

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

No. 51/4/SP&PA-2007/

Date: June 04, 2007

**To**

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| 1.The Member Secretary,<br>Southern Regional Power Committee,<br>29, Race Course Cross Road,<br><b>Bangalore 560 009.</b><br><b>FAX : 080-22259343</b>                               | 2.The Director (Projects),<br>Power Grid Corp. of India Ltd.<br>“Saudamini”, Plot No.2, Sector-29,<br><b>Gurgaon 122 001, Haryana.</b><br><b>FAX : 95124-2571932</b>                                      |
| 3.The Director (Transmission),<br>Transmission Corp. of Andhra Pradesh Ltd.,<br>Vidyut Soudha, <b>Hyderabad – 500 082.</b><br><b>FAX : 040-66665137</b>                              | 4.The Director (Transmission),<br>Karnataka State Power Transmission Corp.Ltd.,<br>Cauvery Bhawan, <b>Bangalore 560 009.</b><br><b>FAX : 080 -22228367</b>  |
| 5.The Member (Transmission),<br>Kerala State Electricity Board,<br>Vidyuthi Bhawanam, Pattom, P.B. No. 1028,<br><b>Thiruvananthapuram - 695 004.</b><br><b>FAX : 0471-2444738</b>    | 6. Member (Distribution),<br>Tamil Nadu electricity Board (TNEB),<br>6 <sup>th</sup> Floor, Eastern Wing, 800 Anna Salai,<br><b>Chennai - 600002.</b><br><b>FAX : 044-28516362</b>                        |
| 7.The Director (Power),<br>Corporate Office, Block – I,<br>Neyveli Lignite Corp. Ltd.,<br><b>Neyveli, Tamil Nadu – 607 801.</b><br><b>FAX : 04142-252650</b>                         | 8.The Superintending Engineer –I,<br>First Floor, Electricity Department,<br>Gingy Salai,<br><b>Puducherry – 605 001.</b><br><b>FAX : 0413-2334277/2331556</b>  |
| 9. Director (Projects),<br>National Thermal Power Corp. Ltd. (NTPC),<br>NTPC Bhawan, Core-7, Scope Complex,<br>Lodhi Road,<br><b>New Delhi-110003.</b><br><b>FAX-011-24360912</b>    | 10. Shri N. S. M. Rao<br>General Manager (Transmission),<br>NPCIL, 12 <sup>th</sup> Floor, Vikram Sarabhai Bhawan,<br>Anushakti Nagar,<br><b>Mumbai – 400 094.</b><br><b>FAX : 022- 25993570/25991258</b> |
| 11. The Director (Operation),<br>Power Trading Corpn. of India Limited,<br>2 <sup>nd</sup> Floor, NBCC Tower,<br>15 Bhikaji Cama Place,<br><b>New Delhi 110066. FAX-011-41659504</b> |   |

**Sub: 24<sup>rd</sup> meeting** of the Standing Committee on Power System Planning of Southern Region.

**Sir,**

24<sup>th</sup> meeting of the Standing Committee on Power System Planning of Southern Region would be held at **10:00 Hrs on June 18, 2007 (Monday) in conference hall of SRPC, Bangalore.**

Kindly make it convenient to attend the meeting.

Agenda for the meeting is enclosed.

Yours faithfully,

**Encl: Agenda note**

(Pardeep Jindal)  
Director (I/C) (SP&PA-III)  
(Telephone No. 011 26732325)

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## **Standing Committee on Power System Planning in Southern Region**

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### **Agenda for 24<sup>th</sup> Meeting**

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#### **1. Confirmation of the minutes of 23<sup>rd</sup> meeting of the Standing Committee**

The minutes of the 24<sup>th</sup> meeting held on January 22, 2007 at Chennai, was circulated vide our letter No.51/4/SP&PA/2007 dated 21-02-2007.

NPCIL, vide their letter no. NPCIL/GM(Trans.)/2007/M/35 dated March 06, 2007, sent their observations on Item No. 7.0, regarding “ Requirement of Reactors to contain over voltages in the Southern Region” . Based on these observations of NPCIL, modifications in Para No. 7.2 and 7.3 of the minutes of the 23<sup>rd</sup> meeting of the Standing Committee on Power System Planning of Southern Region, were incorporated, and same was circulated vide our letter of even number dated 19-04-2007.

The minutes as circulated vide our letter No.51/4/SP&PA/2007 dated 21-02-2007 along with the corrigendum circulated vide our letter dated 19-04-2007, may be confirmed.

#### **2.0 Review of Progress on Earlier Agreed Transmission Schemes**

##### **2.1 Under construction schemes**

POWERGRID may give the progress of under construction schemes giving

- Date of firming-up in Standing Committee
- Target as in the standing committee meeting
- Date of FR for the scheme
- Date of approval by PGCIL board or PIB as the case may be
- Date of award of the major part
- Target date as of now
- Reason for delay if any

## **2.2 Augmentation of Talcher II Transmission scheme**

The scheme agreed in the SRPC includes the following works:-

- (i) Talcher II – Rourkela 400kV Quad D/C
- (ii) Talcher II – Berhampur – Gajuwaka 400kVD/C with switching station at Berhampur

In context of private sector participation in transmission, Government of India has constituted an Empowered Committee to identify transmission projects for execution through tariff based competitive bidding. The Empowered Committee has identified this scheme to be executed through this route and for steering the process, Government of India has entrusted this project to the SPV of REC. The representative of SPV of REC may intimate the progress to the Standing Committee.

## **2.3 Transmission System for North Chennai TPS (2x500 MW).**

The transmission system for North Chennai TPS (1000 MW) of JV of NTPC and TNEB was evolved in the 22<sup>nd</sup> meeting and revised system as per following was agreed in the 23<sup>rd</sup> meeting:

- i) LILO of Alamathy-Sriperumbudur 400 kV D/C line at Chennai JV TPS.
- ii) 2x315 MVA 400/230 kV ICT at Chennai JV TPS.
- iii) 4 nos. 230 kV bays at switchyard of Chennai JV TPS.
- iv) 230 kV inter connection with existing North Chennai TPS (under scope of TNEB at their cost).

POWERGRID may intimate the progress of the above transmission scheme.

Supplementary scheme is also to be evolved based on allocation of 25% of power from the generation project to beneficiaries other than TNEB. NTPC/TNEB may intimate the position in this respect. It may be noted that delay in this process would effect evacuation of full power of the generation project.

## **2.4 Transmission System for Tuticorin TPS (2x500 MW).**

The transmission system for Tuticorin TPS (1000 MW) of JV of NLC and TNEB was evolved in the 22<sup>nd</sup> meeting and revised system as per following was agreed in the 23<sup>rd</sup> meeting:

- i) Tuticorin JV TPS – Madurai 400 kV D/C Quad.
- ii) 2x315 MVA 400/220kV ICT at Tuticorin TPS JV.
- iii) LILO of 2 nos. of 220 kV circuits at Tuticorin TPS JV.

POWERGRID may intimate the progress of the above transmission scheme.

Supplementary scheme is also to be evolved based on allocation of 25% of power from the generation project to beneficiaries other than TNEB. NLC/TNEB may intimate the position in this respect. It may be noted that delay in this process would effect evacuation of full power of the generation project.

## **2.5 Requirement of Reactors to contain over voltages in the Southern Region**

Based on the decision taken in the 23<sup>rd</sup> meeting, POWERGRID is to deploy 11 nos. of reactor (7 bus reactors + 4 line reactors), NTPC – 2 nos. of bus reactors, NPCIL – 1 no. of bus reactor, NLC – 2 nos. of bus reactors, APTRANSCO - 4 nos. of reactor (3 bus reactors + 1 line reactors), and KPTCL – 5 nos. of bus reactors. Progress on these deployments may be given by respective utilities.

## **2.6 Switchyard provisions at North Chennai JV TPS and Tuticorin JV TPS**

In the 23<sup>rd</sup> meeting, it was clarified that switchyard equipments at North Chennai JV TPS and Tuticorin JV TPS is to be provided by the respective generation companies in their generation projects as per the practice already being followed. NTPC/TNEB and NLC/TNEB may inform the progress.

## **2.7 Establishment of Two Numbers of 400 kV Substations near Chennai in Tamilnadu, by TNEB and Review of Chennai NTPC-TNEB JV TPS (2x500 MW) Transmission System” – Sunguvarchatram and Sholinganallur (Refer Item 8.0 of the summary record of the 23<sup>rd</sup> meeting)**

TNEB may inform the progress of the agreed transmission scheme. TNEB may also intimate their final scope of works for their substations and associated lines together with provision of reactors, if any.

**2.8 Establishment of a 400/230 kV S/S near Tirunelveli and Associated Transmission System for evacuation of power from Wind Projects of Tamil Nadu, by TNEB\*** (Refer Item 9.0 of the summary record of the 23<sup>rd</sup> meeting)

As agreed in the 23<sup>rd</sup> meeting, TNEB would build the above transmission system along with suitable reactors and should apply for long-term open access for the Tirunelveli – Pugalur corridor. TNEB may inform the progress on the agreed transmission scheme, including reactors and on the process of seeking long-term open access for the Tirunelveli – Pugalur corridor.

**3.0 Transmission Systems for Evacuation of power from Krishnapattanam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR**

3.1 For evolving an optimum transmission system for evacuation of power from Krishnapattanam UMPP (4000 MW) and corresponding requirements for additional transmission capacity between SR-WR, discussions were held in the previous meeting i.e. 23<sup>rd</sup> meeting of the Standing Committee in which, following emerged :

- (i) Step-up voltage for Krishnapattanam UMPP would be 400kV.
- (ii) There would be six outgoing circuits from generation switchyard, i.e. -
  - Krishnapattanam UMPP – Nellore 400 kV, Quad D/C line
  - Krishnapattanam UMPP – Kurnool 400 kV, Quad D/C line, and
  - Krishnapattanam UMPP – Gooty, 400 kV, Quad D/C line
- (iii) The Kurnool – Raichur link would be either a 400 kV Quad D/C line or 765kV 2xS/C lines. This would be decided based on studies for monsoon period. Further analysis was done after the meeting and it was found that for the emerged scenario during Monsoon period, the Kurnool - Raichur 400kV quad D/C line would be right option instead of the 765kV option.
- (iv) Following 765kV/400kV transformer capacity had been identified-
  - 765/400 kV S/S at Raichur, 3000 MVA,
  - 765/400 kV S/S at Sholapur 3000 MVA, and
  - 765/400 kV S/S at Pune, 3000 MVA
- (v) Depending upon share of various states, including Kerala, from Tamil Nadu UMPP and also considering feedback from state utilities regarding new 400kV

S/Ss or transformer capacity augmentations in their States, the above transmission system may be updated.

- (vi) Following inter-regional links between SR and WR would be established for – (i) transmission of share of Maharashtra from Krishnapatnam UMPP (ii) transmission of share of other regions from Tamil Nadu UMPP, and (iii) free flow of power to all beneficiaries of Krishnapatnam UMPP,
- Raichur (SR) – Sholapur (WR) 765 kV 2xS/C lines
  - Narendra (SR) – Kohlapur (WR) 400 kV D/C line with a 1000 MW HVDC back-to-back at Narendra
  - Sholapur (WR) – Pune (WR) 765 kV S/C line
- (vi) Regarding sharing of Transmission Charges, it was acknowledged that this would emerge after constituents of other regions had also discussed these issues.

3.2 The above transmission system was subsequently discussed in the 3<sup>rd</sup> meeting of SRPC held on 19-02-2007. There was general agreement on the above transmission system and it was discussed that sharing of transmission charges could be based on all beneficiaries of combined Krishnapatnam and Tamil Nadu UMPPs and complete account of sharing of charges would emerge after these issues are discussed with constituents of other regions.

3.3 This issue was also discussed in the 26<sup>th</sup> meeting of the Standing Committee on Power System Planning in Western Region held on 23-02-2007. Following Transmission system was proposed for the Krishnapatnam UMPP:

1. Krishnapatnam UMPP – Nellore 400 kV, Quad D/C line
2. Krishnapatnam UMPP – Kurnool 400 kV, Quad D/C line, and
3. Krishnapatnam UMPP – Gooty, 400 kV, Quad D/C line
4. Raichur (SR) – Sholapur (WR) 765 kV 2xS/C lines
5. Narendra (SR) – Kohlapur (WR) 400 kV D/C line
6. 1000 MW HVDC back-to-back at Narendra
7. Raichur (SR) – Sholapur (WR) 765 kV S/C line-1
8. Raichur (SR) – Sholapur (WR) 765 kV S/C line-2
9. Sholapur (WR) – Pune (WR) 765 kV S/C line
10. 765/400 kV S/S at Raichur, 3000 MVA
11. 765/400 kV S/S at Sholapur 3000 MVA

12. 765/400 kV S/S at Pune, 3000 MVA
13. Pune (WR) – Navi Mumbai (WR) 400kV D/C line

Further, it was also proposed that transmission charges for the works at Sl. No. 1,2,3,4,5,6 & 7 and 50% at Sl. No. 10 & 11 which would meet the requirement of Maharashtra were proposed to be borne by the beneficiaries of Krishnapatnam UMPP. Works at Sl. No. 8,9,12 &13 and 50% of the works at Sl. No. 10 & 11 were proposed as inter-regional system between SR and WR and accordingly, transmission charges to be shared by SR and WR in the ratio of 50:50 and recovered as pooled transmission charges for the regions. It was decided that the constituents would take up these proposals with their management.

3.4 Combined shares from Krishnapatnam and the Tamilnadu UMPPs (tentative) are given in the following table:

Sl. No.	State/ Region	From Krishnapatnam UMPP	From Tamilnadu UMPP
1.	Andhra Pradesh	1600	400
2.	Karnataka	800	800
3.	Kerala	---nil-	300
4.	Tamil Nadu	800	1600
5.	Puducherry	---nil-	--nil-
6.	Total in Southern Region	3200	3100
7.	Maharashtra	800	400
8.	Total in Western Region	800	400
9.	Uttar Pradesh	---nil-	300
10.	Punjab	---nil-	200
11.	Total in Northern Region	---nil-	500
12.	Total	4000	4000

3.5 Regarding new 400kV S/Ss or transformer capacity augmentations in the States, only TNEB has given their demand for providing a new 400/220kV S/S near Karamadai with 2x315 MVA under Krishnapatnam UMPP and a new 400/220kV S/S at Singarpet with 2x315 MVA under Tamilnadu UMP.

- 3.6 While firming-up the transmission system for Krishnapatnam UMPP, a 400kV line to Chittoor had also been envisaged from Krishnapatnam TPS of 1600MW of A.P. and confirmation from APTRANSCO for their programme of 400kV line to Chittoor was sought. However, definite proposal in this context has not been received. It is therefore proposed to include 400kV quad D/C line from Krishnapatnam UMPP to Chittoor under the Krishnapatnam UMPP transmission system.
- 3.7 APTRANSCO have intimated Bhopalpalli TPS (500 MW) coming up near Warrangal. TNEB is also proposing additional generation at Mettur(500 MW), Tuticorin Stage-IV (1000 MW), North Chennai TNEB (500 MW), and Ennore TPS (500 MW). Further, Nagarjuna TPS (1015 MW) is coming up in Karnataka. In view of the above, additional power for export from SR may be available. It is therefore proposed to establish Kurnool as a 765kV S/S. In the National Electricity Plan-Transmission, corresponding to 2013-14 conditions, the SR is estimated to have winter months exportable surplus of 6700 MW (peak) and 12000 MW (off-peak). Considering above, following transmission schemes are proposed:

#### **Scheme - A**

**' Increasing SR\_WR inter-regional transmission capacity through HVDC back-to-back – Target – June/December 2010' :**

- 1) Narendra – Kohlapur 400kV D/C line
- 2) 1000 MW HVDC back-to-back at Narendra of which 500 MW through shifting of equipment from Sasaram.

Transfer of equipment from Sasaram would involve commercial and assets related issues. Transmission charges of the existing scheme at Sasaram for equipment to be shifted as well as unusable and leftover assets, from the date of decommissioning, would be required to be transferred to new scheme and would become payable by SR/WR constituents. The left over assets of land and building, if and when usable at Sasaram, would be credited when utilized in some future scheme.

#### **Scheme - B**

**' Synchronous Inter-connection of SR and WR – Target – December 2010' :**

- 1) Raichur - Sholapur 765kV S/C line-1 at 400kV operation



### **Scheme - C**

#### **' Evacuation System for Krishnapatnam UMPP**

**– Target – to match with the generation project' :**

- 1) Krishnapatnam UMPP – Nellore 400 kV, Quad D/C line
- 2) Krishnapatnam UMPP – Chittoor 400kV, Quad D/C line
- 3) Krishnapatnam UMPP – Gooty, 400 kV, Quad D/C line
- 4) Space provision for two additional 400kV bays at Krishnapatnam UMPP (for Krishnapatnam UMPP – Kurnool 400 kV, Quad D/C line covered in scheme F)
- 5) Raichur - Sholapur 765kV S/C line-2 at 400kV operation
- 6) Sholapur – Pune 765kV S/C line at 400kV operation

### **Scheme - D**

#### **' System strengthening in Western Region corresponding to power from Krishnapatnam UMPP**

**– Target – to match with the generation project' :**

- 1) Pune (WR) – Navi Mumbai (WR) 400kV D/C line

### **Scheme - E**

Additional 400/220kV sub-stations based on future request of state utilities to be provided as separate system strengthening scheme

### **Scheme – F...**

**To be tied-up with Krishnapatnam of APGENCO or Tamil Nadu UMPP or other generation projects or regional system strengthening schemes or inter-regional strengthening schemes**

- KrishnapatnamAPGENCO– KrishnapatnamUMPP– Kurnool or KrishnapatnamUMPP– KrishnapatnamAPGENCO– Kurnool , 400kV Quad D/C line (with Krishnapatnam APGENCO)
- Kurnool – Raichur 765kV S/C line
- 765kV substations at Kurnool, Raichur, Sholapur and Pune
- 765kV operation of Kurnool – Raichur line
- 765kV operation of Raichur - Sholapur line-1 and line-2
- 765kV operation of Sholapur - Pune line

3.8 Regarding sharing of transmission charges it is proposed that

- Scheme – A : Regional pool schemes of SR and WR on 50:50 basis.
- Scheme – B : Regional pool schemes of SR and WR on 50:50 basis.
- Scheme – C : Sharing by all beneficiaries of Krishnapatnam UMPP in ratio of their shares in Krishnapatnam UMPP
- Scheme – D : Sharing only by WR beneficiaries of Krishnapatnam UMPP in ratio of their shares in Krishnapatnam UMPP

Implementation of the above schemes could be taken up based on above proposed sharing of transmission charges. Later, when the works under schemes – F together with other transmission schemes are firmed-up, the total sharing of the transmission charges could be reviewed.

3.9 Members may discuss and concur.

**4.0 Any other issue with permission of chair**