Eastern Regional Power Committee:: Kolkata

Agenda Items for Special TCC and Commercial Meeting of ERPC--Proposed by Power Grid

A) Establishment of Lapanga 400 kV substation by near Jharsuguda in Orissa

The matter needs to be discussed in the Standing Committee.

B) Immediate Evacuation System from Tilaiyya UMPP (4000 MW)

For immediate evacuation of power from Tilaiya UMPP(4000MW), following transmission system was earlier agreed.

- Tilaiya UMPP–Sasaram 765 kV S/c
- Tilaiya UMPP– Gaya 765 kV S/c
- Tilaiya UMPP– Balia 765 kV S/c

In view of space constraints at Sasaram, an additional 765kV Tilaiyya UMPP - Balia S/c line instead of the 765kV Tilaiyya - Sasaram line would be constructed forming two 765kV lines from Tilaiya UMPP to Balia. Thus, the revised system is,

- Tilaiya UMPP – Balia 765kV D/c line
- Tilaiya UMPP – Gaya 765kV S/c line

The modality of sharing Transmission charges for the above ATS shall remain the same as agreed earlier.

The matter was discussed in the 12th ERPC meeting held at Gangtok on 04-12-2009. Deliberation of the same are reproduced below :

" BSEB opined that Tilaiya UMPP–Balia 765kV D/C line, in place of Tilaiya UMPP–Sasaram 765kV S/C line would increase the cost of ATS of Tilaiya UMPP, hence the beneficiaries of Tilaiya UMPP in ER would be additionally burdened for ever. Moreover, Eastern Region would be deprived of one 765kV connectivity, if not constructed at Sasaram. ERPC Members suggested POWERGRID to explore the possibility to accommodate the Tilaiya UMPP–Sasaram 765kV S/C before finalisation of the above project."

The possibility to accommodate Tilaiyya – Sasaram 765 kV S/c line was further explored by POWERGRID, however, it may be noted that there is no space for termination of the line at Sasaram sub-stations. Further, extension of the sub-station may also not be feasible due to

inhabitation. In this regard, BSEB officers along with POWERGRID had visited the site and confirmed the same.

Construction of a new 765 kV sub-station may not be cost effective, therefore two circuits from Tilaiyya UMPP are proposed to be terminated at Balia. However, share of power would be delivered to all the beneficiaries, as per planning criteria of CEA.

Members may kindly discuss and approve.

C. LILO of Maithon - Jamshedpur 400kV D/c at Adhunik TPS

The proposed transmission system for immediate evacuation of power from Adhunik TPS is as given below :

- LILO of Maithon - Jamshedpur 400kV D/c at Adhunik generation project

Or

- Adhunik TPS – Jamshedpur 400 kV D/c

These proposal was discussed in the Standing Committee meetings held on 08-11-2008 & 14-09-2009, LTOA meeting held on 26-05-2009 and 12th meeting of ERPC held at Gangtok on 04-12-2009. While discussing the proposal (on 04-12-2009 at Gangtok) of loop-in & loop-out of Maithon - Jamshedpur 400kV D/c at Adhunik generation project, it was opined that the ERPC is not agreed to any interim arrangement and the evacuation scheme should be firm matching with the commissioning of the generation project.

The generation developer has indicated through an affidavit submitted to POWERGRID on the directive of CERC that the date of commissioning of the generation project is Jan-2012. POWERGRID on its part has taken up the matter with Chief Secretary, Govt. of Jharkhand for possession of encroached land of its Jamshedpur sub-station (copy enclosed at **Annexure-B**). However, so far the land has not come into the possession of POWERGRID. Therefore, the possibility of construction of a 400 kV D/c line from Adhunik generation project to Jamshedpur sub-station may not be feasible. In view of this, the other option of LILO of Maithon – Jamshedpur 400 kV D/c is the only feasible solution and this will not be an interim arrangement but a permanent solution.

Members may kindly discuss and approve.

D) LILO of ER transmission system at IPP Generation Projects in Orissa

Enclosed as a separate agenda (Refer Annexure B).

E) Transmission system for evacuation and transfer of power from IPPs in Orissa

The transmission system for evacuation of power from Orissa was discussed in the Standing Committee meeting held on 08.11.08 at Bhubaneshwar, where in the following pooling stations and the associated transmission lines were discussed and agreed. Further, transmission system was agreed :

Establishment of 765/400kV Pooling Station at Jharsuguda
• Establishment of 765/400kV Pooling Station at Dhenkanal
• Establishment of 765/400kV Pooling Station at Angul
• Dhenkenal Pooling Station – Angul Pooling Station 765kV 2xS/c
• Angul Pooling Station – Jharsuguda Pooling Station 765kV 2xS/c
• Jharsuguda Pooling Station – Dhenkenal Pooling Station 765kV 2xS/c

• LILO of Rourkela – Raigarh 400kV 2xD/c at Jharsuguda Pooling station
• ***** LILO of Meramundali – Jeypore 400kV S/c line at Angul pooling station
• ***** LILO of one ckt of Talcher - Meramundali 400kV D/c line at Angul pooling station
• ***** LILO of Meramundali-Chandaka 400kV D/c line at Dhenkenal Pooling station
[***** These LILO would be later disconnected when Angul and Dhenkanal pooling stations at 765 kV are developed as otherwise it would cause increased short circuit levels in the grid.]

The matter was discussed further in the Standing Committee meeting held on 14 Sept 2010 at Bhubaneshwar and it was clarified by Member (PS), CEA that the system strengthening requirements to facilitate transfer of power from Phase-I generation projects of IPPs in Orissa to NR and WR were earlier firmed-up and the same was further tuned after reviewing the generation scenarios of IPPs.

Accordingly, the transmission requirements within and across the Eastern, Northern, and Western Regions, which were already discussed and agreed in the 27th SCM of NR held on May and 29th SCM held on 10-09-09 of WR, were the following (background at **Annexure A**) :

(a) ER:

- Establishment of 2x1500 MVA, 765/400kV Pooling Station at Jharsuguda
- Establishment of 4x1500MVA, 765/400kV Pooling Station at Angul
- Angul Pooling Station – Jharsuguda Pooling Station 765kV 2xS/c
- LILO of Rourkela – Raigarh 400kV D/c at Jharsuguda Pooling station
- *LILO of Meramundali – Jeypore 400kV S/c line at Angul pooling station
- . *LILO of one ckt of Talcher - Meramundali 400kV D/c line at Angul pooling station
- [***** These LILO would be later disconnected when Angul pooling station is developed
- as 765kV as otherwise it would cause short circuit level problem.]

(b) ER-WR:

- Establishment of 765kV substation at Dharamjaygarh
- Establishment of 2x1500 MVA, 765/400kV Jabalpur Pooling Station
- Jharsuguda Pooling Station – Dharamjaygarh (WR) 765kV D/c
- LILO of Ranchi – WR Pooling (near Sipat) 765kV S/C line at Dharamjaygarh
- Dharamjaygarh – Jabalpur Pooling Station 765kV D/c line
- Jabalpur Pooling Station – Jabalpur 400 kV D/C (high capacity)

(c) WR-NR:

- Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station
- Jabalpur Pool Pooling Station – Bina 765kV D/c line
- Bina – Gwalior 765kV S/C (3rd circuit)
- Jabalpur Pool Pooling Station – Bhopal – Indore 765kV S/C (proposed to be under Pvt.
- Sector)
- Bhopal New substation – Bhopal (M.P.) 400kV D/C (high capacity)
- Gwalior - Jaipur 765kV S/c line
- Jaipur - Bhiwani 765kV S/c line

Later, Ministry of Power, Govt. of India has identified the following transmission system out of the above stated system for development under Private sector. Therefore,

Transmission system under Private Sector

- Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station
- Jabalpur Pool – Bhopal – Indore 765kV S/c
- Bhopal New substation – Bhopal (M.P.) 400kV D/c (high capacity)

The charges of the above system strengthening scheme for evacuation and transfer of power from the above IPPs in Orissa to beneficiaries in various regions would be borne initially by the generation developers. Once the generation developers identified the long term beneficiaries for their generation projects, the same shall be borne by the beneficiary state transmission utilities.

Further, in a meeting chaired by Member(PS), CEA on 15.9.2009 at Bhubansehawr, it was also brought out that the implementation of the transmission system identified for evacuation of power from some generation projects was not feasible in the given time frame and therefore it was decided that the 400 kV lines may be looped in and looped out at those generation project which may be having an early schedule. Accordingly, immediate interim evacuation arrangement for the following generation projects were decided :

Sterlite	• LILO of one ckt of Rourkela-Raigarh 400kV D/c line
Ind Bharat	• LILO of other ckt of Rourkela-Raigarh 400kV D/c line

GMR	• LILO of one ckt of Talcher-Meramundali 400kV D/c line
Jindal	• LILO of Meramundali-Jeypore 400kV S/c line

It was also decided that this shall be an interim arrangement and shall be withdrawn after the project-specific system is in place.

Members may kindly discuss and approve.

F) Establishment of 400 kV Sub-station at DVC by LILO of one ckt. of 400 kV Parulia-Jamshedpur D/C line.

It was stated by Member (PS), CEA that space availability for expansion of the existing 400/220 kV Jameshedpur (PG) substation would be feasible if encroachment was removed from there. An additional 1x315MVA ICT could be provided to meet the upcoming load requirement of DVC without creating a new 400/220kV sub-station at Jamshedpur proposed by DVC. He further added that the 400kV Parulia-Jamshedpur-Mendhasal-Baripada 400 kV D/C line was being LILOed at many locations and further LILO at the new Jamshedpur S/S could cause protection coordinating problems. CE DVC stated that the procurement process for the establishment of new Jamshedpur S/S was already taken up with the aim of supplying the upcoming load of TISCO at Jamshedpur area by 2010 and also to meet more load requirement in future. Member (PS) requested PGCIL and JSEB participants to take effective measures jointly for removal of encroachment with the help of the Govt. of Jharkhand within a period of 2-3 months. PGCIL and JSEB agreed to sort out the problem. In case there was inordinate delay in resolving the encroachment issue, the proposal of DVC could be firmed up. Accordingly, he had suggested DVC to make their NIT ready to float for the proposed S/S. On the query of the members relating to sharing of transmission charges for creating the substation and associated LILO work, Chief Engineer, DVC clarified that the proposed works would be entirely done by DVC at their own expenses.

Members may discuss.

Annexure-A

Transmission system for evacuation and transfer of power from IPPs in Orissa

A comprehensive transmission system was planned so as to take care of the evacuation needs of all the future generation projects in Orissa and the same was discussed with generation developers as well as constituents of Eastern, Northern and Western regions during various meetings in the year 2007 and 2008. The comprehensive transmission system was proposed to be implemented in phased manner matching with the program of generation capacity addition.

Subsequently, review of progress of generation projects in Orissa was done in various meetings with the project developers between November-2008 to April-2009. Accordingly, following projects have been considered under first phase based on the assessment of their actual progress:

List of Phase-I Gen Projects in Orissa

Sl no	Projects	Generation Developer/ Open Access Applicant	Date of Commissioning	Installed Capacity (MW)
1	Sterlite	Sterlite Energy Ltd	Jun-09	2400
2	GMR	GMR Kamalanga Energy Ltd	Sept -11	1050
3	Navbharat	Navabharat Power Pvt. Ltd	Jul - 11	1050
4	Monnet	Monet Power Company Ltd	June-12	1050
5	Jindal	Jindal India Thermal Power Ltd	March-11	1200
6	Lanco Babandh	Lanco Babandh Power Pvt Ltd	Dec-13	2640
7	Ind Barath	Ind Barath Energy(Utkal) Ltd	Sept-11	700
		Subtotal(Orissa)		**10090**

The transmission system for evacuation of power from the above generation projects as well as transfer of power to beneficiaries in various regions was evolved by POWERGRID and discussed in detail with CEA, generation developers and various state utilities for transfer of 8060MW of power under long term access, form the above projects. After many rounds of discussions; the transmission system,

implementation strategy and commercial mechanism was finalized and agreed to by the generation developers. It was decided that the charges of the transmission system would be borne by the generation developers till the time the same is agreed to be borne by the state utilities. Accordingly, it was agreed that POWERGRID would go ahead for implementation of the transmission system based on signing the BPTA (Bulk Power Transmission Agreement) / Furnishing of Bank Guarantee by the project developers for sharing the transmission charges.

POWERGRID had called all the developers who had been granted long term open access for signing the BPTA and furnishing the Bank Guarantee equivalent to Rs 5 lakh per MW for their long term open access capacity required. To this effect following four applicants have signed the BPTA and furnished the Bank Guarantee:

Sl	Project	Generation Developer/Open Access Applicant	Expt. Comm. Schedule	Installed Capacity (MW)	LTOA Required (MW)				
					NR	WR	ER	SR	Total
1	GMR	GMR Kamalanga Energy Ltd	Nov -11	1050	600	-	-	200	800
2	Monnet	Monet Power Company Ltd	June-12	1050	300	225	225	150	900
3	Lanco Babandh	Lanco Babandh Power Pvt Ltd	Dec-13	2640	650	950	-	-	1600
4	Ind Barath	Ind Barath Energy(Utkal) Ltd	Dec-11	700	266	350	-	-	616
		Subtotal(Orissa)		**5440**	**1816**	**1525**	**225**	**350**	**3916**

The number of generation projects who have come forward for giving the bank guarantee have reduced, the requirement of transmission corridor shall be unchanged. This shall give adequate margin for transfer of power in case of contingencies. Further, in view of spread out commissioning schedule of these generation projects the transmission schemes are to be implemented in stages matching with the realistic commissioning of generation projects in consultation with Generating Companies / Beneficiaries. Therefore, transmission system for above mentioned 7 nos. of projects is to be implemented in three parts; Part-A, Part-B and Part-C as detailed below :

A. <u>Transmission system under the scope of Generation Project Developer</u>

Upto Pooling Station at Jharsuguda

- Sterlite (2400 MW)
  - Sterlite – Jharsuguda Pool 400kV D/c line with associated line bays

- Ind-Barath (700 MW)
  - Ind-Barath – Jharsuguda Pool 400KV D/c line with associated line bays

Upto Pooling Station at Angul

- Jindal Thermal (1200 MW)
  - Jindal – Angul Pool 400KV D/c line with associated line bays

- Monnet (1050 MW)
  - Monet – Angul Pool 400KV D/c line with associated line bays

- GMR (1050 MW)
  - GMR – Angul Pool 400KV D/c line with associated line bays

- Lanco Babandh(2640 MW)
  - Lanco Babandh – Angul Pool 400KV 2xD/c line
  - 3x1500MVA, 765/400kV ICT at Angul with associated line bays

- Navbharat Ph-I (1050 MW)
  - Navbharat – Angul Pool 400KV D/c line with associated line bays

B. <u>Transmission system under the scope of POWERGRID</u>

1. Transmission System for Phase-I Generation Projects in Orissa - Part-A

- Angul Pooling Station – Jharsuguda Pooling Station 765 kV 2xS/c line
- LILO of Rourkela – Raigarh 400 kV D/c at Jharsuguda Pooling station
- LILO of Meramundali – Jeypore 400 kV S/c line at Angul pooling station
- LILO of one ckt of Talcher – Meramundali 400 kV D/c line at Angul pooling station
- Establishment of 765/400 kV Pooling Station at Jharsuguda
- Establishment of 765/400 kV Pooling Station at Angul

2. Transmission System for Phase-I Generation Projects in Orissa - Part-B

- Jharsuguda Pooling Station – Dharamjaygarh / near Korba (WR) 765 kV D/c line
- LILO of Ranchi – WR Pooling (near Sipat) 765 kV S/c line at Dharamjaygarh / near Korba
- Dharamjaygarh / near Korba – Jabalpur Pool 765 kV D/c line
- Jabalpur Pooling Station – Jabalpur 400 kV D/c (high capacity) line
- Establishment of 765 kV sub-station at suitable location near Dharamjaygarh / Korba
- Establishment of 765/400 kV Pooling Station at Jabalpur

3. Transmission System for Phase-I Generation Projects in Orissa - Part-C

- Jabalpur Pooling Station – Bina 765 kV D/c line
- Bina – Gwalior 765 kV S/c (3rd circuit) line
- Gwalior – Jaipur 765 kV S/c line
- Jaipur – Bhiwani 765 kV S/c line

C. <u>Transmission system under Private Sector</u>

- Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station
- Jabalpur Pool – Bhopal – Indore 765kV S/c
- Bhopal New substation – Bhopal (M.P.) 400kV D/c (high capacity)

ANNEXURE B

Sharing of Transmission Charges by new IPPs in Eastern Region on account of loop in and loop out of 400 kV lines of POWERGRID in Eastern region

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1.0 Background:

The long term open access was granted to following generation projects (based on CERC Regulation 2004) having beneficiaries in Northern, Western and Southern regions:

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-10	2400	200	200	-	-	400
2	GMR	GMR Kamalanga Energy Ltd	Nov -11	1050	600	-	-	200	800
3	Navbharat	Navabharat Power Pvt. Ltd	Mar-12	1050	465	255	-	-	720
4	Monnet	Monet Power Company Ltd	June-12	1050	300	225	225	150	900
5	Jindal	Jindal India Thermal Power Ltd	March-12	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	Dec-11	700	266	350	-	-	616
		Subtotal(Orissa)		**10090**	**3315**	**2190**	**225**	**350**	**6080**

The power from these generation projects is planned to be transferred to the beneficiary Regions on the transmission system placed at Annexure -1A and 1B. The transmission system at Annexure 1A is the dedicated system to be implemented by the respective developer whereas the system at Annexure 1B would be implemented by POWERGRID and partly by Private developer to be identified by Ministry of Power. The Transmission Charges for system at Annexure 1B are proposed to be shared by the generation developers in proportion to the quantum of Long Term Access sought, till the time the same is shared by the long term beneficiaries finalized by developer. Four of the generation developers viz. Ind-Barath, GMR, Monnet and Lanco-Babandh. have signed the Bulk Power Transmission Agreement and also furnished the requisite Bank Guarantee.

Among the seven developers who have been granted open access, 4 IPPs viz GMR, Ind-Barath Jindal India and Sterlite have indicated through an affidavit submitted to POWERGRID on the directive of CERC, to come up early with the following schedule:

Sterlite Energy Ltd.	**Jun2010;Oct 2010;Jan2011;Mar 2011**
Ind-Barath Ltd.	**Dec 2011 ; Feb 2012**
GMR	**Nov 2011 ; Jan 2012 ; Mar 2012**
Jindal	**March 2012 ; June 2012**

As it may not be feasible to implement the transmission system (at Annexure -1B) matching the above time schedule, it was decided in a meeting chaired by Member(PS), CEA on 15.9.2009 at Bhubansehwar that interim arrangement for connectivity with the Regional grid may be provided to these generating stations so that power does not remain stranded and is evacuated depending upon the transmission capacity margins available in the transmission network. Therefore, the injection of power from these IPPs during interim period has to be dispatched on the STOA basis and the commercial agreement shall be governed by STOA regulations. However, it may further be considered that injection by Ind-Barath and Sterlite is within ER territory. Therefore , it is appropriate that they must pay Eastern regional short-term open access irrespective of the actual demand customer being in other regions.

It is also relevant to mention that CERC is likely to come up with a Transmission Pricing Mechanism with sharing of transmission charges on usage basis (i.e. distance, direction and quantum sensitive). The same would be applicable as and when notified.

Following 400 kV lines were therefore proposed to be looped in and looped out at such generating stations coming up early:

Sl no	Name of Generating Developer	Transmission line to be looped in and looped out at the generation project
1	GMR Kamalanga	Talcher-Meramundli 400 kV D/c line
2	Jindal India Thermal Power Ltd.	Meramundli-Jeypore 400 kV S/c line
3	Ind-Barath	Rourkela-Raipur 400 kV D/c line (One Circuit)
4	Sterlite	Rourkela – Raipur 400 kV D/c line(other circuit)

POWERGRID has informed above arrangement during the recently held 12thTCC/13 ERPC meeting at Kolkata on 25/26th March 2010. ERPC Board advised that while such arrangements of providing immediate connectivity may be acceptable, the sharing of transmission charges may be decided in a separate Commercial cum TCC meeting held early in time.

2.0 Sharing of Transmission Charges – Present Arrangement

The present arrangement of sharing the transmission charges of the 400 kV lines proposed to be looped in and looped out is as below:

S No	Transmission line	Shared by Constituents of
1	Talcher-Meramundli 400 kV D/c line	ER
2	Meramundli-Jeypore 400 kV S/c line	ER
3	Rourkela-Raipur 400 kV D/c line	WR

Following issues need to be considered while finalizing the sharing mechanism for payment of transmission charges:

(i) The LILO arrangement shall be temporary only and shall be restored once the transmission scheme (Annexure 1B) is in place.

(ii) The above-mentioned loop in and loop out shall be built by the respective generation developers including the cost related to modifications and re-instatement of protection, PLCC, communication, SCADA etc. .

(iii) In the interim arrangement, these developers would be connected to ER grid for S No. 1&2 above and to inter-regional link between ER-WR which is paid by WR constituents, however upon the commissioning of the final scheme (Annexure 1B) these developers would dispatch the share of WR and NR through this scheme (Annexure-1B).

3.0 Time frame of implementation:

As the transmission system (at Annexure 1B, item 1) is proposed to be implemented by POWERGRID. Since it is large and passing through forest areas and inhospitable terrain, efforts shall be made to match the commissioning of this system with progress of generation projects. Further, wherever possible interim arrangements in the transmission system for immediate evacuation of power to the extent practicable.

Annexure 1A

Transmission System Under the Scope of Generation Developer

A Upto Pooling Station at Jharsuguda

1 Sterlite (2400 MW)
Sterlite – Jharsuguda Pool 400kV D/c line with associated line bays

2 Ind-Barath (700 MW)
Ind-Barath – Jharsuguda Pool 400KV D/c line with associated line bays

B Upto Pooling Station at Angul

1 Jindal Thermal (1200 MW)
Jindal – Angul Pool 400KV D/c line with associated line bays

2 Monnet (1050 MW)
Monet – Angul Pool 400KV D/c line with associated line bays

3 GMR (1050 MW)
GMR – Angul Pool 400KV D/c line with associated line bays

4 Lanco Babandh(2640 MW)
Lanco Babandh – Angul Pool 400KV 2xD/c line
3x1500MVA, 765/400kV ICT at Angul with associated line bays

5 Navbharat Ph-I (1050 MW)
Navbharat – Angul Pool 400KV D/c line with associated line bays

Annexure 1B

1. Transmission System under the Scope of POWERGRID

1.1 Transmission System for Phase-1 generation projects in Orissa - Part-A

- Angul Pooling Station – Jharsuguda Pooling Station 765kV 2xS/c
- LILO of Rourkela – Raigarh 400kV D/c at Jharsuguda Pooling station
- LILO of Meramundali – Jeypore 400kV S/c line at Angul pooling station
- LILO of one ckt of Talcher - Meramundali 400kV D/c line at Angul pooling station
- Establishment of 2x1500 MVA, 765/400kV Pooling Station at Jharsuguda
- Establishment of 4x1500MVA, 765/400kV Pooling Station at Angul

As the implementation of the transmission system identified for evacuation of power from some generation projects was not feasible in the given time frame, interim arrangement under the scope of generation project for evacuation of power for the following generation projects have been planned :

Sterlite	• LILO of one ckt of Rourkela-Raigarh 400kV D/c line
Ind Bharat	• LILO of other ckt of Rourkela-Raigarh 400kV D/c line
GMR	• LILO of one ckt of Talcher-Meramundali 400kV D/c line
Jindal	• LILO of Meramundali-Jeypore 400kV S/c line

1.2 Transmission System for Phase-1 generation projects in Orissa - Part-B

- Establishment of 765kV switching station at Dharamjaygarh / near Korba
- Establishment of 765/400kV Pooling Station at Jabalpur
- Jharsuguda Pooling Station – Dharamjaygarh / near Korba (WR) 765kV D/c
- LILO of Ranchi – WR Pooling near Sipat 765kV S/c line at Dharamjaygarh / near Korba
- Dharamjaygarh / near Korba – Jabalpur Pooling Station 765kV D/c line
- Jabalpur Pooling Station – Jabalpur 400 kV D/c (high capacity) line

1.3 Transmission System for Phase-1 generation projects in Orissa - Part-C

- Jabalpur Pooling Station – Bina 765kV D/c line
- Bina – Gwalior 765kV S/c (3rd circuit)
- Gwalior - Jaipur 765kV S/c line (2nd circuit)
- Jaipur - Bhiwani 765kV S/c line

2. Transmission System for Phase-1 generation projects in Orissa - Part-D (Under Private Sector)

- Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station
- Jabalpur Pool – Bhopal – Indore 765kV S/c
- Bhopal New substation – Bhopal (M.P.) 400kV D/c (high capacity)