

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

No. 51/4/SP&PA-2001/

Date : 20-10-2004

To

1. The Member Secretary, Southern Regional Electricity Board, 29, Race Course Cross Road, Bangalore 560 009. FAX : 080-22259343	2. The Executive Director (Engineering), Power Grid Corp. of India Ltd. "Saudamini", Plot No.2, Sector-29, Gurgaon 122 001, Haryana. FAX : 95124-2571802
3. The Director (Transmission), Transmission Corp. of Andhra Pradesh Ltd., Vidyut Soudha, Hyderabad – 500 082. FAX : 040-55665137	4. The Director (Transmission), Karnataka State Power Transmission Corp. Ltd., Cauvery Bhawan, Bangalore 560 009. FAX : 080 -22228367
5. The Member (Transmission), Kerala State Electricity Board, Vidyuthi Bhawanam, Pattom, P.B. No. 1028, Thiruvananthapuram - 695 004. FAX : 0471-2446452, 2448213	6. The Executive Director/ Planning, Tamil Nadu Electricity Board, 6 th Floor, Eastern Wing, 800 Anna Salai, Chennai – 600 002. FAX : 044-28525587, 28525639
7. The Director (Power), Corporate Office, Block – I, Neyveli Lignite Corp. Ltd., Neyveli, Tamil Nadu – 607 801. FAX : 04142-252646	8. The Superintending Engineer –I, First Floor, Electricity Department, Gingy Salai, Pondicherry – 605 001. FAX : 0413-2334277
9. Shri K. Prakasa Rao, General Manager I/C Engineering Division, NTPC Ltd., Engg. Office Complex, A-8, Sector 24, Noida – 201 301. FAX: 95120-2410201	10. Shri N. S. M. Rao General Manager (Transmission), Nuclear Power Corp. of India Ltd., 12 th Floor, Vikram Sarabhai Bhawan, Anushakti Nagar, Mumbai – 400 094. FAX : 022-25556513/25563350
11. The Director (Tech), Power Trading Corp. of India Limited, 2 nd Floor, NBCC Tower, 15 Bhikaji Cama Place, New Delhi 110066. FAX-011-51659504	

Sub: 20th meeting of the Standing Committee on Power System Planning of Southern Region


Sir,

Please find enclosed the summary record of discussions in the 20th meeting of the Standing committee on Power System Planning of Southern Region held at Kalpakkam on 7th October, 2004.

Kindly acknowledge the receipt.

Encl: As above.

Yours faithfully,


(B. M. Sethi)

Dy. Director (SP & PA)

<p>1. The Director (Transmission), Southern Regional Electricity Board, 29, Race Course Cross Road, Bangalore 560 009. FAX : 080-22259343</p>	<p>2. The Executive Director (Engineering), Power Grid Corp. of India Ltd. "Saudamini", Plot No.2, Sector-29, Gurgaon 122 001, Haryana. FAX : 95124-2571802</p>
<p>3. The Director (Transmission), Transmission Cell - 4, A I I I I</p>	<p>4. The Director (Transmission), A I I I I</p>

Summary Record of discussions of the 20th meeting of the Standing Committee on Power System Planning in Southern Region held on 7th October 2004 at Kalpakkam.

The list of participants is enclosed at Annexure-I.

Chief Engineer (SP&PA) CEA welcomed the participants and thanked Director (Technical) Bhavini for hosting the meeting at Kalpakkam and making excellent arrangements for the stay of all the delegates. Initiating the discussions, he stated that the main issue of the Agenda was to finalise the transmission system for evacuation of power from the proposed 500MWe PFBR Reactor proposed to be installed by Bhavini at Kalpakkam, the benefits of which was likely to be available by 2010AD. He then requested Director (Tech), Bhavini to indicate the broad details about the project and the schedule of commissioning.

Director (Tech), Bhavini thanked CEA for providing an opportunity to hold the Standing Committee Meeting at Kalpakkam Atomic Power Project (KAPP). Spelling out details of the project, Director (Tech), Bhavini stated that the prototype of Fast Breeder Reactor (FBR) with a capacity of 50MWe was already existing at Kalpakkam since 1984. The present proposal of 500MWe was to utilize the technology for commercial generation of power. He stated that the project has been approved by the Government in September 2003 at prevailing cost of Rs. 2800 crore and completion cost of Rs. 3492 crores. The project was to be completed in a period of seven years. The project was with a debit/equity of 80:20 and the energy cost had been worked out at Rs. 3.25 per unit in 2010. To Avoid salinity problems, the switchyard was proposed to be enclosed-type similar to that existing at Kalpakkam project. To a query it was confirmed that the ultimate capacity of the project will be 500MWe only and no expansion was envisaged. Director (Trans) KPTCL and Director (Tr & GO), APTRANSCO expressed apprehension about the high cost power from the project. They suggested Bhavini to take up with Govt. for providing grant instead of equity to reduce the tariff. Chief Engineer (SP&PA), CEA suggested that this issue may be discussed in the SREB forum. Member Secretary, SREB while agreeing to the suggestion, requested Director (Tech), Bhavini to forward a self-contained proposal for convening SREB meeting and finalizing the issue.

Director (Tr & GO), APTRANSCO wanted to know the status of placement of orders etc. Director (Tech), Bhavini intimated that the civil works have already started, some of the equipments of main plant had already been ordered and switchyard is to be awarded by July 2005.

Chief Engineer (SP&PA), CEA then took up the agenda items one by one:

1. Confirmation of the minutes of 19th Standing Committee Meeting held on 14th June 2004 at Hyderabad.

Regarding TNEB's letter dated 18.8.2004 making observations on the minutes of the 19th Standing Committee Meeting, Chief Engineer (SP&PA), CEA reiterated that minutes of the Standing Committee Meeting reflected what was discussed and agreed during the discussions and there was no point making observations on the minutes. After brief discussion, the minutes were taken as confirmed.

2. Evacuation System for 500 MWe Prototype Fast Breeder Reactor based Atomic Power Project at Kalpakkam (KPFBR)

Chief Engineer (SP&PA) intimated that Ministry of Power in their letter dated 9.6.03 had indicated the tentative allocation of power to the constituent States of Southern Region from the proposed project. He further intimated that the output of the station would be absorbed in the nearby substations in Tamil Nadu and the shares of other beneficiaries will be provided by displacement. He stated that based on the above allocations, studies were carried out in CEA and the results of the studies were enclosed with the agenda note. Chief Engineer (SP&PA), CEA then asked Dy. Director (SP&PA) to make presentations of the studies carried out in CEA. Dy. Director (SP&PA) made a presentation of all the cases studied. The three alternatives studied and discussed are as follows:

Option - I Step-up Voltage at 220kV

- i) KPFBR- Tharamani 220 kV D/C line.
- ii) KPFBR - Kancheepuram 220 kV S/C line
- iii) KPFBR - Arni 220 kV S/C
- iv) LILO of existing MAPS-Villupuram 220 kV S/C line at KPFBR.
- v) KPFBR - MAPS 220 kV S/C (2nd ckt.) cable.

Option - II Step-up Voltage at 400kV

- i) LILO of 400 kV Neyveli-SP Budur S/C line at the PFBR station.
- ii) 2x315 MVA, 400/220 kV S/S at PFBR station
- iii) LILO of existing MAPS-Villupuram 220 kV S/C line at PFBR.
- iv) PFBR-MAPS 220 kV 2nd ckt. (cable)

Option - III Step-up Voltage at 220kV

- i) KPFBR - Kancheepuram 220 kV D/C line
- ii) KPFBR-Arni 220 kV D/C
- iii) PFBR-MAPS 220 kV D/C -cable

Option-III was the most optimal one and was, therefore, recommended. The results of the studies were discussed and TNEB while agreeing for 220kV step up made certain observations. Superintending Engineer, TNEB suggested that one 220kV D/C line may be considered from PFBR to the new 220kV substation at Thiruver/Sirussi to be created by LILO of one of the circuits of 220 kV D/C line between SP Koil and Tharamani. This 220kV D/C connection could be in lieu of D/C line to Arni considered by CEA. Chief Engineer (SP&PA), CEA apprehended the system to be inadequate in the event of the contingency of outage of proposed 220 kV D/C line to Kancheepuram and suggested the proposed line by TNEB to be an addition instead of Arni line. It was, however, decided that CEA would carry out further studies (Peak and off-peak) including the TNEB proposal and come out with recommendations.

3. Additional spare Converter Transformers at Talcher and Kolar HVDC terminal stations.

This has already been agreed in the 19th Standing Committee Meeting as also in the 135th SREB meeting. However, the failure details of converter transformers at Rihand-Dadri HVDC line was furnished by POWERGRID in their letter dated 4.10.04.

4. 400/220 kV Kaiga sub-station and upgradation and operation of Kaiga-Davangere 220 kV D/C line to 400 kV

Chief Engineer (SP&PA), CEA requested KPTCL and NPCIL to indicate the present status of construction of these works. Director (Trans), KPTCL informed about the 400 kV bay extension work at Davangere sub-station that BHEL supplies have been completed and the erection is yet to start. BHEL had targeted the works to be completed by December 2004. As per NPCIL, the transformer installation at Kaiga to be completed by December 2004. Regarding the status of construction of Nellore 400/220kV sub-station, Director (Tr & GO), APTRANSCO informed that the ICT was to be erected by December 2004 and the sub-station commissioning by March 2005.

5. 10th and 11th Plan transmission program of State Utilities in Southern Region and schedule for completion of various transmission works.

Chief Engineer (SP&PA) intimated that as requested, the details of 220kV and 132kV works was furnished by the States. In the meantime CEA had also made an assessment of the requirement based on normative requirements of transmission lines and MVA capacities. These have been presented in Annexure II of the Agenda. He further stated that in some of the cases there was a wide variation between the normative requirements and the programme furnished by the States. He requested Members to clarify the same.

Director (Tr &GO), APTRANSCO stated that the Programme for 132kV ckt. kms. and S/S capacity worked out by them was on the lower side due to increased 220 kV works and reduction in 132kV works during the next 3 years of 10th Plan. Also the figure of 2500 MVA under 132kV sub-stations capacity does not include enhancement of transformer capacity at various sub-stations.

Director (Trans), KPTCL wanted to know as to how CEA had arrived at Normative requirement. Chief Engineer (SP&PA) intimated the normative requirement had been worked out keeping in view the yearly load growth and generation capacity addition programme etc. He further stated that a presentation was made to MoP and the MoP has desired the States to reassess the requirement of 220 kV, 132 kV and 66 kV works taking into account the:

- Existing network
- Deficiencies in the existing network
- Programme for 10th and 11th plan to overcome the deficiencies and additional networks to meet increased load and additional generation capacities.
- Financial requirements and how these are proposed to be funded. MoP has desired funds to be sourced from PFC/REC etc.

Regarding funding requirements, both Director (Trans), KPTCL and Director (Tr & GO) APTRANSCO stated that there was no problem of funds and the banks and financial institutions were ready to fund these works at reasonable rate of interest.

The utilities were also requested to send the latest grid maps of the States

Director (Tr & GO), APTRANSCO and Director (Trans), KPTCL wanted CEA to forward the norms or thumb rule for working out the normative ckt. kms. and MVA capacity at 220kV, 132 kV/110kV and 66kV works so that these can be uniformly followed. They also wanted to know the international norms in this respect.

6. LILO of one circuit of Ramagundam STPS-Hyderabad 400 kV lines of POWERGRID at 400 kV Gajwel S/S of APTRANSCO.

Creation of 400/220 kV sub-station at Gajwel with 2x315 MVA transformers by LILO of one ckt. of Ramagundam-Hyderabad lines was agreed to be implemented. The cost of both the sub-station and LILO works to be borne by APTRANSCO.

7. Status of various on going transmission works in central sector by POWERGRID in Southern Region- pre-poning the creation of 400 kV sub-station at Melakottaiyur.

Regarding pre-poning the creation of 400 kV sub-station at Melakottaiyur by POWERGRID, it was decided that the issue be discussed in the SREB forum as it involves sharing of transmission charges by beneficiary constituents of Southern Region.

8. Other issues.

- i) Director (Tr), KPTCL requested CEA for presentation to be made regarding inter-regional transfer of power as also for providing more inter-State lines within the Southern Region. Chief Engineer (SP&PA), CEA informed that the studies for transfer of inter regional power are in hand and the same may be presented in the next meeting.
- ii) Director (Tr & GO), APTRANSCO requested CEA to study the augmentation of transmission requirements for evacuation of power from 660MW unit at Vijaywada proposed by APGENCO.
- iii) HOD (Electrical), NTPC informed that in the 135th SREB meeting all the constituents agreed for a back up of transmission system for Talcher-Kolar HVDC system. He requested CEA to carry out studies for the back up transmission system and include it in the agenda for the next Standing Committee Meeting. Chief Engineer (SP&PA), CEA agreed and stated that the studies would be carried out and the proposal included for the next meeting.
- iv) Director (Trans), KPTCL requested CEA to study the light load conditions corresponding to 10th Plan to work out the Reactive requirements.

Summary of discussions

1. Summary Record of the discussions of the 19th Standing Committee Meeting as circulated vide CEA letter No. CEA/51/4/SP&PA/2001/315-25 dated 18.6.04 were confirmed.
2. Regarding evacuation system for 500MWe PFBR at Kalpakkam it was decided that CEA would carry out further studies including the proposals made by TNEB, testing the same for light load conditions and come out with the recommendations.
3. Provision of additional spare converter transformer at Talcher and Kolar HVDC terminal stations, was agreed to be implemented.
4. It was informed by NPCIL and Director (Trans), KPTCL that 400kV bay extension work at Davanagere and installation of Kaiga transformer would be completed by December 2004.

5. Director (Tr & GO). APTRANSCO informed that the 400/220 kV ICT at Nellore sub-station would be erected by December 2004 and the sub-station would be commissioned by March 2005.
6. Regarding 10th and 11th Plan transmission programme of State utilities, the States were requested to reassess the requirement of 220kV, 132kV & 66kV works taking into account:
 - Existing network
 - Deficiencies in the existing network
 - Programme for 10th and 11th plan to overcome the deficiencies and additional networks to meet increased load and additional generation capacities.
 - Financial requirements and how these are proposed to be funded. MoP has desired funds to be sourced from PFC/REC etc.

Director (Tr & GO), APTRANSCO and Director (Trans), KPTCL requested CEA to forward the norms followed for working out the normative requirements.

7. It was decided that APTRANSCO may establish a 2x315 MVA, 400/220 kV S/S at Gajwel by LILO of one ckt. of Ramagundam-Hyderabad 400 kV lines of POWERGRID at their cost.
8. Regarding preponing of 400/220 kV S/S at Melakottaiyur by POWERGRID it was decided that the issue may be discussed in the SREB meeting since it involved sharing of charges by beneficiaries.
9. Chief Engineer (SP&PA), CEA stated that the studies for inter-regional exchange of power were in hand and the presentation may be made during the next meeting.
10. Power evacuation and augmentation of the system may be studied by CEA for addition of a 660MW unit at Vijaywada by APGENCO.
11. CEA to carry out studies for back up transmission system for Talcher-Kolar HVDC system and proposal included in the next meeting.
12. CEA to carry out light load studies corresponding to 10th Plan conditions to work out the reactive requirements.

The meeting ended with a vote of thanks to the Chair.

List of Participants in the 20th Standing Committee Meeting on Power System Planning of Southern Region held on 7th October 2004 at Kalpakkam.

Organization and Name		Designation
<u>S/Shri</u>		
<u>C.E.A.</u>		
1.	V. Ramakrishna	Chief Engineer (SP& PA)
2.	B.M. Sethi	Dy. Director (SP & PA)
3.	R. Saha	Dy. Director (SP & PA)
<u>SREB</u>		
4.	K. Srinivasa Rao	Member Secretary
5.	Rakesh Kumar	AEE
<u>Bhavini/NPCIL/ IGCAR</u>		
6.	R. Prabhakar	Director (Tech), Bhavini
7.	Prabhat Kumar	Project Director , Bhavini
8.	N. S. M Rao	CE (ED-TAPS), NPCIL
9.	M.K. Kannan	CE (Tr), NPCIL
10.	Sandeep Sarwate	Engineer , NPCIL
11.	T.K. Shanmogam	Head, PPED, IGCAR
12.	N. Theivarajan	Engineer, IGCAR
<u>POWERGRID</u>		
13.	Y. K. Sehgal	DGM(Elect)
<u>NTPC</u>		
14.	A.K. Gupta	HOD (Elect)
<u>P. T. C.</u>		
15.	Harish Saran	Sr. Manager
<u>NLC</u>		
16.	S. Muthu	DGM (Elec)
<u>KPTCL</u>		
17.	S. Shivamallu	Director (Trans)
18.	K.S.Kataqihallmath	CE (Planning)
19.	K.Balaraman	AEE (EI) Plg.
<u>KSEB</u>		
20.	P.N. Mohanan	Member (Gen & Tr)
<u>APTRANSCO</u>		
21.	G. Kesava Rao	Director (Tr & GO)
<u>TNEB</u>		
22.	S. Vivekanandan	SE (System Studies)
23.	C. Vijayakumar	EE (System Studies)