

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

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

Date : 27-2-2004.

To

1.The Member Secretary, Southern Regional Electricity Board, 29, Race Course Cross Road, Bangalore 560 009. FAX : 080-2259343	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 : 040-3317652, 3320565	4.The Director (Transmission), Karnataka State Power Transmission Corp. Ltd.,Cauvery Bhawan, Bangalore 560 009. FAX : 080 -2228367, 221352
5.The Member (Transmission), Kerala State Electricity Board, Vidyuthi Bhawanam, Pattom, P.B. No. 1028, Thiruvananthapuram - 695 004. FAX : 0471-446774	6.The Executive Director/ Planning, Tamil Nadu Electricity Board, 6 th Floor, Eastern Wing, 800 Anna Salai, Chennai – 600 002. FAX : 044-8521210, 8544528
7.The Director (Power), Corporate Office, Block – I, Neyveli Lignite Corp. Ltd., Neyveli, Tamil Nadu – 607 801. FAX : 04142-52646	8.The Superintending Engineer –I, First Floor, Electricity Department, Gingy Salai, Pondicherry – 605 001. FAX : 0413-334277
9.The Executive Director (Engineering), NTPC Ltd., Engg. Office Complex, A-8, Sector 24, Noida – 201 301. FAX: 91-539462, 91-4410136, 91-4410137	10.The 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 Corpn. of India Limited, 2 nd Floor, NBCC Tower, 15 Bhikaji Cama Place, NewDelhi 110066. FAX-011-51659504	

Sub: 18th meeting of the Standing Committee on Power System Planning of Southern Region
Sir,

In continuation to our earlier letter of even number dated 24-02-2004 enclosing agenda note for the above meeting, it is proposed to hold the above meeting at **Hotel Savera, 146, Dr. Radhakrishnan Road, Chennai-4** on **5-03-2004 at 11.00 am**. Hotel's Telephone number is 044-28114700 and Fax number is 044-28113475. In hotel you may contact Ms. Lini Mathew whose telephone number is 31017102.

Contact person in Chennai :

Mr. A. Surenderan, Chief Manager (Powergrid),

Tel. No. 044 - 24891067 (O), 24899199 (R), Mobile No. 9444206073

Kindly make it convenient to attend the meeting.

Encl: As above.

Yours faithfully,

(A.K. Asthana)

Central Electricity Authority
System Planning & Project Appraisal Division
Sewa Bhawan, R.K. Puram, New Delhi – 100 66.

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

Date : 24-2-2004.

To

1.The Member Secretary, Southern Regional Electricity Board, 29, Race Course Cross Road, Bangalore 560 009. FAX : 080-2259343	2.The Executive Director (Engineering), Power Grid Corp. of India Ltd. “Saudamini”, Plot No.2, Sector-29, Gurgaon 122 001,Haryana.. FAX : 95124-2571802
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Sub: 18th meeting of the Standing Committee on Power System Planning of Southern Region

Sir,

Please find enclosed the agenda note for 18th meeting of the Standing committee on Power System Planning of Southern Region. The meeting is scheduled to be held on 5th March 2004. The venue & time of the meeting shall be intimated separately.

Encl: As above.

Yours faithfully,

(A.K. Asthana)

Agenda for 18th Meeting of the Standing Committee on Transmission System Planning in Southern Region

1. Confirmation of the minutes of the minutes of 17th standing committee meeting held on 15th September, 2003 at SREB, Bangalore.

The minutes of 17th meeting of the Standing Committee on Power system planning of Southern Region held at SREB, Bangalore on 15-09-2003 were circulated to the constituents of Southern Region vide CEA letter No. 51/4/SP&PA-2001/756-766 dated 3-10-2003. No comments have then been received on the minutes of the meeting from the constituents. As such the minutes of the 17th standing committee may please be confirmed.

2. Evacuation System for Kudamkulam APP (2x1000 MW).

2.1 In the last meeting of the Standing Committee, the evacuation system for KAPP was discussed and the following system was agreed:

1. KAPP-Tirunelveli 400kV Quad D/C line-1.*
2. KAPP-Tirunelveli 400kV Quad D/C line-1.*
3. LILO of both circuits of Madurai - Thiruvananthapuram 400 kV D/C line at Tirunelveli.
4. Tirunelveli-Udumalpet 400kV D/C line.
5. Tirunelveli –Cochin – Trissur 400kV Quad D/C line. **
6. Tirunelveli –Edamon 400kV D/C line – Initially to be operated at 220 kV. **
7. Establishment of new 400/220kV, 2x315MVA Sub-station at Tirunelveli and Cochin (Muvattapuzha)
8. 3rd 400/220kV, 1x315MVA transformers at Thiruvananthapuram and Udumalpet substations.

* The two KAPP-Tirunelveli 400kV Quad D/C lines to be on different routes.

** The construction of 400 kV Tirunelveli-Cochin 400kV Quad D/C line and Tirunelveli -Edamon 400 kV TM D/C line (to be operated initially at 220 kV) would utilize the RoW of the existing 220kV inter-state Kayathar-Edamon S/C line and a multi-ckt line from Tirunelveli up to Edamon would be erected utilizing the existing corridor. This would consist of four 400kV circuits – two Quad and two Twin. These would be 2-circuits of Tirunelveli-Cochin 400kV Quad D/C line and 2-circuits of Tirunelveli-Edamon 400kV D/C line (initially to be operated at 220kV and later to become Tirunelveli-Thiruvananthapuram 400kV D/C line).

2.2 However, when the above system was discussed in the SREB Board meeting held on 15.11.2003, TNEB said that as APTRANSCO was not intending to avail power from Kudamkulam APP and as TNEB had shown interest for more power from the project, the transmission scheme needed a review. Member(GO&D), CEA had stated that since the power flows in the grid takes place by displacement, the proposed transmission holds good and any additional transmission scheme under the project required for TNEB could be examined by CEA. It was decided that NPCIL would firm-up the allocation and CEA would finalise the transmission system for the project.

Subsequently, MOP, vide their letter No. 3/9/2003-OM dated 5th February 2004 have finalised the following allocation:

States	Tentative allocation made vide MoP's letter dated 28.10.2002	Entitlements of constituents after relinquishment of share by Andhra Pradesh vide MoP letter dt. 5-2-2004
Andhra Pradesh	530	0
Karnataka	286	442
Tamil Nadu	669*	925*
Kerala	172	266
Pondicherry	43	67
Unallocated	300	300
Total	2000	2000

* Includes 10% home state entitlement

2.3 The revised allocation has been considered. As the power flow takes place through displacement, the system as already evolved holds. For completeness of comprehensive review of the proposed transmission system for KAPP, base case and outage cases for the following options have been studied.

- Option-1: As per proposal evolved in the last Standing Committee meeting.
- Option-2: Option-1 plus Madurai-Karaikudi 400kV D/C
- Option-3: Option-1 plus LILO of one circuit of Madurai-Trichy 400kV D/C line at Karaikudi
- Option-4: Option-2 with the change that one of 400kV quad D/C line from KAPP to Tirunelveli and one 400kV quad D/C line to Madurai with series compensation, and the 400kV D/C line to Udumalpet from Madurai instead of from Tirunelveli.
- Option-5: Option-4 with the change that additional 400kV line Karaikudi-Jayamkondan-Melakottaiyur taken and 400kV D/C line from Cochin to Trissur deferred.

Results of all the study cases are enclosed.

It is seen that all the above options, by and large, meet the requirements. Considering the incident load at Karaikudi, 400kV substation at Karaikudi would be considered. However, requirement of 400kV s/s at Jayamkondan and additional 400kV line between Karaikudi -Jayamkondan-Melakottaiyur is not established in the KAPP time frame. TNEB have also furnished results of studies carried out by them. Power flows in their studies show 55MW flow on Karaikudi-Jayamkondan section and 39MW flow on Jayamkondan –Melakottaiyur section and 5MW on Karaikudi- Trichy section. These flows do not justify 400kV lines.

In respect of capital cost, option-1 or option-2 or option-3 are less expensive in comparison of option-4, because of lesser length of 400kV quad D/C line. Also, in option-4 the flow distribution on two routes is unequal and series compensation on Madurai line is needed to utilize the transmission capacities of the two routes.

In view of the above, either of option-2 or option-3, which are basically the already agreed network plus Karaikudi s/s with either a direct 400kV D/C line from Madurai or through LILO of one circuit of Madurai-Trichy 400kV D/C line, could be adopted.

The members may concur to the above evacuation arrangement

3. Start-up Power arrangement for Kudankulam APP:

In the last meeting of the Std. Committee, it was decided that TNEB and NPCIL would jointly finalize the start up power arrangements at 220kV level with two independent sources of supply for KAPP. It was also discussed that creation of 400/220 kV, 2x315 MVA transformation facility at KAPP, which would not be needed for power evacuation, was left at the discretion of NPCIL.

NPCIL and TNEB may inform the finalised start-up power arrangements.
NPCIL may inform their decision regarding 400/220kV ICT at KAPP.

4. Transfer Capacity enhancement of Talcher-Kolar HVDC link and run back scheme for Talcher STPS-II generating units in the event of contingency of pole outage, so as to improve grid security.

4.1 Evacuation of power from Talcher Stage-II is being done through 2000MW HVDC bi-pole line from Talcher to Kolar. The transmission system required to cater to the outage of one pole of this HVDC line has been in discussion with the constituents of Southern Region since a long time. However, the Southern region constituents have not agreed for the back-up transmission for evacuation of power from Talcher-II and the system is inadequate to meet the contingencies arising on account of outage of any pole of the Talcher-Kolar HVDC line. As such, whenever there is any pole outage on this line, the additional power gets injected into ER-WR system causing heavy jerks because of sudden change of large magnitude in load-generation balance. Such events have also caused grid disturbance in the WR system in recent past.

4.2 To improve the security of grid, CEA, vide its letter no.67/12/2003-SP&PA/837-841 dated 22-12-03 (copy enclosed), had requested NTPC to formulate a run back scheme by NTPC for Talcher STPS-II generating units to cater to outage of one pole of the existing Talcher-Kolar ± 500 kV 2000MW HVDC link. A copy of this letter was also sent to POWERGRID. In this context, POWERGRID, vide their letter No. C/ENG/SEF/S/00/Kudankulam/302 dated 20th January 2004 (copy enclosed), have proposed to enhance the capacity of each pole of Talcher-Kolar HVDC Bi-pole link to 1250 MW at a cost of Rs 90 crores. With the enhanced capacity of the HVDC link as proposed by POWERGRID, we would suggest the following scheme for secure operation of grid, particularly aiming at reducing jerk to ER-WR system following outage of any pole of Talcher-Kolar HVDC link:

- (1) When both poles are in service, the power order should be kept at the level of about 925 MW per pole. This would provide transmission of up to 1850 MW, ensuring full evacuation of Talcher-II power for SR beneficiaries. In case of outage of Talcher-II units, power order may be reduced based on entitlement of SR constituents.
- (2) In the event of one pole outage, while both poles are in operation prior to incident, power order on the other healthy pole should be automatically increased to 1250 MW. Simultaneously, automatic tripping of generating units at Talcher-II to affect minimum instantaneous reduction of 450 MW ex-bus, should also be done. The jerk on ER-WR system would thus be limited to 150 MW.
- (3) In the event of pole outage when only one pole is in operation prior to incident, automatic tripping of generating units at Talcher-II to affect minimum instantaneous reduction of 900 MW ex-bus, should also be done. Corresponding to 1250MW power order prior to such incident, the jerk on ER-WR system would be of the order of 350 MW.

4.3 POWERGRID would need to implement up grading of the HVDC terminal stations to achieve 1250 MW per pole capability as proposed by them and also implement control logic as per (2) above. NTPC would

need to implement control logic for run back arrangement so as achieve automatic tripping of units at Talcher-II to affect reduction in ex-bus output as per (2) and (3) above.

- 4.4 In view of urgent need for implementing the above arrangement for safe and secure operation of grids, POWERGRID and NTPC have been asked to go ahead with the preliminaries for taking-up the works so that once approved in the Standing Committee, the arrangements are implemented in the shortest possible time.

Members may discuss and finalize the above scheme.

5. Provision of 80MVAR Bus Reactor at Nellore

In the last meeting, provision of 80MVAR switchable reactor at Nellore was agreed considering the operational advantage. In the meeting, APTRANSCO had stated that they were in process of taking up the erection of transformer at Nellore. TNEB has suggested to review the provision of reactor at Nellore in view of APTRANSCO taking the ICT works. In this context it may be noted that in the last meeting itself APTRANSCO had informed that tender evaluation for procurement of material and equipment for Nellore S/s was taken up and the decision to have switchable reactor at Nellore was taken up from operational advantage consideration so that operational over-voltages could be avoided.

6. Any other issue with permission of Chair.