo and termination of Gangtok-Rangpo and Melli – Rangpo 132kV lines (constructed under part-A through LILO of Gangtok-Melli 132kV S/c line upto Rangpo) at Rangpo
- LILO of Teesta V – Siliguri 400kV D/c line at New Melli
- Kishanganj – Patna 400kV D/c (quad) line

**(iii) By 2014-15, when Punatsangchu-I (1200 MW) comes up in Bhutan**

**Part-C:** Transmission System for development of pooling station in Northern part of West Bengal and transfer of power from Sikkim/Bhutan to NR/WR.

- New 400kV AC & HVDC sub-station with + 800kV, 3000MW converter module at new pooling station in Alipurduar
- Extension of + 800 kV HVDC station with 3000 MW inverter module at Agra
- LILO of Bishwanath Chariali – Agra HVDC line at new pooling station in Alipurduar for parallel operation of the HVDC station
- LILO of Bongaigaon – Siliguri 400kV D/c line at new pooling station in Alipurduar
- LILO of Tala-Siliguri 400kV D/c line at new pooling station in Alipurduar
- LILO of Birpara-Salakati 220 kV D/C line at New Pooling station in Alipurduar
- Punatsangchu-I (generation project in Bhutan)-Alipurduar 400 kV D/C with quad conductor (Indian portion)

12.4 The transmission charges for Part 'A' & 'B' of the above transmission scheme shall be initially borne by the generation developers. The transmission charges for Part 'C' of the transmission scheme shall be borne by beneficiaries of Bhutan power. Northern Region Constituents has already agreed to share the transmission charges of Part-C of the scheme subject to the allocation of power from Bhutan projects to Northern Region.
The above is for information of the members.

## 13.0 Open Access Applications pertaining to New Generation Projects in Southern Region with target beneficiaries in Western/Northern/Southern Region

In the special SCM held on 18.04.2009 Long Term Open access applications pertaining to New Generation Projects in Southern Region with target beneficiaries in Western/Northern/Southern Region was discussed. It was decided that the inter-state transmission system strengthening in WR and NR as well as inter-regional system strengthening between NR and WR shall be identified later on. Subsequently other open applications received in Southern Region with target beneficiaries in WR/NR/SR. The details of LTOA Generation Projects in SR are as given below:

| LTOA Applicant | LTOA Applied | Allocation of Power (MW) | | |
|---|---|---|---|---|
| | | SR | WR | NR |
| **Krishnapatnam Area** | | | | |
| Simhapuri Energy Private Ltd. | 491 | 311 | 135 | |
| PTC India Ltd. (Meenakshi) | 600 | 205 | 195 | 200 |
| APPDCL | 175 | | | 175 |
| Krishnapatnam Power (Navayuga) | 1860 | 360 | 600 | 900 |
| **Total** | **3126** | **876** | **930** | **1275** |
| | | | | |
| **Tuticorin Area** | | | | |
| Coastal Energen Pvt. Ltd. | 1100 | 820 | 280 | |
| Ind-Barath Power (Madras) Ltd. | 945 | 284 | 236 | 425 |
| **Total** | **2045** | **1104** | **516** | **425** |
| **Srikakkulam Area** | | | | |
| East-Coast Energy | 2440 | 1940 | 500 | |
| NCC Vamshadara | 1320 | 500 | 500 | 320 |
| **Total** | **3740** | **2440** | **1000** | **320** |
| **Grand Total** | **8931** | **4420** | **2446** | **2020** |

For transfer of power to WR and NR beneficiaries following transmission system strengthening within WR/NR and between WR-NR has been identified. Details are as given below:

(i) Sholapur – Pune 765 kV 2nd S/c.

(ii) Jabalpur Pooling station – Orai 765 kV S/c line.

(iii) Orai – Bulandshahar 765 kV S/c line.

(iv) Bulandshahar – Sonipat 765 kV S/c line

(v) Establishment of 765 kV station at Orai by LILO of one circuit of Satna – Gwalior 765 kV line

(vi) Establishment of 765 kV station at Buland shahar by LILO of Agra – Meerut 765 kV line.

(vii) Establishment of 765 kV station at Sonepat by LILO of Bhiwani – Meerut 765 kV line.

The estimated Cost of the above system shall be about Rs. 3300 Crores

The transmission charges of the above system strengthening scheme shall be borne by the generation project developers till the finalization of their beneficiaries.

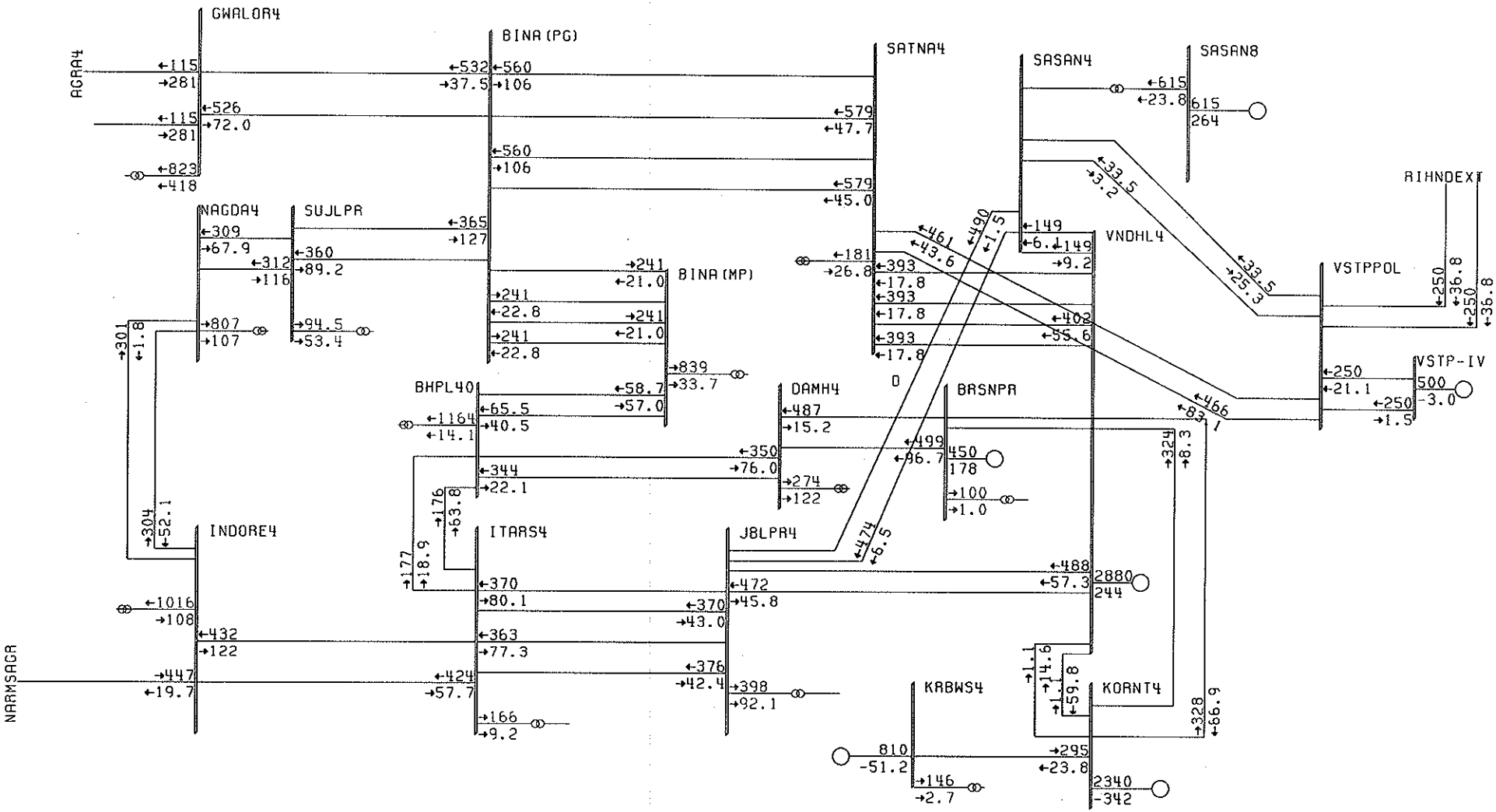
**13.0 Any other item with permission of the Chair**

LTOA meeting after the SCM meeting.

The list of open Access granted in Western Region is at Annexure- III.

PGCIL agenda for the LTOA meeting is at Annexure - IV.

EXHIBIT-2(a)




CASE-1: VSTPP-IV & RIHAND-III : 500 MW EACH

- VSTPP Pooling Stn - Satna 765 kV 2xS/C (ch. at 400 kV)
- VSTPP Pooling Stn - Sasan 400kV D/C

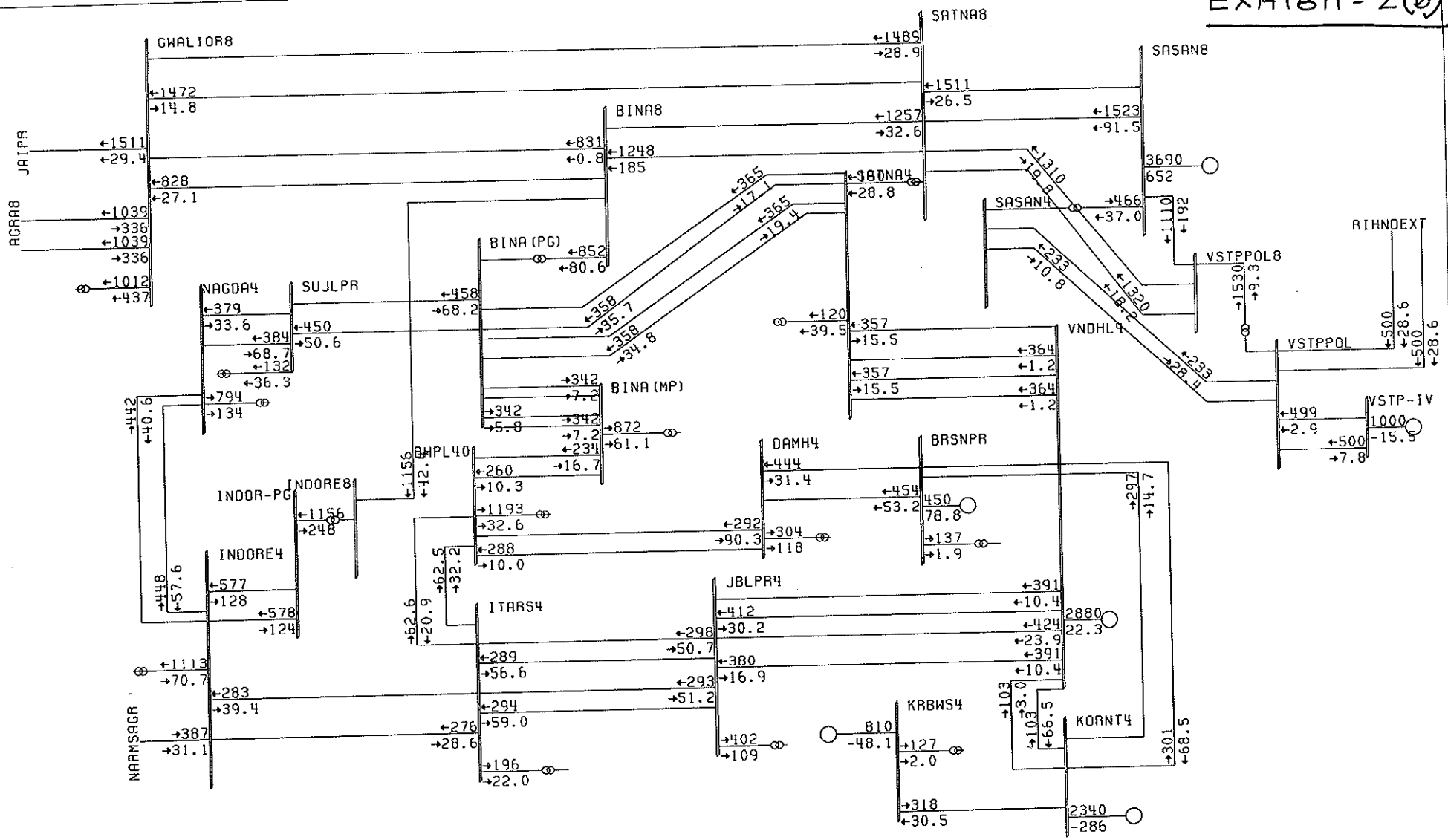
STUDIES FOR MUNDRA-WITH STRENGTHENING
TUE, SEP 01 2009 12:31

150% RATED
0.900 UV 1.050 OV
KV: ≤220 ,≤400 ,≤765

BUS - NONE
BRANCH - MW/MVAR
EQUIPMENT - MW/MVAR

CASE-1

EXHIBIT-2(b)




CASE-2 : VSTPP-IV & RIHAND-III : 1000MW EACH

- VSTPP Pooling Stn – Satna – Gwalior 765 kV 2xS/c
- Gwalior – Jaipur 765 kV S/c

STUDIES FOR MUNDRA-WITH STRENGTHENING

TUE SEP 01 2009 12:22

LSQ% RATIO 0.900UV 1.050OV

KV: ≤220 , ≤400 , ≤765

BUS - NONE
BRANCH - MW/MVAR
EQUIPMENT - MW/MVAR

CASE-2

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

## PART - I :TRANSMISSION LINES

| Sl. No. | Name of the Trans line | Length (CKM) | Date of SCM | Details of SCM | Date of FR | GoI / BoD Appl. | Cost (Appd.) /Ant. | Progress of Construction | | | | Completion Tgt. | | Remarks / Constraints & assistance required. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | *Locs. (no.)* | *Stubs Setting (no.)* | *Tower Erect. (no.)* | *Strng.( ckm)* | *Sch.* | *Ant./ Act.* | |
| **3.0** | **WESTERN REGION** | | | | | | | | | | | | | |
| **3.1** | **Sipat - II Supplementary Trans. System (Balance Portion)** | **482** | **06/09/2002** | **16th** | **Mar'04** | **Jun'05** | **813.67** | **652** | **652** | **652** | **482** | **Jun'08** | **Sep'09** | |
| 3.1.1 | 400KV D/C Akola - Aurangabad line | 482 | | | | | | 652 | 652 | 652 | 482 | Jun'08 | **Sep'09** | Final checking under progress. |
| **3.2** | **Western Region Strengthening Scheme - II** | **6973** | **23/01/2004** | **20th** | **Sep'05** | **Jul'06** | **5221.23 (3581.40-PG & 1639.83 IV)** | **6185** | **3801** | **2829** | **1110** | **July'10** | **July'10** | |
| **3.2.1** | ***SET-A : For absorbing import in eastern and central part of WR*** | ***2478*** | | | | | | 3692 | 1566 | 709 | 310 | | | |
| 3.2.1.1 | 765 kV 2nd S/C Seoni (PG)–Wardha (PG) line (initially to be operated at 400kV) | 270 | | | | | | 734 | 5 | | | | | |
| 3.2.1.2 | 400 kV D/C Wardha (PG)–Parli (PG) (Quad.) | 682 | | | | | | 926 | 492 | 270 | 140 | | | |
| 3.2.1.3 | 400 kV D/C Raipur(PG)–Wardha(PG) line | 736 | | | | | | 991 | 638 | 254 | 119 | | | |
| 3.2.1.4 | 400 kV D/C Bhadravati(PG)-Parli(PG) line | 776 | | | | | | 1041 | 431 | 185 | 51 | | | |
| 3.2.1.5 | 400kV D/CParli (MSEB) – Parli (PG) line | 14 | | | | | | | | | | | | Engg. & survey under progress. |
| **3.2.2** | ***SET-B: For Regional Strengthening in Southern Maharashtra (to be implemented through IPTC route)*** | ***1936*** | | | | | | | | | | | | |
| 3.2.2.1 | Parli (PG) – Pune (PG) 400 kV D/C | 616 | | | | | | | | | | | | |
| 3.2.2.2 | Pune(PG)–Aurangabad (MSEB) 400kV D/C | 450 | | | | | | | | | | | | |
| 3.2.2.3 | Parli (PG) - Solapur(PG ) 400kV D/C | 392 | | | | | | | | | | | | |
| 3.2.2.4 | Solapur (PG) – Kolhapur(MSEB) 400kV D/C | 378 | | | | | | | | | | | | |
| 3.2.2.5 | LILO of Lonikhand (MSEB) – Kalwa (MSEB) 400 kV D/C at Pune (PG ) | 48 | | | | | | | | | | | | |
| 3.2.2.6 | LILO of Solapur (MSEB) – Karad (MSEB) 400 kV S/C at Solapur (PGCIL ) (25 Km D/C + 2Km S/C) | 52 | | | | | | | | | | | | |

**Annex-I**

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl. No. | Name of the Trans line | Length (CKM) | Date of SCM | Details of SCM | Date of FR | GoI / BoD Appl. | Cost (Appd.) /Ant. | Progress of Construction | | | | Completion Tgt. | | Remarks / Constraints & assistance required. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | *Locs. (no.)* | *Stubs Setting (no.)* | *Tower Erect. (no.)* | *Strng.( ckm)* | *Sch.* | *Ant./ Act.* | |
| **3.2.3** | ***SET-C : For Regional Strengthening in Gujarat (to be implemented through IPTC route)*** | ***980*** | | | | | | | | | | | | |
| 3.2.3.1 | Rajgarh (PG)–Karamsad (GEB) 400kV D/C | 480 | | | | | | | | | | | | |
| 3.2.3.2 | Limbdi (Chorania) (GEB) – Ranchodpura (Vadavi) (GEB) 400kV D/C line | 190 | | | | | | | | | | | | |
| 3.2.3.3 | Ranchodpura (Vadavi) (GEB) – Zerda (Kansari) (GEB) 400kV D/C line | 310 | | | | | | | | | | | | |
| **3.2.4** | ***SET–D: For Regional Strengthening in Northern Madhya Pradesh*** | ***1579*** | | | | | | 2493 | 2235 | 2120 | 800 | July'10 | July'10 | |
| 3.2.4.1 | Bina (PG) – Gwalior(PG) 765kV 2nd S/C line (initially to be operated at 400kV) | 233 | | | | | | 624 | 620 | 616 | 135 | July'10 | July'10 | |
| 3.2.4.2 | Korba (NTPC) – Birsinghpur (MPGENCO) 400kV D/C line | 453 | | | | | | 644 | 440 | 386 | 151 | July'10 | July'10 | |
| 3.2.4.3 | Birsinghpur (MPGENCO) – Damoh (PGCIL ) 400kV D/C line | 454 | | | | | | 637 | 605 | 565 | 166 | July'10 | July'10 | |
| 3.2.4.4 | Damoh (PG) – Bhopal (MPEB) 400kV D/C | 430 | | | | | | 576 | 570 | 553 | 348 | July'10 | July'10 | |
| **3.3** | **Trans. System associated with Gandhar-II (GBPP)** | **850** | | | | **Aug'06** | **653.21** | | | | | * | * | *33 months from Investment approval (accorded in Aug'06) or from date of tying-up of FSA by NTPC (which is awaited) whichever is later |
| **3.4** | **Western Region Strengthening Scheme - V** | **343** | **30/09/2006** | **25th** | **Nov' 06** | **Dec'07** | **477.69** | **524** | **146** | **72** | | **Sep'10** | **Sep'10** | |
| 3.4.1 | 400KV Vapi (PG) - Navi Mumbai D/C line | 277 | | | | | | 396 | 87 | 31 | | Sep'10 | Sep'10 | Severe ROW problem being faced in Maharastra & DNH on almost all locations. |
| 3.4.2 | 220KV Vapi - Khadoli (UT of DNH) D/C line | 56 | | | | | | 95 | 59 | 41 | | Sep'10 | Sep'10 | |
| 3.4.3 | LILO of Lonikhand (MSEB) - Kalwa (MSEB) 400KV S/C line at Navi Mumbai. | 10 | | | | | | 33 | | | | Sep'10 | Sep'10 | Engg. & survey in progress. |
| **3.5** | **Western Region Strengthening Scheme - VI** | **106** | **30/09/2006** | **25th** | **Nov' 06** | **Feb'08** | **340.72** | **146** | **94** | **20** | | **Nov'10** | **Nov'10** | |
| 3.5.1 | 400KV D/C Dehgam - Pirana line | 106 | | | | | | 146 | 94 | 20 | | Nov'10 | Nov'10 | |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl. No. | Name of the Trans line | Length (CKM) | Date of SCM | Details of SCM | Date of FR | GoI / BoD Appl. | Cost (Appd.) /Ant. | Progress of Construction | | | | Completion Tgt. | | Remarks / Constraints & assistance required. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | *Locs. (no.)* | *Stubs Setting (no.)* | *Tower Erect. (no.)* | *Strng.( ckm)* | *Sch.* | *Ant./ Act.* | |
| **3.6** | **Western Region Strengthening Scheme - IX** | **60** | **23/02/2007** | **26th** | **Jun' 07** | **Apr.'08** | **230.89** | | | | | **Jan'11** | **Jan'11** | |
| 3.6.1 | LILO fo 400KV D/C Bina - Nagda Line at Sujalpur | 60 | | | | | | | | | | Jan'11 | Jan'11 | Tendering under progress. |
| **3.7** | **Transmission System Associated with Mundra Ultra Mega Power Project.** | **3658** | **23/02/2007 / 10/06/2008** | **26th SCM of WR / Joint SCM of NR &** | **April'07** | **Oct'08** | **4824.12** | **1928** | **52** | | | **Oct'12** | **Oct'12** | Completion Schedule - 48 months from IA |
| **3.7.1** | **Part-A - Tr. System of Mundra (UMPP)** | | | | | | | | | | | | | |
| 3.7.1.1 | 400KV D/C Mundra - Limdi line (Tripal snowbard) | 602 | | | | | | | | | | | Oct'12 | Award under progress. |
| 3.7.1.2 | 400KV D/C Mundra - Bachchau - Ranchodpura line (Tripal snowbard) | 764 | | | | | | 1028 | 50 | | | | Oct'12 | |
| 3.7.1.3 | 400KV D/C Mundra - Jetpur line (Tripal snowbard) | 656 | | | | | | 900 | 2 | | | | Oct'12 | 01 out of 02 pkgs awarded in Mar'09. Foundation commenced from July'09. |
| **3.7.2** | **Part-B - Regional System Strengtheing in WR for Mundra (UMPP)** | | | | | | | | | | | | | |
| 3.7.2.1 | 400KV D/C Gandhar - Navsari line | 268 | | | | | | | | | | | Oct'12 | Award placed in Mar'09. Engg. in progress. |
| 3.7.2.2 | 400KV D/C Navsari - Mumbai line | 408 | | | | | | | | | | | Oct'12 | 01 out of 02 pkgs awarded in Mar'09. |
| 3.7.2.3 | 400KV D/C Wardha - Aurangabad line | 800 | | | | | | | | | | | Oct'12 | Tendering under progress. |
| 3.7.2.4 | 400KV D/C Aurangabad - Aurangabad (MSETCL) line | 60 | | | | | | | | | | | Oct'12 | Tendering under progress. |
| 3.7.2.5 | LILO of both Ckt of Kawas - Navsari 200KV D/C at Navsari | 100 | | | | | | | | | | | Oct'12 | Award placed in Mar'09. Engg. in progress. |
| **3.8** | **Transmission System Associated with Sasan Ultra Mega Power Project.** | **2245** | **23/02/2007 / 10/06/2008** | **26th SCM of WR / Joint SCM of NR &** | **Jun'07** | **Dec'08** | **7031.88** | **3040** | **185** | | | **Dec'12** | | |
| **3.8.1** | ***Part-A - Tr. System of Sasan (4000) UMPP*** | | | | | | | | | | | | | |
| 3.8.1.1 | 765KV S/C Sasan - Satna line -I | 255 | | | | | | 694 | 40 | | | | Dec'12 | |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl. No. | Name of the Trans line | Length (CKM) | Date of SCM | Details of SCM | Date of FR | GoI / BoD Appl. | Cost (Appd.) /Ant. | Progress of Construction | | | | Completion Tgt. | | Remarks / Constraints & assistance required. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | *Locs. (no.)* | *Stubs Setting (no.)* | *Tower Erect. (no.)* | *Strng.( ckm)* | *Sch.* | *Ant./ Act.* | |
| 3.8.1.2 | 765KV S/C Sasan - Satna line -II | 279 | | | | | | | | | | | Dec'12 | 01 out of 02pkgs. Awarded in July'09. |
| 3.8.1.3 | 765KV S/C Satna - Bina line -I | 279 | | | | | | 758 | 125 | | | | Dec'12 | |
| 3.8.1.4 | 765KV S/C Satna - Bina line -II | 274 | | | | | | 738 | 10 | | | | Dec'12 | Foundation commenced from July'09. |
| 3.8.1.5 | 765KV S/C Sasaram - Fatehpur line -II | 352 | | | | | | | | | | | Dec'12 | Tendering under progress. |
| 3.8.1.6 | 765KV S/C Fatehpur - Agra line | 340 | | | | | | | | | | | Dec'12 | Tendering under progress. |
| 3.8.1.7 | 400KV D/C Bina - Bina (MPPTCL) line | 10 | | | | | | | | | | | Dec'12 | Award placed in Mar'09. Engg. in progress. |
| 3.8.1.8 | LILO of both ckt Vindhyachal -Jabalpur 400KV D/C at Sasan | 16 | | | | | | | | | | | Dec'12 | Award placed in Feb'09. Engg. in progress. |
| **3.8.2** | ***Part-B - Regional System Strengtheing in WR for Sasan (UMPP)*** | | | | | | | | | | | | | |
| *3.8.2.1* | 765KV S/C Bina - Indor line | 320 | | | | | | 850 | 10 | | | | Dec'12 | |
| 3.8.2.2 | 400KV D/C Indore - Indore (MPPTL) (Quad) line | 120 | | | | | | | | | | | Dec'12 | Award placed in Mar'09. Engg. in progress. |
| *3.9* | ***Western Region Strengthening Scheme - X*** | **14** | **30/07/2007** | **27th SCM & 9th LTOA** | **Sep'07** | **Feb'09** | **664.96** | | | | | **Feb'12** | Feb'12 | Completion Schedule - 36 months from IA |
| *3.9.1* | LILO of 765KV S/C Sipat - Seoni line at WR Pooling station Near Sipat | 14 | | | | | | | | | | Feb'12 | Feb'12 | Tendering under progress. |
| **3.10** | ***Western Region Strengthening Scheme - XI*** | **24** | **30/07/2007 / 12/09/08** | **9th LTOA meeting / 8th WRPC** | **Nov' 08** | **Feb'09** | **409.50** | | | | | **Feb'12** | Feb'12 | Completion Schedule - 36 months from IA |
| 3.10.1 | LILO of 765KV S/C IInd Sipat - Seoni line at WR Pooling station Near Sipat | 24 | | | | | | | | | | Feb'12 | Feb'12 | Tendering under progress. |
| **3.11** | ***Transmission System Associated with KORBA - III*** | **430** | **30/07/2007 / 16/01/2009** | **27th SCM / 9th WRPC** | **Feb'09** | **Feb'09** | **276.61** | **638** | **11** | | | **Jun'11** | Jun'11 | Completion Schedule - 28 months from IA |
| *3.11.1* | 400KV D/C Korba STPS - Raipur line | 430 | | | | | | 638 | 11 | | | Jun'11 | Jun'11 | |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

## PART - II :SUB STATIONS

| Sl.No | Name of the Sub -Station | MVA Ratio | Date of SCM | Details of SCM | Date of FR | GoI / BoD Apprl. | Status of Construction | | | | Completion Tgt. | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Land* | *Control Room Bldg.* | *Str. & Eqpt. Fdn./ Ercn.* | *Trans-former* | *Sch.* | *Ant./ Act* | |
| **3.0** | **WESTERN REGION** | | | | | | | | | | | | |
| **3.1** | **Sipat - II Supplimentary Trans. System** | **630** | 06/09/2002 | 16th | Mar'04 | **Jun'05** | | | | | **Jun'08** | **Sep'09** | Both (Sipat I&II) Gen. Project delyed. Delay in mobilise & supply by BHEL affected the progress. |
| *3.1.1* | 400/220 KV Wardha Sub station | 2x315 | | | | | Acquired | Compltd | Compltd | Compltd | Jun'08 | Mar.09 | Commissioned in Mar'09 alongwith ICT-I. IInd ICT ant. in Aug'09 |
| *3.1.2* | 765/400/220 KV Seoni Ext. | | | | | | Available | Available | Compltd | | Jun'08 | Mar'09 | Commissioned in Mar'09. |
| *3.1.3* | 400KV Akola Ext. (MSEB) | | | | | | Available | Available | Compltd | | Jun'08 | Mar'09 to Sep.'09 | Wardha bay commissioned in Mar'09. |
| *3.1.4* | 400KV Aurangabad Ext. (MPSEB) | | | | | | Available | Available | WIP | | Jun'08 | Sep'09 | Erection & testing under progress. |
| **3.2** | **Western Region Strengthening Scheme II** | | 23/01/2004 | 20th | Sep'05 | **Jul'06** | | | | | **Jul'10** | **Jul'10** | |
| *3.2.1* | **SET-A : For absorbing import in eastern and central part of WR** | | | | | | | | | | | | |
| *3.2.1.1* | Seoni 400/220 kV Substation (PG) Extension | | | | | | | | | | | Jul'10 | Engg .in progress. |
| *3.2.1.2* | Parli 400 kV (New) Switching Station (PG) | - | | | | | Available | WIP | WIP | | | Jul'10 | Engg. Supply & civil works under progress. |
| *3.2.1.3* | Parli 400/220 kV Substation (MSEB) Extension | | | | | | Available | Available | | | | Jul'10 | Engg .in progress. |
| *3.2.1.4* | Bhadravati 400 kV Substation (PG) Extension | | | | | | Available | Available | | | | Jul'10 | Engg .in progress. |
| *3.2.1.5* | Wardha 400/220 kV Substation (PG) Extension alongwith 25% fixed series compensation | | | | | | Available | Available | | | | Jul'10 | Engg .in progress. |
| *3.2.1.6* | Raipur 400/220 kV Substation (PG) Extension | | | | | | Available | Available | | | | Jul'10 | Engg .in progress. |
| *3.2.2* | **SET - B: For Regional Strengthening in Southern Maharashtra** | | | | | | | | | | | | |
| *3.2.2.1* | Pune 400/220 kV (New) Substation (PG) | 2x315 | | | | | Acquired | WIP | WIP | | | | Engg., supply, civil works & erection under progress. |
| *3.2.2.2* | Solapur (New) 400/220 kV Substation (PG) | 2x315 | | | | | Acquired | WIP | WIP | | | | Engg., supply, civil works & erection under progress. |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl.No | Name of the Sub -Station | MVA Ratio | Date of SCM | Details of SCM | Date of FR | GoI / BoD Apprl. | Status of Construction | | | | Completion Tgt. | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Land* | *Control Room Bldg.* | *Str. & Eqpt. Fdn./ Ercn.* | *Trans-former* | *Sch.* | *Ant./ Act* | |
| *3.2.2.3* | Parli 400 kV Substation (PG) Extension | | | | | | Available | Available | WIP | | | | Engg. Supply & civil works under progress. |
| *3.2.2.4* | Aurangabad 400/220 kV Substation (MSEB) Extension | | | | | | Available | Available | WIP | | | | Engg., supply, civil works & erection under progress. |
| *3.2.2.5* | Kolhapur 400/220 kV Substation (MSEB) Extension | | | | | | Available | Available | WIP | | | | Engg., supply & civil works under progress. |
| ***3.2.3*** | **SET-C : For Regional Strengthening in Gujarat** | | | | | | | | | | | | |
| *3.2.3.1* | Rajgarh 400/220 kV Substation (PG) Extension alongwith 25% fixed series compensation | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.3.2* | Karamsad 400/220 kV Substation (GEB) Extension | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.3.3* | Limbdi (Chorania) 400/220 kV Substation (GEB) Extension | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.3.4* | Ranchhodpura (Vadavi) 400/220 kV Substation (GEB) Extension | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.3.5* | Zerda (Kansari) 400/220 kV Substation (GEB) Extension | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.4* | **SET – D: For Regional Strengthening in Northern Madhya Pradesh** | | | | | | | | | | | | |
| *3.2.4.1* | Bhopal 400/220 kV Substation (MPEB) Extension | | | | | | Available | Available | WIP | | | | Engg. Supply & civil works under progress. |
| *3.2.4.2* | Korba 400/220 kV Switchyard (NTPC) Extension | | | | | | Available | Available | | | | | To be executed by NTPC. |
| *3.2.4.3* | Birsinghpur 400 kV Switchyard (MPGENCO) Extension | | | | | | Available | Available | | | | | Award placed in Mar'09. Engg. in progress. |
| *3.2.4.4* | Bina 400 kV Switching Station (PG ) Extension | | | | | | Available | Available | WIP | | | | Engg. Supply & civil works under progress. |
| *3.2.4.5* | Gwalior 400/220 kV Substation (PG) Extension | | | | | | Available | Available | WIP | | | | Engg. & civil works in progress. |
| *3.2.4.6* | Damoh 400/220 kV Substation (PG) Extn. | | | | | | Available | Available | WIP | | | | Engg. & civil works in progress. |
| **3.3** | **Transmission System associated Gandhar -II (GBPP)** | | 23/11/2004 | 23th | Dec'04 | **Aug'06** | | | | | * | * | * 33 months from Investment approval (accorded in Aug'06) or from date of tying-up of FSA by NTPC (which is awaited) whichever is later |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl.No | Name of the Sub -Station | MVA Ratio | Date of SCM | Details of SCM | Date of FR | GoI / BoD Apprl. | Status of Construction | | | | Completion Tgt. | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Land* | *Control Room Bldg.* | *Str. & Eqpt. Fdn./ Ercn.* | *Trans-former* | *Sch.* | *Ant./ Act* | |
| **3.4** | **Western Region Strengthening Scheme V** | | 30/09/2006 | 25th | Nov' 06 | **Dec'07** | | | | | **Sep'10** | **Sep'10** | |
| *3.4.1* | 400/220 KV Navi Mumbai (GIS). | 2x315 | | | | | Acquired | WIP | WIP | | Sep'10 | Sep'10 | Engg., supply, civil works erection under progress. |
| *3.4.2* | Ext. 400/220 KV Vapi (PG) S/Stn. | - | | | | | Available | Available | WIP | | Sep'10 | Sep'10 | Engg. & civil works in progress. |
| *3.4.3* | Ext. 220/66 KV Khadoli (UT & DNH) S/Stn. | - | | | | | Available | Available | WIP | | Sep'10 | Sep'10 | Engg. & civil works in progress. |
| **3.5** | **Western Region Strengthening Scheme VI** | | 30/09/2006 | 25th | Nov' 06 | **Feb'08** | | | | | **Nov'10** | **Nov'10** | |
| *3.5.1* | 400/220 KV Pirana Sub station | 2x315 | | | | | Acquired | WIP | | | Nov'10 | Nov'10 | Engg. and civil works under progress. |
| *3.5.2* | Ext. 400/220KV Wardha S/Stn. | 1x315 | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply, civil works erection under progress. |
| *3.5.3* | Ext. 400/220KV Pune S/Stn. | 1x315 | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply & civil works under progress. |
| *3.5.4* | Ext. 400/220KV Gwalior S/Stn. | 1x315 | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply & civil works under progress. |
| *3.5.5* | Ext. 400/220KV Raipur S/Stn. | 1x315 | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply & civil works under progress. |
| *3.5.6* | Ext. 400/220KV Bina S/Stn. | 1x315 | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply & civil works under progress. |
| *3.5.7* | Ext. 400/220KV Dehgam S/Stn. | | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply and civil works under progress. |
| **3.6** | **Western Region Strengthening Scheme VII** | | 23/02/2007 | 26th | Apl'07 | **Feb'08** | | | | | **Nov'10** | **Nov'10** | |
| *3.6.1* | Ext. 400/220KV Khandwa S/Stn (420KV 125 MVAR BR) | | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg., supply & civil works under progress. |
| *3.6.2* | Ext. 400/220KV Dehgam S/Stn (420KV 125 MVAR BR) | | | | | | Available | Available | WIP | | Nov'10 | Nov'10 | Engg. and civil works under progress. |
| **3.7** | **Western Region Strengthening Scheme IX** | | 23/02/2007 | 26th | Jun' 07 | **April'08** | | | | | **Jan'11** | **Jan'11** | |
| *3.7.1* | 400/220KV Shujalpur S/Stn | 2x315 | | | | | | | | | Jan'11 | Jan'11 | Award placed in Dec'08. Engg. in progress. |
| *3.7.2* | Ext. 400/220KV Vapi S/Stn | 1x315 | | | | | Available | Available | | | Jan'11 | Jan'11 | Award placed in Dec'08. Engg. in progress. |
| *3.7.3* | Ext. 400/220KV Dehgam S/Stn | 1x315 | | | | | Available | Available | | | Jan'11 | Jan'11 | Award placed in Dec'08. Engg. in progress. |
| **3.8** | **Transmission System Associated with Mundra Ultra Mega Power Project.** | | 23/02/2007 | 26th | April'07 | **Oct'08** | | | | | **Oct'12** | **Oct'12** | Completion Schedule - 48 months from IA |
| 3.8.1 | 400/220 KV Bachchau S/Stn. | 2x315 | | | | | Acquired | | | | | Oct'12 | Award placed in May'09. |
| 3.8.2 | 400/220 KV Navsari GIS S/Stn. | 2x315 | | | | | Under acquisition | | | | | Oct'12 | Award placed in July'09. |

# PROGRESS REPORT FOR JULY'2009

Rs. in Crore

| Sl.No | Name of the Sub -Station | MVA Ratio | Date of SCM | Details of SCM | Date of FR | GoI / BoD Apprl. | Status of Construction | | | | Completion Tgt. | | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Land* | *Control Room Bldg.* | *Str. & Eqpt. Fdn./ Ercn.* | *Trans-former* | *Sch.* | *Ant./ Act* | |
| 3.8.3 | 400KV GIS Switching Station at Mumbai | | | | | | Under acquisition | | | | | Oct'12 | |
| 3.8.4 | 765/400KV Wardha S/Stn. | 3x1500 | | | | | Under acquisition | | | | | Oct'12 | Award placed in Mar'09. Engg. in progress. |
| 3.8.5 | 400/220 KV Aurangabad S/Stn. | 2x315 | | | | | Under acquisition | | | | | Oct'12 | Tendering under progress. |
| 3.8.6 | Extn. 765KV at Seoni & Wardha S/stn. | | | | | | Available | Available | | | | Oct'12 | Award placed in Mar'09. Engg. in progress. |
| 3.8.7 | 40% Fixed Series Compensation on Wardha - Aurangabad 400KV D/C line. | | | | | | | | | | | Oct'12 | Tendering under progress. |
| **3.9** | **Transmission System Associated with Sasan Ultra Mega Power Project.** | | 23/02/2007 | 26th | Jun' 07 | Dec'08 | | | | | Dec'12 | Dec'12 | Completion Schedule - 48 months from IA |
| **3.9.1** | ***Part-A - Tr. System of Sasan (4000) UMPP*** | | | | | | | | | | | | |
| 3.9.1.1 | 765/400 kV Satna S/Stn. | 2x1000 | | | | | Under acquisition | | | | | Dec'12 | Award placed in Mar'09. Engg. in progress. |
| 3.9.1.2 | Extns. 765KV at Agra, Gwalior, Bina & Seoni Sub station | | | | | | Available | Available | | | | Dec'12 | Bina & Seoni pkgs awarded in July'09. |
| **3.9.2** | ***Part-B - Regional System Strengtheing in WR for Sasan (UMPP)*** | | | | | | | | | | | | |
| 3.9.2.1 | 765/400KV Indore S/stn. | 2x1500 | | | | | Under acquisition | | | | | Dec'12 | |
| 3.9.2.2 | Extn. 765/400KV Bina S/Stn. | 2x1000 | | | | | Available | Available | | | | Dec'12 | Award placed in Mar'09. Engg. in progress. |
| 3.9.2.3 | Extn. 765/400KV Gwalior S/Stn. | 2x1500 | | | | | Available | Available | | | | Dec'12 | |
| **3.10** | ***Western Region Strengthening Scheme - X*** | | 30/07/2007 | 27th | Sep'07 | Feb'09 | | | | | Feb'12 | Feb'12 | Completion Schedule - 36 months from IA |
| 3.10.1 | 765/400KV WR Pooling Station near Sipat | 2x1500 | | | | | Under acquisition | | | | | Feb'12 | Award placed in Mar'09. Engg. in progress. |
| **3.11** | ***Western Region Strengthening Scheme - XI*** | | 12/09/08 | 8th WRPC | Nov' 08 | Feb'09 | | | | | Feb'12 | Feb'12 | Completion Schedule - 36 months from IA |
| 3.11.1 | Extn. 765/400KV WR Pooling Station near Sipat (3rd ICT) | 1x1500 | | | | | | | | | | Feb'12 | Award placed in Mar'09. Engg. in progress. |
| **3.12** | ***Transmission System Associated with KORBA - III*** | | 30/07/2007 | 27th | Feb'09 | Feb'09 | | | | | Jun'11 | Jun'11 | Completion Schedule - 28 months from IA |
| 3.12.1 | Extn. 400/220KV Raipur Sub station | | | | | | Available | Available | | | | Jun'11 | Award under progress. |

**ANNEXURE-2**

**PROPOSED PHASING OF TRANSMISSION SYSTEM STRENGTHENING IN CHHATTISGARH**

| S. N | Generation Unit | Capacity (MW) | Gen ProjectComm. Sch. | Transmission system elements | Trans. syste Expected Comm.* |
|---|---|---|---|---|---|
| 1 | BALCO Unit # 1 (300 MW) | 300 | Jun'10 | Interim Arrangement<br>LILO of One Ckt of 400kV Korba-Birsinghpur D/c at BALCO | to be developed by applicant |
| 2 | BALCO Unit # 2 (300 MW) | 600 | Sep'10 | Interim Arrangement<br>LILO of Second ckt of 400kV Korba-Birsinghpur D/c at BALCO | --do-- |
| 3 | BALCO Unit # 3 (300 MW) | 900 | Dec'10 | | |
| 4 | RKM Powergen Unit # 1 (360MW) | 1260 | Mar'11 | Interim Arrangement<br>LILO of one ckt of 400kV Rourkela-Raigarh D/c at RKM | --do-- |
| 5 | Vandana Vidyut Unit # 1 (135MW) | 1395 | Apr'11 | Interim Arrangement<br>LI LO of Korba-Bhatapara 400kV S/c at Vandana Vidyut | --do-- |
| 6 | RKM Powergen Unit # 2 (360MW) | 1755 | Jun'11 | Interim Arrangement<br>LILO of second ckt of 400kV Rourkela-Raigarh D/c at RKM | --do-- |
| 7 | RKM Powergen Unit # 3 (360MW) | 2115 | Sep'11 | | |
| 8 | SKS Power Unit # 1 (300MW) | 2415 | Nov'11 | Dedicated system for SKS Power<br>▪ 400kV SKS – Raigarh Pool D/c (Quad)<br><br>Dedicated system for RKM<br>▪ 400kV RKM- Raigarh Pool D/c (Quad)<br>▪ Restoration of 400kV Rourkela-Raigarh D/c by removing LILO at RKM<br><br>Common tr. System<br>▪ Establishment of 765/400kV S/s at Raigarh Pool (charged at 400KV )<br>▪ 400kV Raigarh Pool -Raigarh D/c | Sep'12 |

| | | | | | |
|---|---|---|---|---|---|
| 9. | DB Power Uniit#1 (600 MW) | 3015 | Nov'11 | Dedicated system for DB<br>• 400kV DB – Raigarh Pool D/c (Quad)<br>Common tr. System<br>• Establishment of 765/400kV S/s at Raipur Pool (charged at 400kV)<br>• Raipur Pool - Raipur 400kV D/c<br>• 765kV Raigarh Pool-Raipur Pool D/c line (charged at 400kV) | Sep'12 |
| 10 | SKS Power Unit # 2 (300MW) | 3315 | Dec'11 | Common tr. System<br>▪ Raipur Pool- Wardha 765kV 1st D/c (op. at 400kV) | Sep'12 |
| 11 | Vandana Vidyut Unit # 2 (135MW) | 3450 | Dec'11 | Dedicated system for VVL<br>• Vandana Vidhyut - Champa Pool 400kV D/c<br>• Restoration of LILO of Korba – Bhatapara 400kV S/c by removing its LILO at VVL<br><br>Dedicated system for BALCO<br>• BALCO - Champa Pool 400kV D/c<br>• Restoration of 400kV Korba-Birsinghpur D/c by removing LILO at BALCO<br>Common tr. system<br>• Establishment of 765/400kV S/s at Champa pool charged at 400kV<br>• Champa Pool - Raipur pool 765kV D/c (operated at 400kV) | Sep'12 |
| 12 | RKM Powergen Unit # 4 (360MW) | 3810 | Dec'11 | Common tr. system<br>• Wardha –Aurangabad 765kV 1st D/c (op. at 400kV)<br>• Aurangabad-Kharghar 400kV D/c(Quad) | Sep'12 |
| 13 | Chhattisgarh Steel & Power (285 MW) | 4095 | Dec'11 | Dedicated system for CSPL<br>• CSPL- Vandana Vidhyut 400kV D/c | |
| 14 | Wardha Power Unit # 1 (600MW) | 4695 | Feb'12 | Dedicated system<br>• Wardha Power - Champa pool 400kV D/c (Quad) | |
| 15. | DB Power Uniit#2 (600 MW) | 5295 | Feb'12 | | |
| 16 | Athena Unit # 1 (600MW) | 5895 | Mar'12 | Dedicated system for Athena<br>• Athena - Raigarh Pool 400kV D/c (Quad) | |
| 17 | Jindal Unit # 1 | 6995 | Mar'12 | Dedicated system for Jindal<br>• Jindal-Tamnar 400kV D/c (Quad) | |

| | | | | | |
|---|---|---|---|---|---|
| | (1x600 +1x500 MW[earlier plan]) | | | Common tr. system<br>• Establishment of 765/400kV Tamnar S/s charged at 400kV<br>• 765kV Tamnar-Raigarh Pool 765kV D/c (Op. at 400kV) | Sep'12 |
| 18 | SKS Power Unit # 3,4 (600MW) | 7595 | Mar'12 | | |
| 19 | Vandana Vidyut Unit # 3 (270MW) | 7865 | Mar'12 | | |
| 20 | Lanco Unit # 1 (660MW) | 8525 | Mar'12 | Dedicated system for Lanco<br>• 400kV Lanco-Champa Pool D/c (Quad) | |
| 21 | Wardha Unit # 2 (600MW) | 9125 | Jun'12 | Common tr. system<br>• Charging of 765/400kV Champa Pool S/s at 765kV with 3x1500 MVA tr. capacity<br>• Charging of 765/400kV Raipur Pool S/s at 765kV with 1x1500 MVA tr. capacity<br>• Charging of 765kV Champa-Raipur Pool D/c at 765kV<br>• Charging of 765kV Raipur Pool-Wardha 1st D/c at 765kV<br>• Charging of 765kV Wardha – A'bad 1st D/c at 765kV<br>• Establishment of 765/400kV, 2x1500 MVA S/s at Aurangabad | Mar'13 |
| 22 | Lanco Unit # 2 (660MW) | 9785 | Jun'12 | Common tr. system<br>• Champa Pool –Dharamjaygarh 765kV S/c<br>• 765kV Raipur Pool- Wardha 2nd D/c at 765kV<br>• Wardha – Aurangabad 2nd 765kV D/c<br>• Aurangabad-Nasik 400kV D/c | Mar'13 |
| 23 | Jindal Unit # 2 (600MW) | 10385 | July'12 | Common tr. system<br>• Charging of 765/400kV Tamnar S/s at 765kV with 2x1500 tr. capacity<br>• Charging of Raigarh Pool-Tamnar 765kV D/c line at 765kV<br>• Charging of 765/400kV Raigarh Pool S/s at 765kV with 4x1500 MVA tr. capacity<br>• Charging of 765kV Raigarh Pool-Raipur Pool D/c line at 765kV | Mar'13 |
| 24 | Korba (W) | 10985 | July'12 | Dedicated system for Korba(W) | |

| | | | | | |
|---|---|---|---|---|---|
| | Unit # 1<br>(600MW) | | | • LILO of 400kV Athena – Raigarh Pool D/c at Korba (W)<br><br><u>Common tr. system</u><br>• Aurangabad- Padghe 765 kV D/c<br>• Padghe – Padghe (MSTECL) 400kV D/c (Quad)<br>• Establishment of 765/400kV, 2x1500 MVA S/s at Padghe | Mar'13 |
| 25 | Athena<br>Unit # 2<br>(600MW) | 11585 | Aug'12 | | |
| 26 | Wardha<br>Unit # 3<br>(600MW) | 12185 | Oct'12 | <u>Common tr. system</u><br>• Champa Pool –Raigarh Pool 765kV S/c | Mar'13 |
| 27 | Jindal<br>Unit # 3<br>(600MW) | 12785 | Nov'12 | <u>Dedicated system for Jindal</u><br>• Jindal-Tamnar 400kV 2nd D/c (Quad)<br><br><u>Common tr. system</u><br>• <u>+</u>600kV, 4000 MW HVDC Bipole to Vadodra<br>• 400kV Vadodra- Asoj D/c (Quad)<br>• 400kV Vadodra- Karamsad D/c (Quad) | Dec'13 |
| 28 | Wardha<br>Unit # 4 ,5,6<br>(3x600MW) | 14585 | Feb'13 & onwards | <u>Common tr. system</u><br>• <u>+</u>800kV, 6000 MW HVDC Bipole to Kurukshetra (First stage of 3000 MW)<br>• Kurukshetra-Jullandhar 400V D/c (Quad) [one circuit via Nakodar]<br>• LILO of 400kV Sonepat-Abdullapur (triple)at Kurukshetra<br>• Establishment of 2x500 MVA, 400/220 kV S/s at Kurukshetra | Mar'14 |
| 29 | Jindal<br>Unit # 4<br>(600MW) | 15185 | Mar'13 & onwards | <u>Common tr. system</u><br>• Augmentation of tr. Capacity at Tamnar by 1x1500 MVA | |

**** Assuming Investment approval is obtained by Mar'10***

*Note:*

1) Total Capacity [15485 MW] = 15185 MW+300MW (corresponding to BALCO Unit # 4 which is for captive consumption)

**Annexure- III**

## Details of LTOA already granted in Western Region

| S. No | Open Access Applicant | Capacity (MW) | OA Granted (MW) | Target Allocation (MW) | |
|---|---|---|---|---|---|
| | | | | WR | NR |
| | **Applicants in Chhattisgarh** | | | | |
| 1 | BESCL | 500 | 170 | 170 | |
| 2 | PTC (Lanco-I) | 300 | 300 | 300 | |
| 3 | Jindal Power Ltd. | 500 | 500 | 500 | |
| 4 | PTC(Lanco-II) | 300 | 300 | | 300 |
| 5 | NTPC (Korba-III) | 500 | 500 | 500 | |
| 6 | PTC (Dheeru) | 600 | 600 | 300 | 300 |
| 7 | Aryan Coal Benefication | 270 | 270 | 270 | |
| 8 | Spectrum Coal & Power | 100 | 100 | 100 | |
| 9 | Maruti Clean Coal & Power | 300 | 300 | 222 | 78 |
| 10 | Dheeru Powergen | 450 | 450 | 367.5 | 82.5 |
| | ***Sub total*** | ***3820*** | ***3490*** | ***2729.5*** | ***760.5*** |
| | **Applicants outside Chhattisgarh** | | | | |
| 11 | MPPTCL | 400 | 400 | 400 | |
| 12 | Torrent Power Ltd. | 1095 | 500 | 500 | |
| 13 | MPAKVNL | 25 | 25 | 25 | |
| 14 | Mahan (Essar Power Ltd) | 1200 | 1200 | 1200 | |
| 15 | EMCO Energy | 520 | 520 | 520 | |
| 16 | JSW Energy | 1200 | 300 | | 300 |
| 17 | Jaiprakash Power | 1320 | 1320 | 908 | 412 |
| 18 | Aryan Coal Benefication (MP) | 1200 | 1200 | 900 | 300 |
| 19 | Heavy Water Board | 18 | 18 | 18 | |
| 20 | Air Liquide | 6 | 6 | 6 | |
| | ***Sub total*** | ***6984*** | ***5489*** | ***4477*** | ***1012*** |
| | **Total** | **10804** | **8979** | **7206.5** | **1772.5** |

| S.No. | Open Access Applicant | Capacity (MW) | OA Granted (MW) | Target Allocation (MW) | |
|---|---|---|---|---|---|
| | | | | WR | NR |
| | **Applicants in Chhattisgarh** | | | | |
| 6 | PTC (Dheeru) | 600 | 600 | 300 | 300 |
| 9 | Maruti Clean Coal & Power | 300 | 300 | 222 | 78 |
| 10 | Dheeru Powergen | 450 | 450 | 367.5 | 82.5 |
| 17 | Jaiprakash Power | 1320 | 1320 | 908 | 412 |
| 18 | Aryan Coal Benefication (MP) | 1200 | 1200 | 900 | 300 |
| | ***Sub total*** | ***3820*** | ***3490*** | ***2729.5*** | ***760.5*** |
| | **Applicants outside Chhattisgarh** | | | | |
| 17 | Jaiprakash Power | 1320 | 1320 | 908 | 412 |
| 18 | Aryan Coal Benefication (MP) | 1200 | 1200 | 900 | 300 |
| | ***Sub total*** | ***6984*** | ***5489*** | ***4477*** | ***1012*** |
| | **Total** | **10804** | **8979** | **7206.5** | **1772.5** |

**Annexure-IV**

# Agenda Note for Long Term Open Access Application of IPP Generation projects in Western Region

## A) Application in Anuppur Dist, Madhya Pradesh

### 1. Moser Baer Power & Infrastructures Ltd.(2x600 MW)

M/s Moser Baer Power & Infrastructure Ltd. applied for long term Open Access for transfer of power from its proposed generation project (2x600MW) Phase-1 to target beneficiaries in WR/NR including 416MW to M.P as first right to purchase. The project is located in Laharpur(Murra), Belia & Jethari villages, Anuppur Dist., M.P. It is also indicated that they have expansion plan for further 1050MW, however, implementation of Phase-2 shall be taken up subsequently at a later stage. Therefore, in the present proposal transmission requirement has been evolved for transfer of 1200 MW power from Phase-I of their proposed generation project to its beneficiaries. Point of injection and drawl details for the purpose of open access is as under:

| S. N | Gen Capacity (MW) | Point of injection [Quantum (MW) to be transferred] | Point /Quantum of drawal |
|---|---|---|---|
| 1. | Moser Baer Power TPS– 2x600 MW (1200MW)<br>Village- Belia & Jethari, Dist – Anuppur (M.P)<br><br>Generation step-up voltage: 400kV | Nearest S/s in Anuppur Dist, M.P<br><br>1128 MW | **Quantum:**<br>M.P Govt. to buy as per MOU – 416MW<br><br>Others – 162 MW<br><br><u>Capacity for Sale to Other States – 550 MW</u><br>WR : 200 MW<br>NR : 350 MW<br><br>**Point of drawal:**<br>The State Utilities interface with POWERGRID system |

The status of the generation project as informed by the developer is as given below:

**Applicant - Moser Baer Power & Infrastructure Ltd.**

**(2x600MW)**

- Land - 50 acres of land under possession. Total land expected by Nov'09
- Fuel - Ministry of Coal has recommended for coal linkage. Letter of Assurance from SECL received
- Water - Water supply agreement (80 MCM) signed
- Environment - MOEF approved ToR. Public hearing scheduled in Sep'09
- EPC/BTG Status - EPC contract expected to be awarded in Sept'09
- Financial Closure - Expected in Dec'09
- Commissioning - Unit-I : December 2012
  Unit-II : June 2013

The above generation project is located near Jabalpur. A 765/400kV Pooling Station near Jabalpur along with 765kV transmission corridor in WR/NR is proposed as a part of LTOA for various IPPs in Orissa. Therefore, Moser Baer TPS can be connected at proposed Pooling Station near Jabalpur. Strengthening of Jabalpur pooling station-Bina 765 kV corridor is required. Further, to strengthen the 400kV interconnection between Jabalpur Pooling Station with WR grid, 400kV Jabalpur Pooling Station – Damoh D/c line is proposed. The load flow results enclosed at **Exhibit-1**. Proposed transmission system is as under:

i) Generation specific transmission system
   - Moser Baer TPS – Jabalpur Pooling Station 400kV D/c (Quad)
   - 2 nos. 400kV line bays at Jabalpur Pooling Station to terminate above line

ii) Strengthening Scheme

   - Jabalpur pooling station – Bina 765 kV S/c line ***( Implementation through private sector)***
   - Jabalpur Pooling Station – Damoh 400kV D/c (Quad) along with associated bays at either end

In addition to above, M/s Moser Baer Power need to share transmission charges towards following common transmission corridors beyond Jabalpur Pooling Station in WR/NR proposed for IPPs in Orissa/Bilaspur Pooling Station.

Common Transmission system to shared by Maruti Clean Coal & Power Ltd.(300MW), PTC India(600MW), Dheeru Powergen(450MW), Jaiprakash Power Ventures Ltd(920MW), Aryan Coal Benefications Pvt. Ltd.(1200MW), Moser Baer(1200MW) to be shared along with IPPs in Orissa(6080MW) in proportion to allocation to NR

a) Bina – Gwalior 765 kV S/c (3rd)
b) Gwalior – Jaipur 765kV S/c(2nd)
c) Jaipur – Bhiwani 765kV S/c

Common Transmission system to shared by Moser Baer(1200MW) along with IPPs in Orissa(6080MW)

a) Jabalpur Pooling Station - Bina 765kV D/c

Common Transmission system to shared by Maruti Clean Coal & Power Ltd. (300MW), PTC India(600MW), Dheeru Powergen(450MW), Jaiprakash Power Ventures Ltd, (920MW) and Aryan Coal Benefications Pvt. Ltd. (1200MW), Moser Baer(1050MW) in proportion to allocation to WR

a) Indore - Vadodara 765 kV S/c
b) Vadodara – Pirana 400kV D/c(Quad)
c) Establishment of 765/400kV 2x1500MVA Pooling station at Vadodara

## B) Application in Sagar Dist, Madhya Pradesh

### 1. Bina Power Supply Co. Ltd. (2x250 MW)

M/s Bina Power Supply Co. Ltd. applied for long term Open Access for transfer of power from its proposed generation project (2x250MW) to target beneficiaries in WR/NR including 210MW to M.P (Bina). The project is located in Village-Sirchopi, Tehsil-Bina, Dist.- Sagar, M.P. Point of injection and drawl details for the purpose of open access is as under:

| S. N | Gen Capacity (MW) | Point of injection [Quantum (MW) to be transferred] | Point /Quantum of drawal |
|---|---|---|---|
| 1. | Bina Power Supply TPS– 2x250 MW (500MW)<br>Village- Sirchopi, Tehsil – Bina, Dist- Sagar (M.P)<br><br>Generation step-up voltage: 400kV | 400kV Bina (PG)<br><br>500 MW | **Quantum:**<br>Long term Sale:<br>M.P – 210 MW at MPSEB S/s Bina<br><br>Merchant Power – 290 MW<br>WR : 145 MW<br>NR : 145 MW<br><br>**Point of drawal:**<br><br>The State Utilities interface with POWERGRID system |

The status of the generation project as informed by the developer is as given below:

| | | |
|---|---|---|
| **Applicant** | **-** | **Bina Power Supply Co. Ltd. (2x250MW)** |
| o Land | - | Under Possession |
| o Fuel | - | Coal linkage available |
| o Water | - | GoMP given in principle approval for 100 cusec water |
| o Environment | - | In process |
| o EPC/BTG Status | - | BTG awarded to BHEL |
| o Financial Closure | - | Achieved |
| o Commissioning | - | Unit-I : September 2011<br>Unit-II : December 2011 |

The above generation project is located near Bina. One 400kV D/c line between Bina(M.P ) and Bina(PG) is existing and strengthening of this corridor through another D/c line is under construction. Considering the location of the project and nearby load centres, it is proposed to interconnect the project through LILO of 400kV Bina(M.P) – Bina(PG) D/c line at Bina TPS. The load flow results enclosed at **Exhibit-1**. Proposed transmission system is as under:

i) Generation specific transmission system

- LILO of Bina(M.P) – Bina(PG) 400kV D/c at Bina TPS

In addition to above, M/s Bina Power Supply Co. needs to share transmission charges towards following common transmission corridor beyond Bina(PG) in WR/NR proposed for IPPs in Orissa/in Bilaspur Pooling Station.

Common Transmission system to shared by Maruti Clean Coal & Power Ltd.(300MW), PTC India(600MW), Dheeru Powergen(450MW), Jaiprakash Power Ventures Ltd(920MW), Aryan Coal Benefications Pvt. Ltd.(1200MW), Moser Baer(1200MW), Bina Power(290MW) to be shared along with IPPs in Orissa(6080MW) in proportion to allocation to NR

a) Bina – Gwalior 765 kV S/c (3rd)
b) Gwalior – Jaipur 765kV S/c(2nd)
c) Jaipur – Bhiwani 765kV S/c

Common Transmission system to shared by Maruti Clean Coal & Power Ltd. (300MW), PTC India(600MW), Dheeru Powergen(450MW), Jaiprakash Power Ventures Ltd, (920MW) and Aryan Coal Benefications Pvt. Ltd. (1200MW), Moser Baer(1200MW), Bina Power(500MW) in proportion to allocation to WR

a) Indore - Vadodara 765 kV S/c

b) Vadodara – Pirana 400kV D/c(Quad)
c) Establishment of 765/400kV 2x1500MVA Pooling station at Vadodara

## C) Application in Amravati Dist, Maharashtra

### 1. Indiabulls Power Ltd. (2x660 MW)

M/s Sophia Power Co. Ltd. applied for long term Open Access for transfer of power from its proposed generation project (2x660MW) to target beneficiaries in WR/NR including 930MW to Maharashtra. Earlier the capacity of the project was 2640MW. The project is located in Nandgaon pet, Dist-Amravati, Maharashtra. Point of injection and drawl details for the purpose of open access is as under:

| S. N | Gen Capacity (MW) | Point of injection [Quantum (MW) to be transferred] | Point /Quantum of drawal |
|---|---|---|---|
| 1. | Amravati TPS – 2x660 MW (1320MW)<br>Nandgaon Pet, Dist – Amravati (Maharashtra)<br><br>Generation step-up voltage: 400kV | Nearest POWERGRID S/s in Maharashtra<br><br>1230 MW | **Quantum:**<br>Maharashtra – 930 MW<br><br><u>Capacity for Sale to Other States – 300 MW</u><br>WR : 200 MW<br>NR : 100 MW<br><br>**Point of drawal:**<br>Interconnection of CTU system with the STU system of target States |

The status of the generation project as informed by the developer is as given below:

**Applicant - Indiabulls Power Ltd.(2x660MW)**

- Land - Under possession
- Fuel - Coal linkage granted by the Standing Linkage Committee. Source of linkage: WCL/SECL
- Water - Allotted 240 MLD
- Environment - MOEF prescribed ToR for EIA study. EAC recommended the project for environmental clearance.
- EPC/BTG Status - Awarded
- Financial Closure - Achieved
- Commissioning - Unit-I : December 2011<br>Unit-II : March 2012

The above generation project is located near Akola/Wardha. MSETCL already granted connectivity of this project through following transmission system. Copy of the letter from M/s Indiabulls in this regard is enclosed at **Annexure-1.**

- Nandgaonpeth(Sophia) – Akola II (MSETCL) 400kV D/c(Quad)
- LILO of Akola I – Koradi I 400kV S/c at Nandgaonpeth

Transfer of 300MW to other States in WR/NR can be effected through 400kV Akola – Aurangabad D/c line. However, strengthening beyond Aurangabad is proposed to cater the power transfer requirement from various IPPs in Chhattisgarh including Amravati TPS. The load flow results enclosed at **Exhibit-1**. Proposed transmission system is as under:

i) Strengthening Scheme – Transmission charges to be shared along with other IPPs in Chhattisgarh
   - Aurangabad(PG) – Nasik 400kV D/c
   - Aurangabad(PG) – Khargar 400kV D/c (Quad)

In addition to above, M/s Indiabulls needs to share transmission charges towards following common transmission corridor beyond Bina(PG) in WR/NR proposed for IPPs in Orissa.

Common Transmission system to shared by Maruti Clean Coal & Power Ltd.(300MW), PTC India(600MW), Dheeru Powergen(450MW), Jaiprakash Power Ventures Ltd(920MW), Aryan Coal Benefications Pvt. Ltd.(1200MW), Moser Baer(1050MW), Bina Power(500MW) to be shared along with IPPs in Orissa(6080MW)

a) Bina – Gwalior 765 kV S/c ($3^{rd}$)
b) Gwalior – Jaipur 765kV S/c(2nd)
c) Jaipur – Bhiwani 765kV S/c

## D) Application in Amreli Dist, Gujarat

### 1. Pipavav Energy Private Ltd. (1x600 MW)

M/s Pipavav Energy Pvt. Ltd. applied for long term Open Access for transfer of power from its proposed generation project (1x600MW) [imported coal based] to target beneficiaries in WR/NR. The project is located at Pipavav port, Tehsil Rajula,

Amreli Dist, Gujarat. Point of injection and drawl details for the purpose of open access is as under:

| S. N | Gen Capacity (MW) | Point of injection [Quantum (MW) to be transferred] | Point /Quantum of drawal |
|---|---|---|---|
| 1. | Pipavav Energy TPS – 1x600 MW (600 MW)<br>Pipavav port, Dist – Amreli (Gujarat)<br><br>Generation step-up voltage: 400kV | Nearest POWERGRID S/s in Gujarat<br><br>555 MW | **Quantum:**<br>WR : 280 MW<br>NR : 275 MW<br><br>**Point of drawal:**<br>Interconnection of CTU system with the STU system of target States |

The status of the generation project as informed by the developer is as given below:

**Applicant - Pipavav Energy Pvt. Ltd. (1x600MW)**

- Land - 320 acre under possesion, balance 210 acre in process
- Fuel - Private coal mines[Videocon] in Indonesia(80%) and balance from Australia
- Water - Sea water is being used
- Environment - Public hearing completed. MOEF clearance expected in Sep'09.
- EPC/BTG Status - Awarded to BHEL
- Financial Closure - Expected in Oct'09.
- Commissioning - Unit-I : March 2013

The proposed generation project is in proximity to 400kV Amreli/Jetpur S/s(GETCO). However, GETCO informed that GSECL has planned to establish 3200MW generation project at Sarakhadi during 11$^{th}$ plan for which 400kV D/c Sarakhadi TPS – Amreli line as one of the interconnection considered. In view of the above, interconnection of Pipavav TPS with 400kV Pirana(PG) S/s is proposed. The load flow results enclosed at **Exhibit-1**. Proposed transmission system is as under:

i) <u>Generation specific transmission system</u>

- Pipavav TPS – Pirana(PG) 400kV D/c
- 2 nos. 400kV line bays at Pirana(PG) to terminate above line

ii) <u>Strengthening Scheme</u>

- Bhachau – Versana(GETCO) 400kV D/c

In addition, M/s Pipavav Energy Pvt. Ltd. need to share the applicable regional transmission charges corresponding to its quantum of power transfer.

## E) Application in Bhatapara Dist, Chhattisgarh

### 1. Real Ispat & Power Ltd.(1x80 MW)

M/s Real Ispat & Power Ltd. applied for long term Open Access for transfer of power from its proposed generation project (1x80MW) [coal/washery reject based] to target beneficiaries in WR/NR. The project is located at Village – Bharatpur(Nipania), Bhatapara Dist., Chhattisgarh. Point of injection and drawl details for the purpose of open access is as under:

| S. N | Gen Capacity (MW) | Point of injection [Quantum (MW) to be transferred] | Point /Quantum of drawal |
|---|---|---|---|
| 1. | Real Ispat & Power Ltd. – 1x80 MW (80 MW)<br>Dist – Bhatapara (Chhattisgarh)<br><br>Generation step-up voltage: 400kV or 220kV | Ex-generator bus<br><br>70 MW | **Quantum:**<br>WR : 42 MW<br>NR : 28 MW<br><br>**Point of drawal:**<br>Interconnection of CTU system with the STU system of target region |

The status of the generation project as informed by the developer is as given below:

**Applicant - Real Ispat & Power Ltd.(1x80MW)**

- Land - 100 acre required and total land under possession
- Fuel - Dolachar and washery rejects/coal fines- all tied ups
- Water - Allocation obtained
- Environment - ToR granted. EC is awaited within next 3 months
- EPC/BTG Status - Before 15$^{th}$ Sep'09
- Financial Closure - Expected in Oct'09.
- Commissioning - Unit-I : December 2010

The proposed generation project is in proximity to 400kV Bhatapara S/s. Considering the capacity of the project and its location, it is proposed to interconnect the Real Ispat

generation project(80MW) with the grid through LILO of 220kV Bhatapara(PG) – Bhatapara(CSPTCL) D/c line at the generation switchyard. Proposed transmission system is as under:

i) Generation specific transmission system

- LILO of 220kV Bhatapara(PG) – Bhatapara(CSPTCL) D/C line at Real Ispat generation switchyard

In addition, M/s Real Ispat & Power Ltd. need to share applicable regional transmission charges as well as Chattishgarh STU charges corresponding to its quantum of power transfer.

**Members may like to discuss above proposal and decide.**

# SYSTEM STUDIES IN WESTERN REGION

EXHIBIT-1

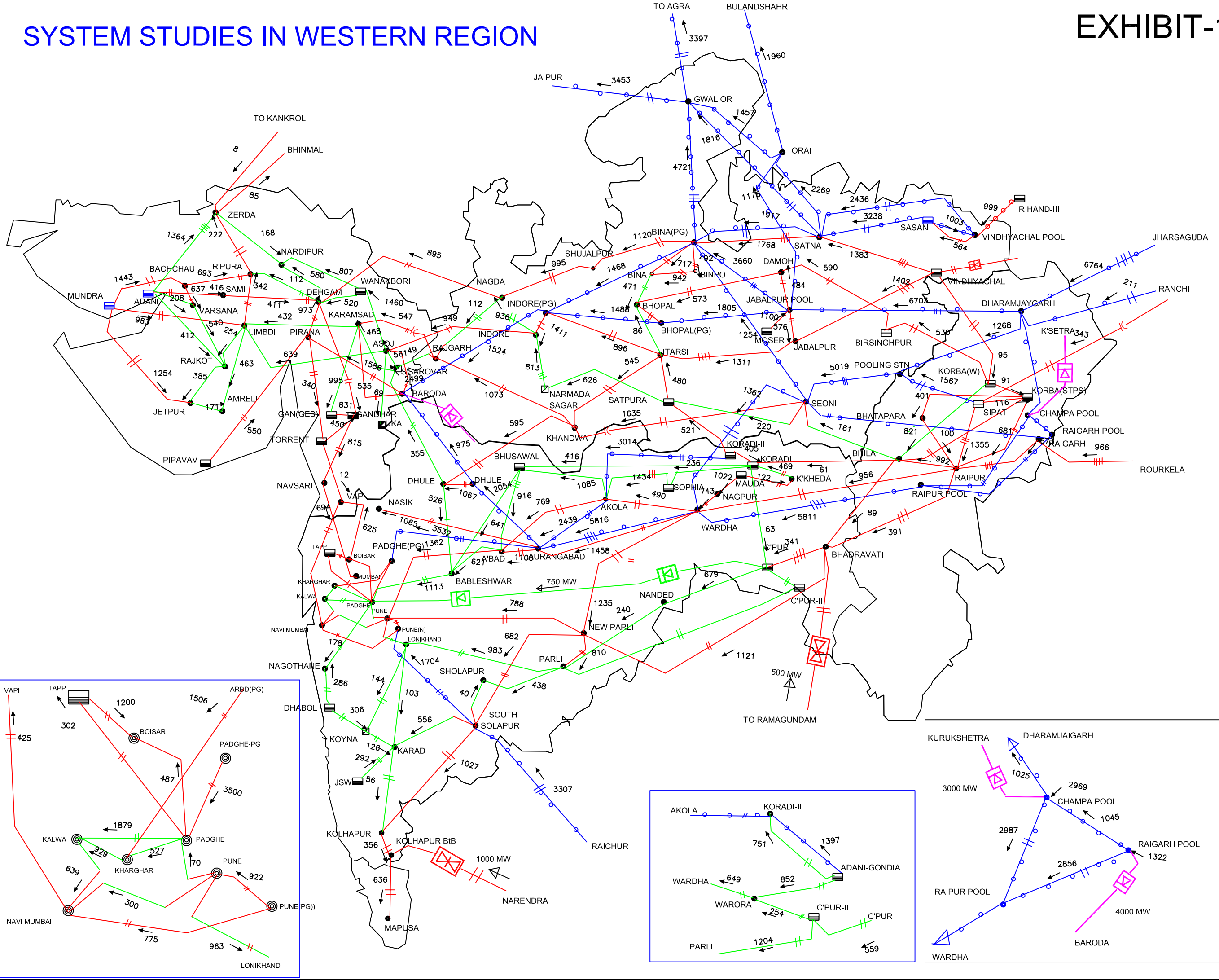
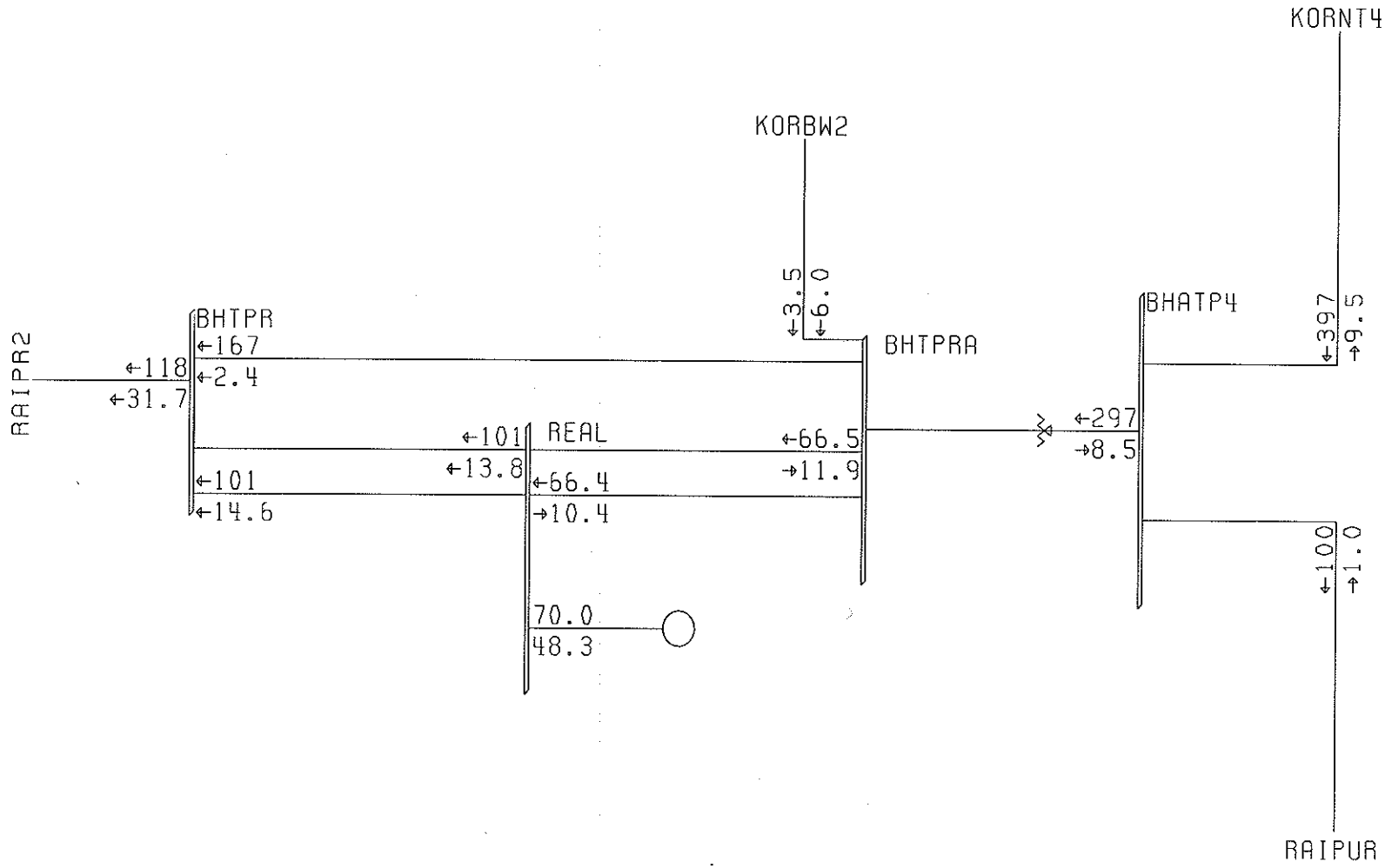


EXHIBIT-3




- LILO OF BHATAPARA(PG) – BHATAPARA(CSPTCL) 220 KV D/C LINE AT REAL ISPAT

| | | | |
|---|---|---|---|
| POWER TECHNOLOGIES, INC. | TUE, SEP 01 2009 14:34 | | BUS - NONE<br>BRANCH - MW/MVAR<br>EQUIPMENT - MW/MVAR |