

/Government of India
CENTRAL ELECTRICITY AUTHORITY
System Planning & Project Appraisal Division
Sewa Bhawan: R.K.Puram
New Delhi-110066

No.26/10/2002-SP&PA/

dated 7th March 2002

To

The Chief Engineer(Tr.Plg.),
MSEB,'Prakashgad',Plot No.G-9,
Bandra (East), Mumbai-400051.
Fax No. 022 6452868

The Member Secretary,
Western Regl. Electricity Board,
MIDC Area, Marol,
Andheri East, Mumbai.
Fax 022 8370193

The Chief Engineer(Tr.),
GEB, Sardar Patel Vidyut Bhawan,
Rase Course, Baroda-390007.
Fax No.0265 337918

Chief Engineer (POSD),
Nuclear Power Corp. of India Ltd.,
11-S-17, VS Bhavan, Anushakti Nagar,
Mumbai-400094
Fax 022 5563350

The Executive Director (T&P),
MPEB, Shakti Bhawan,
Vidyut Nagar, Jabalpur-482008.
Fax No. 0761 661696

Chief Engineer (Tr.),
Chhatisgarh State Electricity Board,
Gudhiyari, Raipur-489009

The Chief Engineer,
Electricity Department,
Government of Goa, Panaji.
Fax 0832 222354

The Member (Power),
Narmada Control Authority,
113,BG,Scheme No.74-C,
Vijay Nagar, Indore-452010.
Fax 0731 559888

The Executive Director (Engg.),
PowerGrid Corp. of India Ltd.,
B-9, Kutub Institutional Area,
Katwaria Sarai, New Delhi-16.
Fax 011 6560039

The Executive Director (Elect.),
NTPC Ltd., Engg. Office Complex,
A-8, Sector-24, NOIDA 201301.
Fax 91 4410201

Subject: Minutes of the 14th Standing Committee meeting on Power System Planning in western region held on 25-2-2002 at POWERGRID Guest House, Mapusa, Goa.

Sir,

Minutes of the 14th Standing Committee meeting on Power System Planning in Western Region held on 25th Feb. 2002 at POWERGRID Guest House, Mapusa, Goa are enclosed.

Encl: As above

o/c

SKSij7

P.K. Pahwa
(P.K. Pahwa)
Director (SP&PA)

7/3/2002

Minutes of the 14th Meeting of Standing Committee on Power System Planning for Western Region held on 25th February, 2002 at Goa.

1. The 14th meeting of the Standing Committee on Power System Planning for Western Region was held on Monday, 25th February 2002 at Goa. The list of participants is enclosed at Annex-I.

1.1 CE (SP&PA) welcomed all the participants to the meeting and thanked POWERGRID for organizing the meeting. He stated that this meeting was convened mainly to review the already finalised transmission system associated with Sipat Stage-I as MSEB had indicated that they might not opt for any allocation from Sipat and other central Sector generating projects. Giving a brief background he stated that the transmission system associated with Sipat Stage-I was discussed during the past three meetings and finalized in the meeting taken by Member (PS) CEA in July 2001. Subsequently, the FR submitted by POWERGRID was examined in CEA and appraised in SPAC meeting held in August 2001. When the transmission scheme was in final stages of being taken up for TEC clearance in November 2001 it was understood from NTPC that MSEB had indicated their reluctance in availing its allocation from Sipat vide their letter of August, 2001 addressed to Director (Commercial) NTPC. He stated that such important decision, having implication on transmission system, was not brought to the notice of CEA at the time when MSEB had indicated its intention of not availing power from Sipat hence steps to review the transmission system could be initiated only in December 2001. The matter was discussed with Member (Technical) MSEB and it was indicated by him that they were reviewing their power supply and demand requirement and would indicate their requirement from Sipat shortly. He added that a study had been carried out to review the transmission network already finalized considering a scenario of MSEB not availing allocation from Sipat. As the transmission system under Sipat Stage-I involved construction of 765 kV sub-station and equipment for the first time in the country hence a reasonable period of 4 years would be required for project implementation after final Govt clearance. Further a period of about nine months prior to project implementation was needed by POWERGRID for other activities and clearances such as preparation of FR, TEC /PIB/CCEA clearance etc hence it was necessary that

modifications in network be finalised so that POWERGRID could prepare and submit FR to CEA considering the proposed changes.

The agenda items were thereafter taken up for discussion.

2. Confirmation of the minutes of the 13th meeting of the Standing Committee on Power System Planning for Western Region.

2.1 The minutes of the 13th meeting of Standing Committee on Power System Planning for Western Region circulated vide CEA letter no 26/10/2000/-SPA/228-37 were confirmed.

3. Transmission System associated with Sipat Stage-I

3.1 Director (SP&PA) stated that studies had been conducted in CEA considering that MSEB would not be taking any allocation from Sipat and other future projects of NTPC. He stated that for the purpose of the study latest generation addition programme as per Report of Working Group on Power corresponding to end of Xth Plan period and loads as per 16th EPS had been assumed. With generation availability of 74% , a deficit of 3500 MW in WR was noted. Except combined Madhya Pradesh and Chattisgarh system, all other constituent states were in deficit. This deficit was adjusted against unallocated share from Central Sector projects and import of 500 MW from Northern Region over Vindhyaachal B/B link. Loads of all constituents except MSEB were met. Reduction in load of MSEB to the tune of 3000 MW with reference to that projected as per 16th EPS was done. Maximum dispatches from the Sipat Stage-I, Vindhyaachal Stage-I&II, Korba stations in the vicinity of Sipat had been assumed. In addition, dispatches from Vindhyaachal Stage-III and Sipat Stage-II that were likely to come up at the same time frame had also been considered. Studies were conducted with the network approved earlier by deletion of 400 kV Khandwa- Aurangabad D/C and 400 kV Bhandra S/S meant for delivery of Sipat Stage-I share to MSEB. However it was observed that with deletion of 400 kV D/C line to Bhandara , the 400 kV Sipat-Raipur S/C would be loaded to the tune of 730 MW and under contingency of 400 kV Sipat-Korba (STPS) this line would be overloaded to about 920 MW. The results of the various cases studied indicate that 400 kV Bhandra S/S was essential from the view of system stability and hence was required from grid conditions even if MSEB opts not to take any allocation from Sipat.

3.2 CE (MSEB) stated that they had carried out a study to analyse the future load demand vis-à-vis generation availability. The demand in Maharashtra was not likely to grow at the rate as taken in 16th EPS as many of the industries were setting up their own captive stations and load growth of about 3% was anticipated against higher load growth taken for the purpose of 16th EPS. As per their projection based on power supply and demand requirement there would be marginal shortfall of 1500 MW during peak hours during the end of 10th Plan which they would be able to manage and confirmed that MSEB had decided not to avail its allocation from Sipat and future Central Sector projects of NTPC. He stated that MSEB had no objection to the proposed deletion of 400 kV Khandwa-Aurangabad D/C line from Sipat Stage-I transmission system.

3.3 CE (SP&PA) suggested that in case MSEB desired to include 400 kV Khandwa-Aurangabad D/C line then the cost of this line would have to be borne by MSEB. Also in case MSEB desired to draw power at 400 kV Bhandra S/S the cost of transformer along with associated bays would have to be borne by MSEB.

CE (MSEB) stated that they would consider the above suggestion of CE (SP&PA) and indicate their requirement.

3.4 CE (GEB) stated that they agree to the proposed deletion of 400 kV Khandwa-Aurangabad line. Also if the results of the study indicated that 400 kV Bhandra sub-station was required from grid consideration then they had no objection to the establishment of 400 kV Bhandra switching station.

CE (CSEB) also agreed with the proposal suggested by CEA but requested CEA to consider LILO of Raipur-Rourkela via Raigarh. Also he suggested LILO of Korba-Bhilai line at Bhatapara under Stage-I.

3.5 ED (POWERGRID), opined that transmission scheme under Stage-I had already been finalised once and whatever additions/deletions were required due to MSEB not opting for its share, the same should be done under Stage-I transmission system. Any additional requirement should be considered independently as system strengthening scheme under Sipat Stage-II as otherwise it would result in further delay in finalizing the system for Stage-I.

120

separate line from Korba (STPS) to Sipat could be planned. AGM (NTPC) stated that there was space constraint for additional bays at Korba (STPS) and it was not possible to provide additional bays. After discussions it was decided that LILO of Korba (STPS)-Raipur line at Sipat as proposed earlier be retained. The following modification in the already approved transmission system for Sipat Stage-I was agreed subject to clearance by MPEB.

- (i) **Deletion of 400 kV D/ C Khandwa- Aurangabad.**
- (ii) **Deletion of 400 kV D/C Raipur- Chandrapur and implementation of the same as an independent scheme.**
- (iii) **Deletion of 400/220 kV transformers at Bhandara and associated bays. However the same could be considered in case MSEB decides to bear the cost for the same.**

4. Transmission System associated with Sipat Stage-II

4.1 Chief Engineer (SP&PA) stated that transmission system for evacuation had been evolved considering Sipat Stage-I &II. However for delivery of power to MPEB 400 kV Khandwa- Rajgarh D/C has been proposed under System Strengthening under Stage-II. In addition any system strengthening proposed by CSEB could also be considered

4.2 Chief Engineer (CSEB) suggested establishment of 400 kV Raigarh either by LILO of Korba-Katni or through direct interconnection with Korba(STPS) or LILO of Rourkela-Raipur line. He also suggested LILO of 400 kV Korba-Bhilai line at Bhatapara.

4.3 CE (SP&PA) stated that 400 kV Korba-Bhilai line belonged to CSEB and LILO of this line could be done by CSEB. Regarding LILO of 400 kV Raipur-Rourkela line as suggested by CSEB, he informed that 400 kV Raipur-Rourkela line was proposed to be LILO at Hirma under Hirma transmission scheme and it was not advisable for any further LILO of this line.

4.4 DGM (POWERGRID) stated that series compensation on 400 kV Raipur-Rourkela was already planned and would need re-configuration hence LILO of Raipur-Rourkela line line was not desirable. He further stated that as per their study under outage of one circuit of 400 kV D/C Seoni-Khandwa (Quad conductor) the other circuit would be overloaded to about 1200 MW and suggested provision of series compensation on this line .

4.5 AGM (NTPC) informed that there was space constraint for additional bays at Korba (STPS) and space for 2 nos. bays for proposed 400 kV Korba-Katni D/C line requested by MPEB was under consideration and no further space for additional bays at Korba(STPS) would be available.

4.6 CE (SP&PA) opined that proposal of CSEB for 400 kV Raigarh S/S needed further study before any configuration could be finalized.

4.7 Chief Engineer (SP&PA), CEA stated that outage of S.Sarovar-Asoj 400 kV line indicated that S.Sarovar-Karamsad line would be overloaded . In order to overcome this loading he stated that studies had indicated that bypassing of S.Sarover-Asoj-Limbdi line at Asoj and bypassing of S.Sarover-Karamsad-Limbdi line at Karamsad would control the flows and GEB may like to consider the proposal.

4.8 SE (GEB) stated that they would further study the above proposal and convey their views.

4.9 It was decided that system strengthening under Stage-II of Sipat would be further studied and if members had any suggestion or proposal they could forward the same to CEA for study and further consideration. It was decided that this item would again be taken up in the next meeting of Standing Committee.

5. Transmission System associated with Vindhyachal STPP Stage-III (2x500 MW)

5.1 Director (SP&PA) stated that studies for transmission system associated with Vindhyachal STPP Stage-II (2x500 MW) had been carried out considering three alternatives. In the first alternative, a series compensation of 40% on Vindhyachal-Jabalpur-Itarsi 400 kV D/C (3rd and 4th circuit) and Vindhyachal-Bina-Satna D/C was considered. As Vindhyachal-Jabalpur-Itarsi (1st and 2nd circuit) was designed to operate at a lower temperature of 65° C, no series compensation on this line had been considered. The second alternative studied was with an additional 400 kV Vindhyachal-Bina-Satna D/C line and the third alternative was with 30% series compensation on 400 kV D/C Vindhyachal-Jabalpur-Itarsi D/C (1st and 2nd circuit) and 40% series compensation on Vindhyachal-Jabalpur-Itarsi D/C (3rd and 4th circuit). In all the above alternatives load flow were found to be in order but under contingencies it was observed that in 1st alternative the outage of one circuit of 400 kV Vindhyachal-Bina-Satna line caused overloading of the other circuit. The second alternative was able to withstand single line

122

contingency and in the third alternative it was observed that in case of outage of 4th circuit of Vindhyachal-Jabalpur D/C line the 1st and 2nd circuit would be loaded to about 650 MW per circuit and 3rd circuit would be loaded to 765 MW of power. He stated that this alternative could be considered provided POWERGRID confirmed that loading to these levels was feasible. CE (SP&PA) opined that unless action to reduce mid-span clearance was taken it would not be possible to operate with series compensation under outage conditions.

5.2 DGM (POWERGRID) stated that circuits 3&4 were designed for 85° C and there was no problem and stated that mid span for circuits 1 & 2 could be reduced by increasing tension of conductors through certain modifications. ED (POWERGRID) stated that any proposal should take into consideration that the existing network was utilised to the optimum before any additional lines were considered for evacuation of power from Vindhyachal Stage-III.

5.3 AGM (NTPC) stated that they had no objection to the provision of series compensation on lines emanating from Vindhyachal provided provision of series compensation was not made at generating station end and no sub-synchronous resonance problem could be allowed. at the generating station and requested POWERGRID for a study in this regard. To a query from ~~Super~~Engineer(GEB) and Chief Engineer(CSEB) regarding commissioning schedule of Vindhyachal Stage III it was indicated that 1st unit under Stage-III was anticipated by March, 2007 and 2nd unit by November, 2007. Addition of further units under Stage-IV was also under consideration.

5.4 S E (GEB) stated that any proposal for evacuation of power should take in to account long term perspective considering additional generation at Vindhyachal Stage-IV which was likely to come up at a later date. He enquired about the cost of alternative-II ~~vis-a~~ vis alternative-III.

5.5 DGM(POWERGRID) informed that cost of alternative-II would be about 500 crores against Rs 80 crores for alternative-III.

5.6 CE (CSEB) stated that they would like to further study various alternatives before finalizing their views.

5.7 It was decided that the constituents would further study the various alternatives proposed and send their suggestions/views if any to CEA and this item would be again taken up for consideration in the next meeting.

6.0 Transmission System associated with Tarapur Extension Unit 3 & 4 (2x500 MW)

6.1 AGM, NPC informed that for the past six months interaction with various identified beneficiaries of Tarapur Extension was in progress for obtaining their concurrence. Due to steps taken in execution of the project the capital cost of the project had been brought down resulting in reduction in cost of energy and stated that that indicative price of energy worked to Rs.3.50 per unit. He further informed that Goa, UT of Daman and Diu, UT of DNH had conveyed their concurrence. MPEB had also concurred with a condition that tariff at the time of commissioning should be acceptable to the State Electricity Regulatory Commission.. Gujrat Electricity Board had indicated its intention of availing allocation but were yet to convey their concurrence. As per their information, the proposal had been put up to their Board and hoped for positive response. Regarding MSEB he informed that they had discussed with MSEB officers and availing allocation from Tarapur Extension was under consideration of MSEB.

6.2 CE (MSEB) confirmed that availing allocation from Tarapur Extension was under consideration and stated that cost of energy was the main issue and was being analysed by their Finance Department.

6.3 CE (SP&PA) stated that not much progress in obtaining concurrence had been made since the last Standing Committee meeting and stated that minimum construction period for the agreed transmission system was about 2 ½ years after all Government clearances were obtained and apprehended that transmission system might not be available in the time frame in which the generating units were planned for commissioning unless urgent measures were taken and requested NPC to take immediate steps in finalizing and obtaining concurrence of the various beneficiaries so that the agreed transmission system could be concurred and POWERGRID could prepare and submit FR for TEC consideration. He requested the beneficiaries who had not concurred to convey their concurrence, otherwise due to delay in transmission system the generation project would also get delayed and this would increase the capital cost of generation project due to increased IDC, resulting in increased cost of energy.

6.4 E.D.(POWERGRID) stated that the FR for transmission scheme could only be processed for TEC and other Govt clearances required after NPC finalised the beneficiaries and entered in to BPSA . He opined that it was difficult to construct lines in the time frame desired by NPC and requested NPC to finalize and enter in BPSA with the constituent beneficiaries at the earliest if they wished no further delay in the transmission scheme. To a query from NPC regarding feasibility of parallel processing of the transmission scheme for investment clearance it was clarified by POWERGRID that process of TEC and other Govt clearances could only be initiated after signing of BPTA which in turn required finalisation of BPSA by NPC.

7.0 In the end it was decided that CEA would hold a meeting with MPEB officers to obtain their concurrence to the transmission system associated with Sipat and in case required the next meeting for finalizing Sipat transmission would be held shortly.

List of participants during the 14th Standing Committee Meeting on power system planning held on 25.02.2002 at POWERGRID Guest House, Mapusa, Goa.

S.No.	Name	Designation	Organisation
1.	V. Ramakrishna	CE	CEA
2.	P.K. Pahwa	Director	CEA
3.	Ravinder Gupta	D D	CEA
4.	Sharvan Kumar	AD	CEA
5.	S.B. Agarker	CE	NPCIL
6.	N.S.M. Rao	AGM (Comm.)	NPCIL
7.	N.N. Misra	AGM (PE-E)	NTPC
8.	A.K. Gupta	DGM (PE-E)	NTPC
9.	Anand Mohan	ED	POWERGRID
10.	R.B. Mishra	ED	POWERGRID
11.	Y.K. Sehgal	DGM	POWERGRID
12.	S. Singh	DGM	POWERGRID
13.	Y.N. Johri	CE (Tr)	CSEB
14.	J.V. Nadkarni	CE (Tran.Plg)	MSEB
15.	J.V. Vyas	SE (Tr.Plg)	GEB
16.	L.K. Wasnik	SE (O)	WREB
17.	R.A. Ghali	CEE	Goa Elect. Deptt.
18.	N. Blaganga	SE (Plg.)	Goa Elect. Deptt.