

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

No. 51/4/SP&PA-2007/ 151-162

Date: 21-02-2007

**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: 23<sup>rd</sup> meeting** of the Standing Committee on Power System Planning of Southern Region -  
Summary Record of Discussions

**Sir,**

23rd meeting of the Standing Committee on Power System Planning of Southern Region was held on January 22, 2007 at Chennai.

Summary record of the discussion is enclosed. Your comments and observations, if any, may be sent to us at the earliest.

Yours faithfully,  
-Sd/-

**(Pardeep Jindal)**  
**Director (I/C) (SP&PA-III)**  
(Telephone No. 011 26107144)

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## Standing Committee on Power System Planning in Southern Region

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### Summary Record of Discussion of 23<sup>rd</sup> Meeting held on 22-01-2007 at Chennai

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1.0 The 23<sup>rd</sup> meeting of the Standing Committee on Power System Planning in Southern Region was held on 22<sup>nd</sup> January 2007 (Monday) at Hotel Savera, Chennai.

*The list of participants is at Annex-1.*

2.0 Shri V. Ramakrishna Member (Power System), CEA welcomed the participants and thanked POWERGRID for organizing the meeting. Expressing urgency for evolving transmission system for Ultra Mega Power Projects (UMPP), he informed that Government of India was taking initiative through hand-holding system by floating Special Purpose Vehicles (SPV), which would obtain all necessary clearances before handing over the UMPPs to actual developers through competitive tariff based bidding. Under this mechanism, two UMPPs at Sasan and Mundra had already been awarded. In Southern Region, progress on award of Krishnapatnam UMPP was going at fast rate and it was expected to be awarded by April 2007. Another UMPP in Tamil Nadu was also scheduled to be awarded by September 2007. He emphasized that, the transmission system associated with Krishnapattnam UMPP should, therefore, be finalised by February 2007; this issue would also be discussed by SRPC in their meeting to be held next month. He also informed that the share from Krishnapattnam UMPP had been finalized in the Ministry of Power, which was as under-

Beneficiary State	Tentative allocation (MW)
A. P.	1600
Karnataka	800
Tamil Nadu	800
Maharashtra (WR)	800
Total	4000

Shares from Tamil Nadu UMPP were yet to be finalized.

3.0 Earlier, AGM (POWERGRID) introduced about an exhibition and conference, namely 'GRIDTECH', being organized by them in the month of February 2007 in Delhi, which would focus on new technologies in the field of transmission. He requested the engineers from the State Utilities to participate, actively, in these events.

4.0 The agenda items were, thereafter, taken up for discussions.

#### **5.0 Confirmation of the minutes of 22<sup>nd</sup> standing committee meeting.**

5.1 CE(SP&PA) informed that the summary record of the 22<sup>nd</sup> meeting that was held on August 17, 2006 at SRPC, Bangalore were circulated vide CEA's letter No.CEA/51/4/SP&PA/2006 dated 10-08-2006 and no observations were received from participants.

5.2 Member (PS) stated that SRPC had pointed out that at para 3.1.3 in the minutes for 22<sup>nd</sup> meeting regarding tentative allocation, the reference had been given to 130<sup>th</sup> meeting of SRPC, whereas, it should have been 135<sup>th</sup> meeting that was held on 10.8.2004. This modification should be made in the minutes of the 22<sup>nd</sup> meeting of the Standing Committee.

5.3 The minutes of the 22<sup>nd</sup> meeting of the Standing Committee, as modified above, were confirmed.

5.4 CE(SP&PA) stated that PGCIL had requested for issue of clarifications regarding provision of switchyard equipments at North Chennai JV TPS and Tuticorin JV TPS to be provided by the respective generation companies in their generation projects as per the practice already being followed. This issue was discussed and it was agreed that NTPC-TNEB JV Company and the NLC-TNEB JV Company would provide necessary switchyard equipments at their respective generation projects.

- 5.5 AGM (NTPC) stated that name of the Joint Venture project with TNEB was not North Chennai but it was Ennore. However, it was pointed out that there was another project at Ennore, so there might be confusion if these two projects had same name. After discussions, it was agreed that the North Chennai JV project would be called as – ‘Chennai NTPC-TNEB Joint Venture TPS’.
- 5.5 The associated transmission systems for ‘Chennai NTPC-TNEB JV TPS’ and ‘Tuticorin NLC-TNEB JV TPS’, as agreed in the 22<sup>nd</sup> meeting, was based on allocation of 75% of power to Tamilnadu. Allocation of rest of 25% of power was still undecided. Therefore, necessary additions in the corresponding transmission systems, that would need to be provided considering these allocations, would be decided after firming up of the allocations.

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

- 6.1 CE (SP&PA) explained about various dispatch scenarios, as detailed in the Agenda, which were considered to estimate requirement of transmission system for evacuation of power from Krishnapattnam UMPP and also for export of power from SR to WR. He said that the focus was to identify the transmission capacity for maximum transfer conditions. After considering various operating scenarios for Summer, Monsoon and Winter seasons, two extreme conditions of Summer and Winter peaks for 2013-14 scenario were studied. In Summer Peak, most of the power was to be absorbed in SR itself and about 1000 MW would be exported, whereas, in Winter Peak, about 6000 MW was to be exported from SR. He also stated that while studying these extreme conditions it was assumed that the Talcher augmentation system would be available. He also said that though there would be a surplus of about 10,000 MW during off peak hours, about 6000 MW could effectively be exported from SR for utilization in WR and NR.

- 6.2 He further informed that the maximum demand of SR would be about 43.5 GW as taken for Summer Peak; demand in winter was taken as 39 GW. Though demand of SR may be higher than 39 GW in Winter, yet, there would be substantial part of winter, in which SR would experience about 39 GW of load, and therefore, transmission system requirements had been worked out considering 39 GW load in SR, based on which, transmission requirement for export of 6000 MW had been assessed.
- 6.3 KPTCL enquired about the generation projects, which were taken for estimating these scenarios. TNEB and NLC also informed that the progress on the Cuddalore TPS, Jayamkondam TPS is also going on and therefore they should also be taken into consideration. CE (SP&PA) read out the list of generation projects that were programmed to be added in SR and were considered for these estimations, he, however, told that the generation programme was under review and the latest generation programme would be furnished alongwith minutes of this meeting. *(Latest updated generation programme for 11<sup>th</sup> and 12<sup>th</sup> Plan period is given at Annex-III).*
- 6.4 Explaining about transmission alternatives and different study cases considered for evolving a suitable transmission system, CE(SP&PA) said that tentative transmission system for evacuation of power from Krishnapattnam AP State (1600 MW) and Tamil Nadu UMPP had also been taken. Following two transmission alternatives were finally considered:

**Alternative-I**

1. Krishnapattnam UMPP – Nellore 400 kV, Quad D/C line
2. Krishnapattnam UMPP – Kurnool 400 kV, Quad D/C line
3. Krishnapattnam UMPP – Gooty, 400 kV, Quad D/C line
4. Kurnool – Raichur 400 kV Quad D/C line
5. Raichur (SR) – Sholapur (WR) 765 kV 2xS/C lines
6. Sholapur (WR) – Pune (WR) 765 kV S/C line.

7. Narendra (SR) – Kohlapur (WR) 400 kV D/C line
8. 765/400 kV S/S at Raichur, 3000 MVA
9. 765/400 kV S/S at Sholapur 3000 MVA
10. 765/400 kV S/S at Pune, 3000 MVA

### **Alternative-II**

Transmission system in Alternative-I above and a 1000 MW HVDC back-to-back at Narendra for Narendra (SR) – Kohlapur (WR) 400 kV D/C line.

In both the above alternatives, tentative transmission system for evacuation of power from Krishnapattnam AP State (1600 MW) was taken as 400kV D/C lines from Krishnapattnam to Nellore and Chittoor; and tentative transmission system for evacuation of power from Tamil Nadu UMPP as 400kV quad D/C lines from TNUMPP to Melakottaiyur, Hosur and Neyveli. However, these would need to be firmed-up in subsequent focussed studies.

- 6.5 For summer case, he said that the Raichur – Sholapur 765kV line would remain lightly loaded for almost whole part of the summer season and therefore would require effective VAR compensation on both ends.
- 6.6 For winter scenario in which 6000 MW would need to be exported, studies indicated that in case of outage on Raichur-Sholapur 765kV line the SR system could be isolated from rest of all-India system if we consider the HVDC back-to-back alternative (Alternative-II). Whereas with Alternative-I, i.e. without this back-to-back, whole power would rush on the Narendra - Kohlapur line and may affect security of the Grid.
- 6.7 AGM, POWERGRID informed that in the studies carried out by PGCIL for seeking long-term open access for Krishnapattnam, they had taken a slightly different transmission system. In Powergrid studies a 400 kV line from Krishnapattnam UMPP to Chittoor and further towards Kolar is considered for export of surplus power available in SR towards ER using back flow on Kolar –Talcher HVDC link and also a line from Jeypore to Bhadrawati (Chandrapur) for sending power from ER to WR.

6.8 Member (PS) stated that in the studies carried out by PGCIL, the Tamil Nadu UMPP was not considered. Also, the possibility of flowing power back on HVDC from Kolar to Talcher, from SR to ER, may not be feasible because the inter-regional links from ER to WR and NR were not sufficient. Pune and Sholapur which are load centers, developing a new corridor directly to these load centers from SR, which also offers shorter distance, would be advantageous.

6.9 Member, TNEB expressed that possibility of planning a 765kV S/S and corresponding 765kV transmission systems in Tamil Nadu should also be considered. Similar opinion was also expressed by CE, APTRANSCO, who said that Kurnool might be planned as a 765kV S/S and argued that off-take from Kurnool in monsoon period might be higher and therefore Kurnool-Raichur link could be a 765kV link.

6.10 CE, KSEB expressed that no share had been given to Kerala from Krishnapattnam UMPP. He was informed that, Kerala might now opt for getting share from the Tamil Nadu UMPP. Representatives from Kerala and Tamil Nadu also said that no new 400kV S/s had been planned under Krishnapattnam UMPP. It was also informed that all the state utilities could give location of new 400kV S/Ss or transformer capacity augmentations requirements in their states that may be examined for inclusion under Krishnapattnam and Tamil Nadu UMPPs.

6.11 Summing up the discussions on Krishnapattnam UMPP, Member(PS), CEA said that –

- (i) Step-up voltage for Krishnapattnam UMPP would be 400kV.
- (ii) There would be six outgoing circuits from generation switchyard, i.e. -
  - Krishnapattnam UMPP – Nellore 400 kV, Quad D/C line
  - Krishnapattnam UMPP – Kurnool 400 kV, Quad D/C line, and
  - Krishnapattnam 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 done after the meeting, are included at Annex-II. It is seen that due to surpluses in all the regions during Monsoon period, the*

*exportable surplus from SR would be not more than 1800-2000 MW. Therefore, the system as proposed by CEA, that is – Kurnool-Raichur 400kV quad D/C line would be right option instead of the 765kV option.)*

- (iv) Based on the studies as discussed in the meeting, 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 two inter-regional links between SR and WR would be established for – (i) transmission of share of Maharashtra from Krishnapattnam UMPP (ii) transmission of share of other regions from Tamil Nadu UMPP, and (iii) free flow of power to all beneficiaries of Krishnapattnam 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

**6.12 Sharing of Transmission Charges:** After discussions on sharing of transmission charges, following emerged:

- a. Sharing of transmission charges could be based on combined beneficiaries of Krishnapattnam and Tamil Nadu UMPPs.
- b. SR and WR beneficiaries, (and also NR beneficiaries, if they opt from Tamil Nadu UMPP) based on their share from generation, could share transmission charges of inter-regional links of Narendra-Kohlapur and Raichur-Sholapur and also the Sholapur-Pune 765kV line.
- c. It was also acknowledged that complete account of sharing of charges would emerge after constituents of other regions had also discussed these issues.
- d. It was decided that the issues regarding sharing of transmission charges would be taken up in the forthcoming SRPC meeting.



## 7.0 Requirement of Reactors to contain over voltages in the Southern Region.

7.1 CE(SP&PA), CEA stated that installation of 25 nos of reactors (20 bus reactors + 5 line reactors) was agreed in the 22<sup>nd</sup> meeting but before firming up, PGCIL was to confirm the long-term suitability and feasibility of installation of the reactors at the proposed locations and if there was any constraint.

7.2 AGM, POWERGRID confirmed that, based on studies, these reactors would be useful in future also. He, however, expressed that the reactors at State grid stations should be installed by respective STU and similarly, reactors at generating switchyard should be installed by respective generation company. He also opined that reactors at generation switchyard have more impact in controlling high voltages. GM, NPCIL expressed that as this is a regional system improvement scheme, therefore it should be implemented by POWERGRID. CE, CEA stated that, though the scheme was initially thought to be implemented as a single scheme to be implemented by POWERGRID, however, considering practical difficulties in implementation and maintenance of the reactors, these could be deployed by respective states/ utilities.

7.3 After discussions, it was decided that the reactors would be installed by respective state utilities/ generation companies as given below:

**(Each Reactor is of 63 MVAR capacity)**

### (1) Reactors to be deployed by POWERGRID:

<b>Bus Reactors</b>	
<b>S.NO</b>	<b>Bus Name</b>
1.	Hosur
2.	Kolar
3.	Hiriyur
4.	Salem
5.	Munirabad
6.	Hyderabad (PG)
7.	Sriperumbudur

<b>Line Reactors</b>		
<b>S.No</b>	<b>Bus Name</b>	<b>Name of the Line</b>
8.	Trichy	Neyveli - Trichy- I
9.	Madurai	Madurai - Trichy-I

10.	Udumalpet	Salem – Udumalpet-II
11.	Trivandrum	Madurai – Trivandrum -I

**(2) Reactors to be deployed by NTPC:**

<b>Bus Reactors</b>	
<b>S.NO</b>	<b><u>Bus Name</u></b>
1.	Ramagundam
2.	Simhadri

**(3) Reactors to be deployed by NPCIL:**

<b>Bus Reactors</b>	
<b>S.NO</b>	<b><u>Bus Name</u></b>
1.	Kaiga

**(4) Reactors to be deployed by NLC:**

<b>Bus Reactors</b>	
<b>S.NO</b>	<b><u>Bus Name</u></b>
1.	Neyveli-Expn
2.	Neyveli TS-II

**(5) Reactors to be deployed by APTRANSCO:**

<b>Bus Reactors</b>	
<b>S.NO</b>	<b><u>Bus Name</u></b>
1.	Srisaillam LBPH
2.	Kurnool
3.	Vizag

<b>Line Reactors</b>		
<b>S.No</b>	<b>Bus Name</b>	<b>Name of the Line</b>
	<b>APTRANSCO</b>	
4.	Hyderabad (AP)	Khammam-Hyderabad-I

**(6) Reactors to be deployed by KPTCL:**

<b>Bus Reactors</b>	
<b>S.NO</b>	<b><u>Bus Name</u></b>

1.	Raichur TPS
2.	Talaguppa
3.	Davanagere
4.	Neelamangala
5.	Hoody

## **8.0 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**

8.1 CE(SP&PA), CEA stated that system studies were carried out jointly by TNEB and CEA, for strengthening of transmission system of TNEB to meet increasing load requirement in and around Chennai area. Based on the studies TNEB had proposed following transmission schemes, all of which would be built by TNEB at their cost:

### **1. Sunguvarchatram 400 kV S/S and Associated Transmission System**

- a) Sunguvarchatram 400/230 kV S/S, 2x315 MVA and also 2x200 MVA 400/110kV ICTs.
- b) LILO of the Sriperumbudur(PG) - Melakottaiyur(PG) 400 kV S/C line at Sunguvarchatram (TNEB)
- c) Alamathi - Sunguvarchatram 400 kV D/C line (instead of the Alamathi - Melakottaiyur 400 kV D/C line as earlier agreed in the 22<sup>nd</sup> meeting under North Chennai JV TPS transmission scheme).
- d) Sriperumbudur - Sunguvarchatram, 230 kV D/C with one line to be made LILO at the proposed 230 kV S/S at NOKIA and other line to be made LILO at Sriperumbudur SIPCOT 230 kV S/S.
- e) Sunguvarchatram - Oragadam, 230 kV S/C line.

### **2. Sholinganallur 400/230 kV S/S and Associated Transmission System**

- a) Sholinganallur 400/230 kV S/S, 2x315 MVA and also 200 MVA 400/110kV ICT.
- b) Melakottaiyur(PG) – Sholinganallur, 400kV D/C line
- c) LILO of the Sirucheru -Taramani 230 kV S/C line at Sholinganallur.

d) Sholinganallur - KITS, 230 kV D/C line.

8.2 Discussing the proposals, Member(PS), CEA said that suitable Reactors should also be provided by TNEB at Sunguvarchatram and Sholinganallur S/Ss. After further discussions, the proposals of TNEB as mentioned above, were agreed for implementation by TNEB. TNEB representative also agreed to provide suitable Reactors at their 400kV S/Ss.

8.3 CE, CEA further told that the Alamathi - Sunguvarchatram 400 kV D/C line that was being proposed to replace the Alamathi - Melakottaiyur 400 kV D/C line, was earlier agreed in the 22<sup>nd</sup> meeting under the Chennai JV TPS transmission scheme. As such, Alamathi - Melakottaiyur 400 kV D/C line could be deleted from the scope of transmission system associated with Chennai NTPC-TNEB JV TPS. This was also agreed. Accordingly, following will be the revised transmission system associated with Chennai NTPC-TNEB JV TPS (1000 MW):

1. LILO of Alamathi- Sriperumbudur 400 kV D/C line at Chennai JV TPS
2. 2x315 MVA 400/230 kV ICT at Chennai JV TPS
3. 4 no. 230 kV bays at switchyard of Chennai JV TPS
4. 230 kV inter connection with existing North Chennai TPS (under scope of TNEB at their cost).

## **9.0 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**

9.1 CE(SP&PA), CEA stated that system studies were also carried out jointly by TNEB and CEA, for planning transmission additions required to evacuate power from various wind power projects in southern part of Tamil Nadu near Kayathar and Tirunelveli area. Based on the studies TNEB had proposed following transmission system:

- a) Tirunelveli (TNEB) (near Marandai) 400/230 kV S/S, 3x315 MVA
- b) Tirunelveli (TNEB) - Tirunelveli (PG), 400 kV Quad D/C line.

- c) Pugalur (PG) - Sunguvarchatram (TNEB) 400 kV Quad D/C line so that one circuit is connected to the proposed Sunguvarchatram 400kV S/S and other circuit is terminated at Melakottaiyur, by LILO of the Sunguvarchatram - Melakottaiyur 400 kV S/C line.
- d) Five numbers of 230/33 kV wind energy substations at Marandai, Sayamalai, Vagaikulam, Kumarapuram, Sankaralingapuram and one 230/110 kV Samugarangapuram substation with associated 230 kV lines connecting with the Tirunelveli (TNEB) 400 kV S/S.

He further added that all the above projects would be built by TNEB, however, TNEB would have to apply for open access for transmitting the power from Tirunelveli up to Pugalur, for their wind power projects.

9.2 AGM, POWERGRID said that the Pugalur - Sunguvarchatram line would require line reactors. TNEB representative agreed to provide suitable reactors under this scheme and also informed that they were taking up the issue of open access for wind projects, with CERC. Member(PS), stated that TNEB should obtain long-term open access for this corridor.

9.3 After further discussions, it was agreed that TNEB may build the above transmission system alongwith suitable reactors and should apply for long-term open access with CERC for the Tirunelveli – Pugalur corridor.

10.0 Meeting ended with vote of thank to the chair.

**List of Participants in the 23<sup>rd</sup> Meeting held on 22<sup>nd</sup> January, 2007 at Chennai**

<b>Sl. No.</b>	<b>Name and Organization</b>	<b><u>Designation</u></b>
<b><u>CEA</u></b>		
1.	V. Ramakrishna	Member (PS)
2.	A.K. Asthana	Chief Engineer(SP&PA)
3.	T. Chatterjee	Chief Engineer(GM)
4.	Pardeep Jindal	Deputy Director (SP&PA)
<b><u>SRPC</u></b>		
5.	A. Magudapathi	Superintending Engineer
6.	A. K. Yadav	Executive Engineer
<b><u>POWERGRID</u></b>		
7.	Y.K. Sehgal	AGM
8.	Dilip Rozekar	CDE (Engg.)
9.	A. Surendiran	Chief Manager
<b><u>NTPC</u></b>		
10.	Pramod Kumar	AGM
11.	A. Basu Roy	DGM (Coord.)
<b><u>NPCIL</u></b>		
12.	N.S.M. Rao	GM(Transmission)
<b><u>Neyveli Lignite Corp.</u></b>		
13.	V. Sethuraman	Director/Power
<b><u>APTRANSCO</u></b>		
14.	M. Koteswara Rao	Chief Engineer (Power System)
15.	M. Balasubramanyam	DE/System Studies
<b><u>Tamil Nadu Electricity Board</u></b>		
16.	V.N. Vivekananda Murthy	Member (Distribution)
17.	C. Vijaya Kumar	CE/Planning
18.	S. Balaguru	EE/System Studies
19.	S. Sowmyana Rayanam	Consultant/TNEB
<b><u>Kerala State Electricity Board</u></b>		
20.	K. Ramachandran Nair	Chief Engineer
<b><u>KPTCL</u></b>		

21.	Chandre Gowda	Director (Trans)
22.	M.S. Prabhakar	EEE (PSS)
	<b><u>Elect. Department, Puducherry</u></b>	
23.	D. Gunasekaran	Executive Engineer
	<b><u>PTC India</u></b>	
24.	S.S. Sharma	Sr. VP

### Analysis for Kurnool – Raichur link

During the meeting CE, APTRANSCO said that Kurnool could be planned as a 765kV S/S and argued that off-take from Kurnool in monsoon period might be higher and therefore Kurnool-Raichur link could be a 765kV link.

As per studies carried out for evolving transmission system for Krishnapattnam UMPP and as included in agenda for the 23<sup>rd</sup> meeting, following Demand/Availability scenarios for winter, monsoon and summer seasons were estimated:

**Table-I : Availability and Demand Scenario for 2013-14 Peak Condition**

Regions	Winter Peak			Monsoon Peak			Summer Peak		
	Availability	Demand	Surplus(+) / Deficit (-)	Availability	Demand	Surplus(+) / Deficit (-)	Availability	Demand	Surplus(+) / Deficit (-)
Northern	41338	53110	-11772	51574	47799	3775	47575	53110	-5535
Western	55344	62010	-6666	52228	55809	-3581	53453	62010	-8557
Southern	45013	39141	5872	44170	39141	5029	44559	43490	1069
Eastern	36586	20370	16216	36053	18333	17720	35896	20370	15526
North-Eastern	5419	3220	2199	8907	2898	6009	7580	3220	4360
Total	183699	177851	5848	192932	163980	28952	189063	182200	6863

As is seen from above table, there would be an all-India surplus of about 29000 MW during monsoon period, and all regions except WR would be surplus. To study a load flow case for monsoon period, following dispatch-load balance could be studied:

Monsoon Peak Period			
Region	Dispatch	Load	Export(+) / Import(-)
NR	40000	47800	-7800
WR	49000	55800	-6800
SR	41000	39200	+1800
ER	29000	18300	+10700
NER	5000	2900	+2100
All-India	164000	2900	0



It is seen from above that, that the exportable surplus from SR would be not more than 1800-2000 MW. Therefore, the system as proposed by CEA, that is – Kurnool-Raichur 400kV quad D/C line would be right option instead of the 765kV option.