

Central Electricity Authority
System Planning & Appraisal Division
Sewa Bhawan: R.K. Puram
New Delhi - 110066.

No. 26/10/2000-SPA/483-91

dated the 2nd March, 2000

To

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Subject: Summary record of the 11th Standing Committee meeting on Power System Planning in Western Region held on 22nd February, 2000.

Sir,

Please find enclosed summary record of 11th Standing Committee meeting on Power System Planning in Western Region held on 22nd Feb., 2000 at WREB office MIDC Area, Marol, Andheri East, Mumbai for your information and further necessary action.

Encl.: As above

o/c (V. Ramakrishna)
Chief Engineer (SP&A)

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3/3/2000

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**Minutes of the 11th Meeting of the Standing Committee on Power System
Planning in Western Region held on Feb 22, 2000 at WREB, Mumbai**

List of participants is enclosed at Annex – I.

Chief Engineer (SP&A), CEA welcomed all the participants to the meeting and thanked WREB for the excellent arrangements for the meeting. He stated that the meeting was convened to discuss and finalise the transmission system from Tarapur Extn. Units 3&4 (2x500MW) and Sipat Stage-I & II (3000MW) anticipated to be commissioned by 2006-07. CEA had already given TEC to Sipat TPS Stage-I (3x660 MW). He stated that to enable commissioning of the associated transmission network matching with the generation, it was necessary to finalise the transmission system at the earliest so that POWERGRID would be able to take up the implementation after obtaining the necessary investment approvals from the Govt. of India. Thereafter agenda was taken up for discussion.

1.0 Transmission System Associated with TAPP 3&4:

Chief Engineer (SP&A), CEA stated that a Nuclear Power Station at Tarapur with an installed capacity of 2x160MW (derated) under stage-I along with the following transmission system was existing:

- TAPP - Borivili 220kV D/C (one ckt. being LILOed at Boisar)
- TAPP - Navsari 220kV D/C (one ckt. being LILOed at Vapi)

Nuclear Power Corporation (NPC) was expanding Tarapur project by setting up of Units 3&4 of 500MW each at TAPP Extn. and the project was expected to be commissioned by 2005-06. He further mentioned that the project, which was earlier scheduled for commissioning in 1996-97, had got delayed due to financial constraints. As the time frame, in which the project was expected to be commissioned earlier, has now changed and there has been considerable changes in load-generation scenario in Western region, a need was felt for reviewing the system planned earlier with TAPP Extn.

Accordingly, CEA had carried out studies corresponding to the end of 10th Plan period and had proposed six transmission alternatives for TAPP 3 & 4 considering TAPP generation step-up at 400kV level with a view of ROW constraints around TAPP complex.

Chief Engineer (SP&A), CEA pointed out that considering the pros and cons of various transmission alternatives, alternative-6 given in the agenda consisting of following transmission elements was considered suitable for evacuation of power from TAPP 3 & 4:

- i) TAPP 3 & 4 - Padghe 400KV D/C
- ii) TAPP 3 & 4 - Boisar 400KV D/C
- iii) Boisar - Padghe 400kV S/C
- iv) Boisar - Valsad 400KV S/C

He further added that in order to reduce the overloading of the 220 kV Tarapur-Boisar S/C line, it might be advisable to open the 220 kV TAPP-Navsari and TAPP-Vapi lines or keep part of the loads of Navsari and Vapi radial on TAPP. CE (Tr.) GEB stated that the proposal were generally agreeable to Gujarat, however, mentioned that instead of creating a 400kV substation at Boisar, 220kV interconnection at Boisar through an ICT at TAPP 3&4 may be thought of. CE (SP&A) clarified that the proposal of interconnection of TAPP Extn. with TAPP 1 & 2 and Boisar at 220 kV would result in overloading of existing 220 kV lines from TAPP Stage-I and accordingly the same was not advisable.

SE (PSP), MPEB stated that a number of IPPs coming into MP, it was doubtful whether they would need any share from TAPP Extn. Again in the studies some lines were not fully loaded. CE (SP&A), CEA clarified that earlier the shares were on proportionate basis but with the changing scenario, the constituents need to tie up with NPC regarding quantum of power required. But in any case the evacuation arrangements need to be discussed. Regarding the line loading, he clarified that it was a standard practice to consider scenario in studies to ensure that transmission system was adequate to evacuate all power even under stringent conditions. Accordingly, in the studies, the scenario of higher generation in the Western part of the Region had been assumed.

SE (Planning), MSEB stated that setting up of 400 kV Boisar S/S was not desirable as there was not much load North of Tarapur. Further, with Vasai areas being declared as an eco-district, the loads in these areas cannot go up much in the future. In South of Tarapur, Tata generation was itself in surplus. With BSES and BEST generating units coming in the future, it may not be advisable to go in for 400 kV Boisar S/S. He suggested that TAPP extension evacuation could be on the lines of Alternative 5 suggesting to go towards Ahmed Nagar, Nasik or Pune sides like Alephata S/S. Regarding the issue of giving start-up power to TAPP, he stated that two bays at Boisar were available and also TAPP had start up from two

independent sources at Borivili and Padghe. Replying to this suggestion, CE (SPA) clarified that in this context planning in MSEB system must also be reviewed, as at present power from Dabhol units, situated in South of Maharashtra was evacuated towards Nagothane and Padghe which are in the North, whereas power from TAPP, which is located in North was proposed to be evacuated to Pune, Ahmed Nagar and other S/S South of Padghe. This would cause unnecessary line crossings and increased system losses and leading to operational problems for shutdown, stringing etc. This can be avoided. He requested MSEB to review on these points. CE (Plg.), MSEB stated that loads from Maharashtra Krishna Valley Corporation of about 1200 MW was being planned in Miraj and Sangli districts. Hence, power from Dabhol was also getting diverted from Dabhol-Koyna-Karad to 400 kV Kolhapur S/S which was under advanced stage of construction. Also some loads in Pune district had gone up as places nearby Pune are getting added to Pune city loads. Hence the option of considering, bringing of TAPP power to Alphata or nearby place was suggested. CE (SPA), CEA stated that the load scenario as stated now by CE (Plg.) MSEB was different from the details furnished to CEA and requested that full details may be given to CEA for conducting revised studies. CE (Plg), MSEB agreed to send the details within a week.

Head of Electrical System Group, NPC stated that the TAPP units 1 & 2 had already completed their life of 30 years and are likely to be derated/decommissioned in the future. So Boisar itself may be acting as load on new units 3 & 4 to be commissioned. In that case power would be going to 400 kV Padghe/Pune area and then back to Boisar on 220 kV, which was not desirable. Hence, 400 kV Boisar S/S must be thought of by MSEB. He informed that GIS technology was adopted in order to overcome pollution problems at TAPP Extn. switchyard. As the NIT was about to be issued, he requested the constituents to decide as soon as possible on the no. of transmission outlets required.

POWERGRID indicated that there would be a problem of land acquisition and forest clearance at Boisar as villagers were already under agitation for the same and further pointed out that to relieve the overloading problem of TAPP 1&2 - Boisar 220kV line, high capacity 220kV lines may be made between TAPP 1 & 2 - Boisar 220KV S/C line. POWERGRID also pointed out that in order to get TEC as well as to finalise the transmission system of TAPP 3 & 4, it was necessary to finalise the beneficiaries of the project at the earliest. POWERGRID, however, indicated that pending finalisation of the transmission system of TAPP 3 & 4 in the absence of identification of beneficiaries and their allocation, generation step-up voltage, no. of bays may be finalised.

MPEB stated that unless the beneficiaries and their allocation of power from TAPP 3&4 were decided, they were not in a position to comment on the proposed system.

NPC agreed that they will finalise the tentative beneficiaries & their allocation within one and half months time and inform the same to CEA.

NPC representative stated that since TAPP generation switchyard was being made as GIS, installation of ICT and therefore, 220kV interconnection at Boisar may not be feasible, as per guidelines of Atomic Energy Regulation Board, no third party could be allowed to enter in the vicinity of the Atomic Power Plant. With this in view, it is necessary to create a substation slightly away from TAPP 3 &4.

It was decided that after finalisation of the beneficiaries and their allocation, proposed transmission system would be reviewed by CEA.

After deliberations, it was decided that TAPP 3 & 4 generating step up voltage should be at 400 kV level and 4 nos. of 400 kV bays with space provision of additional 400 kV line bay (as the generation switchyard would be of GIS) should be kept in the scope of TAPP 3 & 4 switchyard. MSEB would revert back within one week regarding the setting up of 400/220 kV S/S at Boisar.

NPC further pointed out that for provision of start-up power arrangement of TAPP 3&4, 220 kV transmission lines to be built from TAPP 3 & 4 to TAPP 1 & 2 and Boisar may be included as a part of transmission project of TAPP 3 & 4. However, after detailed deliberations, it was decided that being start-up arrangement, the same should be considered as part of the generation project. If NPC desires, POWERGRID may construct this line on behalf of NPC as deposit work.

2.0 Transmission System Associated with Sipat Stage-I & II (3000 MW)

CE (SPA), CEA gave a background of the evolution of transmission system associated with Sipat STPP Stage-I comprising of 3x660 MW. This project was expected to be commissioned by the end of the 10th Plan (2006-07). TEC to the project was accorded by CEA in its 210th meeting held on 5.1.2000.

He further stated that though only 2000 MW was expected to be commissioned by the end of the X plan, transmission system for both the stages were considered in these studies. This was because the time interval between stages I & II was anticipated to be only about 1-2 years. Hence, there was need to dovetail the transmission network planned for Stage-I, into the transmission system for the ultimate stage.

He stated that the studies had been carried out with three different alternatives for evacuation of power from Sipat TPS.

- i) SIPAT generation stepped to 400 kV and evacuated at 400 kV.
- ii) SIPAT generation stepped to 400 kV and evacuated at HVDC
- iii) SIPAT generation stepped to 765 kV and evacuated at 765 kV.

Each alternative was studied with two grid conditions.

- a) With inter-regional import of about 3200 MW from SR and exported to NR through WR.
- b) Without any export from SR.

Further each alternative was also examined considering CEPA generation (6x660 MW) evacuated over (a) 765 kV and (b) HVDC system.

SE (Plg.), MSEB stated that MSEB had to go through the study results in detail. However, generally speaking he stated that MSEB was not in favour of HVDC alternative. He requested that transmission charges to be paid and incremental transmission charges for SIPAT may be made available. CE (SPA), CEA agreed to give details. CE (Plg.), MSEB agreed to convey their views on step up voltage to CE (SPA), CEA within a week's time.

SE (PSP), MPEB stated that very little transformation capacity was provided to MPEB. CE (SPA), CEA clarified that the transformer capacity provided to MPEB was the largest considering stations like Bhilai, Satpura, Indore, Jabalpur, Satna etc. He stated that as power flows from displacement, MPEB should not view the problem of receiving power from their angle as the location of MSEB and GEB in the grid was different and they were located away from central generation sources unlike MPEB. Hence, transmission planning needs to be done to ensure that these constituents get their share under worst case scenario.

Representatives from MPEB & MSEB requested to CE (SPA), CEA provide a load flow plotting for entire Western Region with & without considering Hirma project. Chief Engineer (SP&A), CEA agreed for the same.

ED (T&P), MPEB pointed out that due to presence of National forest near Seoni area, direct line between Sipat-Seoni may not be feasible instead, line may need to be terminated around Pench and requested POWERGRID to examine the feasibility of same. They have indicated that large number of substations were considered in Maharashtra and it was observed from the studies that line loadings towards Maharashtra were very less (like Seoni-Bhandara, Chhegaon - Aurangabad 400kV line), therefore, there is a need to identify the transmission elements required under Stage-I and II separately. MPEB also requested to provide a 400KV line between Chhegaon and Rajgarh (near Indore) under Sipat project and suggested to consider following system near Indore.

- i) Chhegaon-Rajgarh 400KV D/C
- ii) LILO of Sardar Sarovar-Nagda line at Rajgarh

GEB pointed out that to avoid critical loading of Indore-Asoj 400kV line in case of outage of one ckt., Nagda - Dehgam 400kV D/C line proposed under Hirma Project may be considered under Sipat project. GEB also requested to include the establishment of Valsad 400KV S/s by LILO of Gandhar-Padghe 400KV S/C line, which was earlier proposed under Gandhar-II project, under Sipat project. GEB further indicated that as per present arrangement of Sardar Sarovar transmission system, Sardar Sarovar - Asoj 400kV S/C line was loaded beyond its limit. It was felt that, there was a need to strengthen the Sardar Sarovar - Asoj section. However, at Asoj, no space was available for future expansion, in view of this they suggested to consider either LILO of one ckt. of Sardar Sarovar-Nagda 400KV line at Kasor or Sardar-Sarovar-Kasor 400KV D/c and Nagda - Dehgam 400kV D/C also.

POWERGRID also pointed out that in addition to finalising the step-up voltage at Sipat generating station, it was necessary to segregate the transmission elements under Stage-I & II out of the composite system of Sipat Stage-I & II (3000MW) indicated by CEA for financial convenience for example, Seoni-Akola 400KV D/C under stage-I instead of Seoni-Bhandara-Amaravati-Akola 400KV D/C and, if required, LILO at suitable location by creation of new substations like Bhandara, Amravati under stage- II. POWERGRID also suggested to consider Raipur-Chandrapur 400kV D/C line under stage-I itself as mentioned in the studies carried out by CEA. Chief Engineer (SP&A), CEA mentioned it could be considered in the studies.

DGM (Engg.), NTPC stated that NIT for stage-I had been issued. Hence there was a need to decide the voltage level 765 kV or 400 kV so that switchyard part may be frozen. He also informed, in reply to a question in the discussion that comfort letters from constituents were already received by NTPC and TEC was cleared based on these confirmations.

After further deliberation, MPEB & GEB agreed for 765 kV as step-up voltage at Sipat generating plant while MSEB requested CEA that they may be allowed week's time to convey their decision.

It was decided that after getting confirmation of MSEB regarding generation step-up voltage level, CEA would carry out further studies considering above observations for Sipat system including sensitivity studies for delay of commissioning of Hirma project.

All participants appreciated the efforts made by CEA for carrying out studies and it was decided that next Standing Committee meeting of Western Region shall be held at WREB, Mumbai, in 1st week of April, 2000.

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

Annex-I

List of Participants

S/Shri

CEA

1. V. Ramakrishna, Chief Engineer (SP&A)

WREB

1. L.K. Wasnik, Suptg. Engineer (O&A)
2. S.K. Mohanram, , Suptg. Engineer (S)
3. Manjit Singh, , Suptg. Engineer (C)
4. Satyanarayan. S, Asstt. Director (Studies)

GEB

1. N. C. Shah, Chief Engineer (Trans)
2. B.M. Patel, Addl. Chief Engineer (LD)

MPEB

1. N.K.Sharma, ED(T&P)
2. R.P.Bhatele, Suptg. Engineer (PSP)

MSEB

1. P.S. Lodha, Chief Engineer (TP)
2. A.B. Bhalerao, Suptg. Engineer (Plan)
3. S.M. Majumdar, Suptg. Engineer (Plan)

NTPC

1. A.K. Gupta, CDE (Elect.)
2. N.N. Mishra, DGM (Engg.)

NPC

1. W.A. Dharme, Head (Elect. System)
2. S.B. Agarkar, Head (Power System)
3. Rajesh Lad, SO/F
4. N. Sankaranaryan, SO/F

Powergrid

1. S.C. Mishra, ED (Engg.)
2. I.S. Jha, DGM (Engg.)
3. Subir Sen, DCDE (Engg.)

WRLDC

1. Anjan Roy, AGM