

## Additional Agenda Note for 30<sup>th</sup> Meeting of Standing Committee on Power System Planning in Western Region

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### 1.0 Transmission System for IPPs located in Orissa

1.1 The transmission system for evacuating power from IPPs in Orissa to their targeted beneficiaries in WR and SR was agreed during the 29<sup>th</sup> meeting of SCM of WR. The agreed transmission system was as under:

➤ **System strengthening common for WR and NR associated with Orissa IPPs.**

- (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 IPPs.**

- (i) Establishment of 2x1500MVA, 765/400kV Bhopal Pooling Station. (*Implementation by private sector through tariff based competitive bidding route*)
- (ii) Jabalpur Pooling station – Bhopal 765kV S/c (*Implementation by private sector through tariff based competitive bidding route*)
- (iii) Bhopal – Indore 765kV S/c (*Implementation by private sector through tariff based competitive bidding route*)
- (iv) Bhopal New substation – Bhopal (M.P.) 400kV D/c (high capacity) (*Implementation by private sector through tariff based competitive bidding route*)

➤ **System strengthening in NR associated with Orissa IPP.**

- (i) Gwalior - Jaipur 765kV S/c line
- (ii) Jaipur - Bhiwani 765kV S/c line

➤ **Pooling Stations along with their interconnections for IPPs in Orissa**

- (i) Establishment of 765/400kV Pooling Station at Jharsuguda
- (ii) Establishment of 765/400kV Pooling Station at Angul
- (iii) Angul Pooling Station – Jharsuguda Pooling Station 765kV 2xS/c
- (iv) LILO of Rourkela – Raigarh 400kV 1xD/c at Jharsuguda Pooling station
- (v) \*LILO of Meramundali – Jeyapore 400kV S/c line at Angul pooling station
- (vi) \*LILO of one ckt of Talcher - Meramundali 400kV D/c line at Angul pooling station.

\* Interim arrangement. LILO to be removed after establishment of 765 kV pooling station at Angul

➤ **Dedicated transmission System up to pooling point under the scope of Project Developer for Orissa IPPs**

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 (ii) 3X1500 MVA, 765/400 kV transformers at Angul along with associated bays
Navbharat Phase-I (1050 MW)	(i) Navbharat - Angul Pooling station 400 kV D/C line with associated bays

- 1.2 The elements of the above transmission system to be implemented through private sector are in the process of bidding through PFC Consulting Engineers. For the other elements to be implemented by PGCIL, for ease of implementation PGCIL has divided them in to three parts - Part A, Part B and Part C as given below:

### Transmission System for Phase-I generation projects in Orissa

#### Part-A

##### Pooling stations along with their interconnections

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

- \* As the pooling stations/ transmission system identified for evacuation of power would not be available for some of the generation projects which are likely to come prior to available of evacuation system, interim arrangement for connectivity at the cost of project developers for the following generation projects has been planned as under:

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

#### Part-B

##### System Strengthening Common for WR and NR associated with Orissa IPPs

- (i) Establishment of 765kV 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 – WR Pooling near Sipat 765kV S/c line at Dharamjaygarh
- (v) Dharamjaygarh – Jabalpur Pool 765kV D/c line
- (vi) Jabalpur Pool – Jabalpur 400 kV D/c (high capacity)

#### Part-C

##### System Strengthening Common for WR and NR associated with Orissa IPPs

- (i) Jabalpur Pool – Bina 765kV D/c line
- (ii) Bina – Gwalior 765kV S/c (3<sup>rd</sup> circuit)

**System Strengthening in NR associated with Orissa IPPs**

- (iii) Gwalior - Jaipur 765kV S/c line
- (iv) Jaipur - Bhiwani 765kV S/c line

This is for the information of the members.

**2.0 Agenda proposed by GETCO : Utilization of GETCO network Zerda (Kansari) – Kankroli Inter-Regional link between WR and NR.**

- 2.1 GUVNL has intimated that since commissioning of Zerda (Kansari) –kankroli link GETCO network is being utilized for inter-regional transfer of power to NR as Zerda substation is not connected to the CTU network. It has requested for applicability of GETCO transmission charges and losses for utilization of GETCO network for any transfer of power to NR on Zerda-Kankroli inter-regional link.
- 2.2 With regard to the above it may be noted that Ranchodpura-Zerda 400 kV D/C line planned as a part of WRSS-II is under implementation through RPTL and once this line is commissioned Zerda would get connected to the CTU network.
- 2.3 In our view issue raised by GETCO are commercial in nature and Standing Committee on Power System planning may not be the appropriate forum for discussing such issues. We would suggest that GUVNL may take up the issue in appropriate forum for readdressal.

Members may deliberate

**3.0 Agenda proposed by CSPTCL for alternative supply to Jagdalpur (South Chattisgarh) area.**

- 3.1 CSPTCL vide their letter dated 8<sup>th</sup> June 2010 has informed that at present the whole of South Chattisgarh comprising of Jagdalpur, Kanker, Dantewada, Bijapur & Narayanpur Districts is getting supply through a 220 kV double circuit line, which a radial line emanating from Bhilai 220 kV substation to Barasur (Bodghat). The break down of the double circuit line results in failure of power to all the districts. CSTPCL has further stated that there are dense forest with lot of naxal activities and there is no alternative supply even for feeding essential loads like waterworks, hospitals etc. They have proposed a 220 kV line from Jeypore (Orissa) in Eastern Region to Jagdalpur as an alternative dependable supply to South Chhattisgarh.
- 3.2 The proposal of CSPTCL involves supply to South Chattisgarh from Eastern Region grid. Therefore the proposal needs to be primarily discussed in the Standing Committee of Eastern Region. Also CSTPL would need to indicate the injection point in Eastern Region and the source from which they intent to draw power from Eastern Region.

WR constituents may consider the CSPTCL proposal.

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

- 4.1 The following transmission system for system strengthening within WR/NR and between WR and NR for transfer of power from the New Generation Projects in Southern Region to their target beneficiaries in WR and NR was informed in the 29<sup>th</sup> Standing Committee of WR:

- (i) Sholapur – Pune 765 kV 2<sup>nd</sup> 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 765/400 kV 2X1000 MVA substation at Orai by LILO of one circuit of Satna – Gwalior 765 kV line
- (vi) Establishment of 765/400 kV 2X1500 MVA substation at Bulandshahar by LILO of Agra – Meerut 765 kV line.
- (vii) Establishment of 765/400 kV 2X1500 MVA substation station at Sonapat by LILO of Bhiwani – Meerut 765 kV line.

4.2 The above transmission system has been discussed and agreed by the NR constituents in their 28<sup>th</sup> Standing Committee meeting of NR held on 23.02.2010. The transmission system agreed is as given below:

- (i) Sholapur – Pune 765 kV 2<sup>nd</sup> 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 765/400 kV 2X1000 MVA substation at Orai by LILO of one circuit of Satna – Gwalior 765 kV line
- (vi) Establishment of 765/400 kV 2X1500 MVA substation at Bulandshahar by LILO of Agra – Meerut 765 kV line.
- (vii) Establishment of 765/400 kV 2X1500 MVA substation station at Sonapat by LILO of Bhiwani – Meerut 765 kV line.
- (viii) Orai-Orai (UPPCL) 400kV D/c (Quad)
- (ix) Sonipat-Kurushetra 400 kV D/c (Quad)
- (x) Sonipat (new) – Sonipat (Under Construction) 400 kV D/c (Quad)
- (xi) Bulandshahr – Hapur ( UPPCL) 400kV D/c (Quad)

Transmission charges of item (i) would be shared by IPPs in SR in Tuticorin, Krishnapatnam & Srikakulam area for exporting to WR & NR and remaining items shall be shared by IPPs exporting to NR. Charges would be transferred to beneficiaries as and when confirmed

This is for the information of the members.

## 5.0 Transmission system of Vindhyachal-IV & Rihand-III gen. projects

5.1 The transmission system associated with Vindhyachal –IV (1000 MW) and Rihand – III (1000 MW) generation projects of NTPC was deliberated in the 28<sup>th</sup> and 29<sup>th</sup> meeting of Standing committee on power system planning in WR. The final agreed system comprised of Generation specific transmission system, Common system for WR and NR and System Strengthening in NR. With the commissioning of 1<sup>st</sup> unit of Vindhaychal-IV (2x500MW) and Rihand-III(2x500 MW) generation, Vindhyachal Pooling Station-Satna 765kV link was to be charged at 400kV level and with the commissioning of 2<sup>nd</sup> unit of Vindhyachal-IV & Rihand-III, Vindhyachal Pooling Station-Satna was to be charged at 765kV along with suitable reactive compensation.

- 5.2 Subsequently, POWERGRID had informed that charging of above line initially at 400kV level would involve about 7(Seven) nos. line crossings at Satna . Further, there would be acute ROW problem due to inhabitation around Satna S/s. Keeping this in view, POWERGRID proposed that above 765kV Vindhyachal Pooling Station- Satna 2xS/c line may be charged at 765kV from the beginning itself.
- 5.3 In view of the above, it is proposed that 765kV Vindhyachal Pooling Station - Satna 2xS/c line may be operated at 765kV level from the beginning itself.

Members may deliberate and may kindly note.

## **6.0 Evacuation arrangement for M/s Ideal Energy (2x135 MW+2x660 MW), M/s Power Maharashtra Ltd (3x660 MW + 2x660 MW)**

- 6.1 MSETCL vide their letter no. MSETCL/CO/STU/Trans Plan/6561 dated 05.05.2010 have proposed interconnection of M/s Ideal Energy (2x135 MW+2x660 MW) and M/s Power Maharashtra Ltd (3x660 MW + 2x660 MW) with Wardha(PG) and Aurangabad(PG) substation respectively. The evacuation arrangement proposed by MSETCL in their letter is as given under:

A. Evacuation Arrangement for M/s Ideal Energy Project Ltd. (2x135 MW+2x660 MW)

- (i) LILO on one ckt. of 400 kV Koradi –II – Wardha (PG) at M/s Ideal Energy

B. Evacuation Arrangement for M/s Power Maharashtra Ltd. ((3X660 MW (Phase -I) + 2X660 MW (Phase –II))

- (i) Tiroda (Gondia) – Warora 400 kV D/c line (quad), 195 km.  
(ii) Tiroda (Gondia) – Koradi III 765 kV 2X S/C line, 120 km  
(iii) 2X1000 MVA, 765/400 kV ICT at Tiroda (Gondia)  
(iv) Koradi III – Akola-II 765 kV 2X S/C line, 282 km  
(v) Akola-II – Aurangabad (PG) 765 kV 2X S/C line, 210 km

- 6.2 At present, the transmission corridor from Wardha towards Aurangabad(PG) and beyond viz. Wardha-Aurangabad 765 kV 2XD/c transmission line, Aurangabad- Phadge/ Dhule 765 kV line is planned as a part of the transmission scheme for IPP generation projects coming up in Chhattisgarh who have signed BPTA/ furnished BG and transmission margins would not be available for evacuating power from M/s Ideal Energy Project Ltd. and M/s Power Maharashtra Ltd beyond Wardha / Aurangabad.

- 6.3 For absorption of power in Maharashtra from the above generation projects MSETCL (STU) should plan and develop the requisite intra-state network. In case the power from above generating stations is proposed to be sold outside Maharashtra the generators should approach CTU for open access in inter-state transmission system based on which inter-state network could be planned.

Members may discuss.

## **7.0 Transmission system of IPP generation projects coming up in Chhattisgarh- KSK Mahanadi Power Co. Ltd and Jindal Power Ltd.- regarding**

- 7.1 In the 29<sup>th</sup> meeting of Standing committee on power system planning in WR, transmission system for IPP generation projects coming up in Raigarh/Champa generation complex in Chhattisgarh was agreed. For KSK Mahanadi (erstwhile Wardha Power) generation project (6x600 MW) in Champa complex and Jindal Power generation project (4x600 MW) in Raigarh(Tamnar) complex, it was decided that keeping in view large plant capacity and

contribution of high short circuit current in case of interconnection at 400kV level, both the generation projects are to be interconnected at the respective pooling station at 765kV level. M/s KSK and M/s Jindal Power informed that their generating units have been proposed to be stepped-up at 400kV level. For this, it was decided that KSK Mahanadi and Jindal Power Ltd generating units shall be connected at separate 400kV bus at Champa and Raigarh(Tamnar) pooling station respectively and further to be stepped-up at 765kV level through 400/765kV transformers as a part of their dedicated transmission system. Accordingly following dedicated transmission system was agreed for M/s KSK and M/s JPL:

**Dedicated tr. system for KSK Mahanadi Power Co. Ltd. (3600MW)**

- a) 400KV Wardha Power- Champa Pooling Station 2x D/c (Quad)
- b) 765/400kV 3x1500 MVA transformer at Champa Pooling station

**Dedicated tr. system for Jindal Power Ltd. (2400+400 MW)**

- a) 400kV JPL – Pooling station (Near Tamnar) 2x D/c (Quad)
- b) 765/400kV 3x1500 MVA transformer at Raigarh Pooling station (Near Tamnar)

**7.2** PGCIL has stated that at 765/400kV Champa Pooling station, other generation projects of relatively smaller installed capacity (upto 1320MW) other than KSK project are being pooled at 400kV level which is to be further interconnected at 765kV level through 400/765kV transformer as a part of common transmission system of IPP generation projects coming up in Champa complex. Similarly, at 765/400kV Raigarh(Tamnar) pooling station, other future smaller capacity IPPs are envisaged to be interconnected at 400kV level with step-up at 765kV level through common 765/400kV transformers.

**7.3** PGCIL has further stated that considering the fact that 765/400kV Pooling stations at Champa and Raigarh(Tamnar) along with 765/400kV transformers at Champa Pooling station (for other IPPs) is being implemented by POWERGRID as part of common transmission system of IPP projects in Chhattisgarh, PGCIL has proposed that dedicated 765/400kV 3x1500MVA transformers each at Champa & Raigarh(Tamnar) Pooling Station may be implemented by POWERGRID as a part of transmission system of IPP projects in Chhattisgarh.

Members may deliberate.