

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

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CASE NO. 20 & 21 of 2003

In the matter of
Access by REL to intervening transmission facilities of TPC and MSEB

Dr Pramod Deo, Member

ORDER

Dated: 4th February, 2005

In its Order dated 29th January, 2004 on earlier Applications by BSES Ltd. (now Reliance Energy Ltd. (REL)) seeking access to intervening transmission facilities of Tata Power Co Ltd. (TPC) (Case No. 20 of 2003) and Maharashtra State Electricity Board (MSEB) (Case No. 21 of 2003), the Commission has stated, inter alia that:

"By this Order, therefore, the Commission requires MSEB and TPC, under Section 35 of the EA, 2003, to provide the use of their intervening transmission facilities to BSES to the extent of surplus capacity available with them. However, such use shall be limited to the sourcing of power by BSES from any bulk licensee or their own generating stations within or outside the State. The parties concerned would be free to approach the Commission in case of any genuine dispute regarding the extent of surplus capacity available, as provided for in Section 35. In case no such dispute is raised, the parties should mutually decide the rates, charges and terms and conditions for the provision and use of the intervening transmission facilities as envisaged in Section 36. Mutual agreement on these matters would be in the best interest of the parties. In case, such agreement cannot be reached within a reasonable period of time, either party is entitled to approach the Commission for determination under the proviso to Section 36(1). In that event, however, the Commission would expect evidence that negotiations have been held in good faith and all reasonable efforts have been made to arrive at mutual agreement.

Citing the Order, REL have again approached the Commission on 12th April, 2004 in separate Applications seeking that the Commission

- (a) Adjudicate the extent of surplus capacity available with MSEB for use of intervening transmission facilities by REL to the extent of 800 MW (Padge to Boisar, Padge to Borivli, Padge to Trombay), and the surplus capacity available with TPC considering REL's requirement of 730 MW at nine of the existing interconnection points;
- (b) Specify the rates, charges and terms and conditions for REL's use of such intervening transmission facilities.

2. In respect of TPC, REL have stated that, as allowed by the Commission and as provided under the proviso to Section 35 of the Electricity Act (EA), 2003, they are approaching the Commission again since there is a dispute regarding the availability of surplus capacity inspite of REL's efforts, and TPC have also raised various issues regarding the need for a State Grid Code, etc., to determine



spare capacity, and sought to link many other points with the matter. TPC had also not indicated the rates, charges, and terms and conditions to be negotiated inspite of repeated requests by REL, as envisaged under Section 36.

3. With regard to MSEB, REL have stated in their Application that, following the Commission's last Order, they had approached MSEB, who had asked for various clarifications. These had been given, and REL had also suggested a meeting. However, there was no response from MSEB. MSEB had, in their letter seeking clarifications dated 10.3.2004, indicated that the transmission network around Padge is already loaded to capacity. MSEB have also not responded to REL's plea to indicate rates and terms and conditions to be negotiated.

4. In their Reply dated 5th May, 2004 TPC have denied not responding positively to REL. However, they found it difficult to accede REL's request in the absence of clarifications regarding the need for a State Grid Code for determining the spare capacity, and the basis for deciding the wheeling and transmission charges in the absence of any guidelines from the Commission. TPC have pointed out that the Commission has initiated a process for intra-state ABT to lay down the guiding principles for allowing open access. TPC have also drawn attention to the Commission's reference in its Order that REL should show that new power purchase agreements will not affect REL's quality of service to their consumers. TPC have submitted that, being an interconnected system, TPC need also to satisfy themselves that providing such open access would not jeopardize TPC's own consumers. TPC also required certain further details with reference to the points listed in the CERC Order dated 30th January, 2004. TPC have argued further that REL have asked for open access including 22 / 33 KV busbar which is used by TPC for distribution. However, while open access has been allowed by the Act on the transmission network, it has not yet been granted on distribution. Further, the individual sub-stations indicated by REL are TPC's distribution sub-stations, the capacity of which is limited to the capacity of installed distribution transformers. As such, giving open access to them would correspondingly reduce TPC's ability to meet the load of their own consumers. As far as the 220 KV Borivli point is concerned, it is only for standby and not for normal supply. TPC have also raised various issues regarding the implications of power supply in Mumbai if an outside source of uncertain power is relied upon. Moreover, the transmission capacity constraint is evident from the fact that, when both units tripped on 13th April, 2004, REL were not in a position to meet their full requirement from the existing transmission network and had to resort to load shedding. Other issues with regard to commitment of payment of standby charges, need for a PPA, two part tariff, etc., have also been mentioned in TPC's Reply. Summarizing the distinction between transmission and distribution, TPC have finally stated that, out of REL's request for 730 MW, only 145 MW pertains to transmission open access, the balance being 22/33 KV which is a distribution level voltage. Even this quantum has been asked for at Borivli, which is to be used only for standby and not for regular supply.

5. In their Reply dated 5th May, 2004, MSEB have submitted that they had conducted load flow studies on the circuits proposed by REL for evacuation of power from Padge for a typical system loading and based on CEA guidelines for line loading. On that basis, MSEB had concluded that, considering other circumstances cited, the 400 KV Padge-Kalwa section would be loaded to capacity to meet MSEB's internal requirements. Therefore, injecting additional 350 MW power on the Kalwa-Borivli line would cause overloading of the underlying 220 KV network leading to system instability. In case of outage at Tarapur, the situation on the 220 KV Kalwa-Mulund-Borivli and 220 KV Kalwa-Borivli lines would be further aggravated. With regard to Padge-Trombay, the two relevant circuits are also loaded to the capacity. As far as Padge-Borivli is concerned, considering the possibility of Tarapur being under outage, injecting additional 100 MW would critically overload both the MSEB and the REL networks. MSEB had communicated the load flow study findings to REL. MSEB are also conducting further load-flow studies under various contingencies and scenarios to determine the extent to which capacity is available for providing open access, the results of which would be submitted in due course. MSEB have urged that guidelines be given for ensuring system stability in the absence of balancing markets or an intra-State ABT.



6. At the hearing held on 10th May, 2004, Shri J. J. Bhatt, Counsel for REL, referred to para 23 of the Commission's Order, and submitted that mutual agreement could not be arrived at. He further submitted that MSEB in their Reply dated 5th May 2004 had submitted, in substance, that they do not have surplus capacity, and drew attention to the following paras of the Reply :

"2. Subsequent to the Order, REL, vide its letter dated February 10, 2004 requested MSEB to provide open access on its transmission system and the use of intervening facilities up to 800 MW at:

- a. Padghe to Boisar (100 MW)
- b. Padghe to Borivali (350 MW)
- c. Padghe to Trombay (350 MW)

REL also requested MSEB to indicate reasonable rates, charges and terms and conditions for the same.

3. In its reply dated March 10, 2003 MSEB requested REL to provide further information.

4. In its letter dated March 12, 2004 REL provided details of the voltage level at which the power was to be injected into the system and the evacuation plans from Padghe. REL plans to evacuate power from Padghe as follows:

- a. 100 MW on the two 220 KV circuits going from Padghe to Boisar. One circuit goes directly to Boisar while the other circuit goes to Boisar via Nalasopara.
- b. 350 MW from Padghe to Borivali via the Padghe – Kalwa – Mulund - Borivali circuit and the Padghe – Kalwa - Borivali circuit.
- c. 350 MW from Padghe to Trombay via the Padghe - Kalwa - Mulund- Trombay circuit and the Padghe – Kalwa – Trombay circuit.

5. MSEB conducted load flow studies on the circuits proposed by REL for evacuation of power from Padghe. The load flow studies were conducted for a typical system loading. The findings of the load flow studies, based on the CEA guidelines for line loading, are as follows:

- a. Transmission of 350 MW power from Padghe to Borivali. Presently 500 KV HVDC Chandrapur – Padghe bipole line is being operated as monopole due to technical constraints. It is expected that by 2nd week of May 2004, the bipole operation will commence. Post commencement of the HVDC bipole operation, 1500 MW power will be transmitted at 400 KV Padghe bus over HVDC line. Under such circumstances, 400 KV Padghe – Kalwa section will be loaded to its capacity to meet the internal requirement of MSEB. Therefore, injection of additional 350 MW power, as stated by REL, would cause the overloading of the underlying 220 KV network."

7. Counsel for REL quoted further from MSEB's Reply as follows:

"Post commencement of the HVDC bipole operation, 1500 MW power will be transmitted at 400 KV Padghe bus over HVDC line. Under such circumstances, 400 KV Padghe – Kalwa section will be loaded to its capacity to meet the internal requirement of MSEB. Therefore, injection of additional 350 MW power, as stated by REL, would cause the overloading of the underlying 220 KV network i.e. 220 Kalwa – Mulund – Borivali and 220 KV Kalwa – Borivali lines, leading to system instability."

MSEB have also stated that:

"Padghe – Kalwa section is already loaded to its capacity 220 KV Kalwa is further connected to Trombay via 220 KV Mulund sub-station. REL has proposed to tap these two circuits at their Chembur sub-station so as to transmit 350 MW into their network. As these two circuits



i.e. 220 KV Kalwa – Trombay and Kalwa – Mulund - Trombay are loaded to their capacity, injecting additional 350 MW power will make the circuits overloaded”.

“There are two 220 KV circuits from Padghe to Boisar. One of which is directly connected to Boisar and the other is connected to Boisar via Nalasopara. REL’s 220 KV Dahanu – Varsova s/c line is tapped at 220 KV Boisar presently kept open. When TAPS units are under outage requirement of MSEB Boisar sub-station is met through 220 KV Padghe – Boisar and 220 KV Padghe – Nalasopara – Boisar line. Under these circumstances injecting”.

8. Shri Gaurav Joshi, MSEB Counsel circulated a schematic diagram of the circuit to illustrate the position. He submitted that MSEB would require some time to conduct the further load flow studies. Referring to the diagram, he submitted that it was impossible to meet REL’s requirement of 350 MW on a line which was not capable of carrying that load. MSEB Counsel pointed out that REL and MSEB had different distribution areas and, by providing the facility, MSEB would earn something, but they just did not have the capacity. This had been explained to REL through correspondence. MSEB had said that the issue could be discussed at a meeting, and referred to the letter annexed to MSEB's Reply.

9. Counsel for MSEB referred to the Annexures to their Reply to indicate that the MSEB line was overloaded and did not have any surplus capacity. He further submitted that circuits from Padghe to Boisar via Nalasopara or directly were already loaded up to 60-80% of their normal capacity when there is no outage or breakdown. To a query from the Commission, he stated that these were 2 independent single circuits, one from Padghe – Nalasopara – Boisar and the other from Padghe to Boisar. MSEB’s average use per circuit was 70 – 80 MW, and on an average the maximum load went up to 100 MW. The Commission enquired from MSEB as to the base load and peak load of the circuits and observed that, as MSEB had conducted load flow studies, they should have come with all the details. The representative of MSEB submitted that the line loading data is available for REL to see. The Boisar sub-station was for evacuation of Tarapur. If Tarapur was not available, MSEB would not be in a position to supply power. He explained that all the networks were from Padghe (eastern side) and Kalwa (western side) and all these networks are to meet contingencies. Counsel for MSEB submitted that even if both the circuits were put together, the capacity would still be 260 MW and REL wanted to evacuate 350 MW.

10. The representative of MSEB submitted that, if necessary, a Committee headed by MSEB with representation from both TPC and REL could examine the position. Counsel for REL suggested the formation of a Committee headed by an independent person, and that WRLDC could be involved. All three parties agreed to participate in the Committee. Dr. Ashok Pendse of Mumbai Grahak Panchayat also agreed with the approach, and suggested Prof. Khaparde of IIT, Powai as a Member of the Committee since he had expertise in the technical matters involved. The Commission observed that the Chairman of the Committee could be from the Western Region Electricity Board (WREB).

11. The representative of TPC submitted that the Order dated 29th January, 2004 stated that REL could obtain power from their own generation elsewhere or from a bulk licensee. However, REL had not yet disclosed the generating station or the bulk licensee from whom they wanted to bring power. The Order also states that such new purchase arrangements should not affect the quality, continuity and the reliability of REL's services to consumers in their licensed area, and asked whether REL had satisfied these conditions. Instead, REL had floated public enquiries for different quantum of power at different times. With this method of power coming through the MSEB network, he submitted that the islanding system would collapse. The Commission observed that the matter was a technical one and the relevant points could be raised in the Committee.

12. Regarding the Boisar and Tarapur expansion 3 and 4, the representative of MSEB submitted that the Power Grid Corporation was going to establish a 400 KV sub-station at Boisar and had requested MSEB to provide two lines at Padghe. Thus, there is a lot of network coming up, not restricted to MSEB. Perhaps in a year's time, there would be greater possibilities.



13. The representative of TPC submitted that the issue of what is transmission and the point at which distribution starts also needed to be considered. He further submitted that REL were asking for power from TPC at 22KV. He queried as to whether REL were entitled to evacuate power from 22KV, or whether REL could set up own transformers and then step down. He further submitted that REL wanted to take advantage of the system which TPC had created. There were many conflicting provisions on the subject of what is transmission and what is distribution.

14. Counsel for REL referred to paras 6, 7 and 9 of TPC's affidavit dated 5th May 2004 as under:

Para 6:

“The Hon’ble Commission in the process of defining the network elements, included in transmission network of TPC and MSEB over which open access can be granted. BSES has asked for open access on TPC’s network including 22/33 KV bus bars. This network is being used by TPC for distributing power in its licensed area to its own consumers including distribution licensees. While open access has been allowed by the Act on transmission network it has not been granted yet on distribution network of a licensee.”

Para 7:

“22 and 33 KV is a distribution voltage level all over the world and individual sub-stations indicated by REL are TPC’s distribution substations. The capacity at these substations is limited to the capacity of installed distribution transformers. If REL is given open access on these distribution transformers the TPC’s ability to meet load of its own consumers and other licensees gets restricted by equivalent margin.

Para 9:

“TPC needed to know details of REL’s proposal to bring in power from outside, both in terms of quantity and duration, active and reactive load flow at each point of injection and delivery so that the impact on TPC has enquired about this in its letter dated 27th February 2004. The surplus capacity, if any, on TPC’s network was to be ascertained only after these queries were answered by REL. Since, REL indicated distribution points for open access TPC could not indicate any surplus capacity available on transmission network. Regarding 220 KV Borivali point, TPC has already stated that it is only for standby type of service and not for normal supply.”

In this context, Counsel submitted that REL wanted open access up to the various outlet points of 22/33 KV, and not from the outlet points. The desirability, which was related to capability, was for the Commission to determine and the Committee to address.

15. As far as the legal aspect is concerned, Counsel for REL referred to the definition of distribution system under Sec. 2(19) of the Electricity Act, 2003:

“Distribution system means a system of wires and associated facilities between the delivery points on the transmission lines or the generating station connection and the point of connection to the installation of the consumers.”

Counsel for REL submitted that if 22/33 KV was treated as the delivery point, then up to 22/33 KV in law would be transmission. He referred to the definition of transmission lines under Sec. 2(72) of the Electricity Act, 2003:

“Transmission line means all high-pressure cables and overhead lines (not being an essential part of the distribution system of a licensee) transmitting electricity from a generating station to another generating station or a sub-station, together with any step up and step down transformers, switchgear and other works necessary to and use for control of such cables or overhead lines and such buildings or part thereof as may be required to accommodate such transformers, switch-gears and other works.”



He further submitted that, reading these two definitions together, the transmission lines ended at the 22/33 KV outlet point and thereafter REL were entitled in law to access up to the outlet of 22/33 KV, which could be denied by the Commission by giving reasons after considering the findings of the Committee.

16. The Commission observed that only high voltage line was defined, whereas high pressure cables were not. Counsel for REL referred to the definition of high voltage line under Sec 2(35) of the Electricity Act, 2003:

“High Voltage line means an electrical line or cable of a nominal voltage as may be specified by the Authority from time to time.”

Dr. Pendse of MGP opined that up to 66KV network was transmission network and below 66KV was distribution network. The Commission observed that, as per the definition cited by REL Counsel, it seemed that up to 33/22 KV was also a part of the transmission network and 33 KV was the delivery point.

17. The Commission queried as to whether the step down transformers were also part of the transmission network. Counsel for REL submitted that they were not a part of the transmission system if step down transformers were an essential part of the distribution system. He further submitted that REL were a distribution licensee and that they bought power from TPC as a bulk licensee. He further submitted that all assets of TPC which provided power to REL at different points constituted the transmission facility. To a query from the Commission, Counsel for REL submitted that they were seeking to bring in power from other sources that would replace the power REL purchased from TPC, i.e. it is only a replacement. He submitted that he was essentially on the legal aspect. There might be commercial considerations involved, and they could also be gone into by the Committee. The Commission observed that the definition of distribution system extended to the connection right up to the generator, and that the generator could be connected even with 400 KV. Thus the distinction between transmission and distribution depended on the specific circumstances of each case. Counsel for REL agreed that both the definitions overlapped in this sense. The representative of MSEB submitted that the Committee would not be in a position to go below 33 KV as far as MSEB are concerned. Counsel for MSEB submitted that MSEB also needed clarifications as to where REL were intending to get the power up to Padghe, and whose transmission facility REL were intending to use to bring power upto there.

18. The representative of TPC submitted that the various stations from where REL had asked for open access were all essential parts of the distribution system. He also drew attention to para 13 of TPC's comments dated 5th May 2004 as under:

“None of the issues raised by TPC can be termed unconnected issues. TPC has always shown its willingness to provide open access but on its transmission network. The issues termed as unconnected are given below:

- i. In the open access regime, the present standby arrangement would also undergo a change. If the present standby arrangement were to continue, REL would need to commit payment of standby charges as indicated in TPC APR for 04-05 if approved by the Commission.*
- ii. If TPC were to meet the said standard requirement, then it needs to keep one of its units online for all time to come. Who would absorb and pay for such technically minimum generation as would be necessary for keeping this unit online. Also REL would be required to pay as per two-part tariff for such standby power - the capacity charge and energy charge, the latter being on the maximum incremental cost of the marginal generation.*



- iii. *If TPC were not obliged to meet the standby requirement of REL, then treatment of TPC's generating capacity rendered surplus by REL sourcing power from outside needs to be decided.*
- iv. *If TPC does not provide standby power, it is necessary to know the source of standby power for REL in case of failure of such outside supply.*
- v. *Finalisation of standard quantum and the rate to be paid by REL to MSEB/TPC providing standby for power procured from third parties is an issue. TPC share of standby quantum and the amount should be reduced consequent to reduction in the TPC load."*

"If REL proposes sourcing its requirement from third parties.
- vi. *PPA between TPC and REL needs to be finalized and approved by MERC.*
- vii. *REL may have to enter into a two-part tariff with TPC since it would tie up TPC capacity, which may not be commensurate with energy off take."*

He submitted that all these key points had commercial implications. He further submitted four important issues on which a comprehensive view had to be taken:

- (1) The stranded cost of TPC if REL purchased power from another supplier;
- (2) The quality, continuity and reliability, which the Commission had insisted upon in its Order dated 29th January 2004;
- (3) The power procurement process, which would require to be approved by the Commission, and the use to which the power is put;
- (4) If the whole open access was given in the future, then what would be the impact on the tariff being decided by the Commission for REL.

19. Counsel for MSEB submitted that only the limited issues directly involved in the present cases should be referred to the Committee or else no report would be forthcoming. The Commission directed the parties to file affidavits with suggested terms of reference and other details within two weeks. The Commission also directed MSEB to make available the past data of transmission capacity on their website or if, they did not have past data, then the data from 1st April 2004 onwards.

20. Subsequent to the hearing, REL, TPC and MSEB submitted their suggestions with regard to the terms of reference of the Committee proposed to be set up. After considering these suggestions, the Commission sought the findings and advice of a Committee chaired by the Member-Secretary, Western Region Electricity Board with representatives of the Western Regional Load Despatch Centre, the three Parties, and Prof. S.A. Khaparde, Department of Electrical Engineering, IIT, Mumbai with the following terms of reference :

- (a) Capacity availability on corridors on which REL plans to bring power
- (b) Capacity on the relevant transmission systems of MSEB and TPC
- (c) Pricing of reactive power
- (d) Balancing mechanism required to be established
- (e) Equipments required to measure and report energy flow

21. The Committee submitted its Report vide letter dated 13th August, 2004, signed by all the Parties / Members. It is worthwhile reproducing the following conclusions contained in Chapter 3 of the Report, which are as follows :



3.1 Capacity available on the corridor on which REL plans to bring power:

REL have indicated that the injection is at 220 kV Padghe. The corridors from where the power is coming to Padghe was from sources outside STU network the details of which was not mentioned by REL and cannot be commented upon by the Committee, as it is beyond the STU network.

3.2 Capacity on the relevant transmission systems of MSEB and TPC:

Two sets of simulation were carried out, one by MSEB and other by WREB. MSEB had simulated Base Case with peak and off peak load condition and case with injection of 800 MW at Padghe (Annex. 2). WREB simulated Base Case with peak condition and case with injection of 800 MW injection at Padghe and also the effect single line contingency. Also the new case of 300 MW injection at Padghe and load of 145 MW at Boisar was simulated by WREB (Annex. 3). From the MSEB simulation it is seen that as the 800 MW power is injected at 220 kV Padghe the following lines are over loaded (above SIL of 132 MW). 220 kV Kalwa-Salsette D/C flow was 257 MW per circuit, 220 kV Padgha-Colorchem s/s flow was 229 MW, flow on 220 kV Kalwa-Colorchem s/s was 158 MW which is beyond the SIL capacity. Further in the base case, without any injection, the flow on 220 kV Kalwa-Salsette D/c is 175 MW each for the case considered. Thus as the injection at Padghe is increased the above lines are getting over loaded. From the results of WREB simulation the flow for 220 kV Kalwa-Salsette was 150 MW each in the base case without injection of power at Padghe and increases to 265 MW each with 800 MW injection at Padghe. Also the total flow from Padghe to Kalwa in WREB case with injection considered, is 560 MW whereas in MSEB case it is 559 MW. However WREB simulation does not include the LILO at Colorchem, being a regional simulation. Thus the results after injection are similar for both these independent studies. Further with the contingency of one 220 kV Kalwa-Salsette line being out, the flow on the other circuit increases to 444 MW which indicates tripping of the other circuit also. MSEB representatives observed that 220 kV Kalwa-Salsette D/c lines are generally loaded in the range of 200 to 400 MW (total) for most of the time. Hence these lines do not appear to have surplus capacity presently. As the power flow on the gateway to TPC system is itself beyond the capacity, the question of evaluating transmission capacity in TPC was not done. The SIL loading was taken as 132 MW as per CEA guidelines. REL representative stated that line loading as a function of length, as per CEA guidelines should be considered. However, the rest of the Committee members stated that contingencies should also be considered as per CEA guidelines. In the present case the contingency of one of the 220 kV Kalwa-Salsette D/c line being out was considered which resulted in overloading beyond capacity. Hence other contingencies like tripping of one 500 MW unit etc. were not considered as they are more severe than the line contingency.

3.3 The case referred by REL representative with 145 MW at Boisar radially at 220 kV is slightly different. Boisar is an existing MSEB station connected to 220 kV Padghe and 220 kV Tarapur Atomic Power Station (TAPS) which in turn is connected to "South Gujarat system with a number of Central and State generation. This new case was simulated in WREB. When 330 MW is injected at Padghe, out of the 145 MW only about 88 MW is fed from Padghe side and the rest of the load is fed by an increase in the 220 kV Tarapur-Boisar line with the flow touching about 210 MW or so. Already this line is loaded to 189 MW in the base case and in real time also to control the loading of the same sometimes one 220 kV Padghe-Boisar ckt needs to be kept out. It is an old line and any tripping of the same could affect the evacuation of TPAS power and may endanger the security of a nuclear power station. Hence any possibility of bringing power on this corridor as well as through the other corridor mentioned in 3.1 is also ruled out.

3.4 Pricing of Reactive power : Till such time MERC fixes the price of reactive power, the Committee felt that existing penal rate for reactive power adopted by CERC may be followed.



- 3.5 *Balancing mechanism required to be established : Intra-State ABT may meet the requirement of balancing mechanism. This will be as per the guideline issued by MERC.*
- 3.6 *Equipments required to measure and report energy flow : Real time data at SLDC Kalwa along with Availability Based Tariff complaint Special Energy Meters (SEMs), would be required at the point of injection and delivery."*

22. The matter was further heard on 26th October, 2004 by a single Member Bench consisting of Dr. Pramod Deo, Shri Velayutham having recused himself inasmuch as he had been the Chairman of the Committee which submitted the Report, in his earlier capacity as Member-Secretary, WREB.

23. At the hearing on 26th October, 2004 Shri. Cooper, Counsel for REL, submitted that according to the Committee's report there exists no surplus capacity for making available the open access sought to TPC and MSEB's intervening transmission facilities. However, the entire report proceeds on the basis of adoption of Surge Impedance Loading (SIL) criteria. It ignores certain other basic criteria, which ought to have been taken into consideration in determining whether or not surplus transmission capacity is available for REL. Shri. Cooper quoted para 4.1 of the CEA Manual on Transmission Planning Criteria, which reads as follows:

"4.1 Permissible line loading limit depend on many factors such as voltage regulation, stability and current carrying capacity (thermal capacity) etc. While Surge Impedance Loading (SIL) gives a general idea of the load capability of the line, it is usual to load the short lines appreciably above SIL and because of the stability limitations, to load long lines lower than SIL."

Thus, Shri. Cooper submitted that SIL could, according to the CEA, be only one of the guiding factors, and other criteria also required to be looked at, viz. thermal capacity, voltage regulation, etc. Moreover, assuming SIL is to be the criteria, one must look at the line length. If the line length is longer, then a discounting factor has to be applied and a lesser availability can be concluded.

24. Shri. Cooper further submitted that according to the CEA guidelines, the maximum loading of the 220 KV is 132 MW for line length of 500 KM's. If this is to be the criteria and if the SIL is 132 MWs, obviously 2.5 times could work out to about 330 MWs. REL want to use the Kalwa Salsette Double Circuit (D/c) line, which extends for a distance of approximately 10 KM's. It could, therefore, take a load of 660 MWs if we take into account the line length, which is what the CEA has said. Similarly as far as the Tarapur-Boisar line is concerned, that will be loaded up to 330 MWs. He submitted that the Committee has ignored these aspects. REL had pointed out these considerations to the Committee, and that has been acknowledged in the Report. Shri. Cooper further submitted that since the premier technical agency (i.e. CEA) had made certain recommendations with regard to the criteria and factors to be considered, these should have been used in judging whether or not there is surplus capacity. REL Counsel urged that the Report not be considered as it is, and that the Committee be asked to re-consider its findings keeping in mind the technical guidelines set out by the CEA. Shri. Cooper further submitted that surplus capacity to the extent of at least 100 MWs could be provided straight away as against 800 MWs asked for, in case the Commission comes to the view that 800 MW is not capable of being transmitted through the open access regime in these circumstances.

25. Shri. Cooper submitted that, apart from line length, the current carrying capacity has also to be taken into account. However the Report is silent on this aspect and proceeds solely on the basis of SIL. Moreover, the Committee totally ignored the fact that the flow of current also moves in the reverse direction. There is an interchange of supply of energy between TPC and MSEB, and the surplus capacity is to be assessed only after taking into account the reverse flow.



26. REL Counsel also drew attention to the provisions of EA, 2003, which requires the unbundling of integrated utilities. He quoted Section 2 (47) of the EA, 2003, which reads as follows:

"open access" means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission."

He submitted that a non-discriminatory provision has a definite meaning and definite purpose. This is made further clear by Section 39, which provides that the function of the State Transmission Utility shall be :

"(d) to provide non-discriminatory open access to its transmission system for use by
(i) any licensee or generating company on payment of the transmission charges."

Here also the emphasis is on the word non-discriminatory. Otherwise, there is an inherent tendency on the part of an integrated undertaking to make available its lines only for the purposes of its own generation. The open access regime has implications for cheapest energy sourcing, particularly when coupled with the unbundling provisions. Thus, while assessing whether or not there is surplus capacity available, the principle of non-discriminatory access must also be borne in mind by the Commission or Committee. Shri. Cooper submitted that load growth is taking place which will be catered to by the existing transmission lines, and queried as to why REL should be denied access on a non-discriminatory basis for catering to that increased load. Transmission line owners do not get preference on their own lines.

27. To a query from the Commission, Counsel admitted that REL had a representative on the Committee and that he had urged that the line loading as a function of length has to be considered, as recorded at page 14 of the report :

"REL representative stated that line loading as a function of length as per CEA guidelines should be considered. However, the rest of the Committee Member stated that contingency should also be considered as per the CEA guidelines. In the present case, the contingency of 220 KV Kalwa Salcette D/c line was considered which resulted in overloading beyond capacity. Hence, other contingencies like shipping etc. was not considered."

In effect, however, other members were looking at the contingency of what happens when one unit shuts down. However, that cannot be the basis, or else open access can never be provided.

28. To the Commission's query regarding CEA guidelines on redundancy, Shri. Barbole, CE (LDC) and others of MSEB stated that these guidelines are given in the CEA Manual at 6.2 which deals with how certain contingencies are to be taken into account :

"As a general rule, the EHV grid system shall be capable of withstanding without necessitating load shedding or rescheduling of generation, the following contingencies..."

When one line is already out and some other line also trips, the system should be able to withstand it. Considering this guideline, MSEB's network is just sufficient for their own requirement. He also pointed out that the Committee included independent outside experts. Non-discriminatory open access does not mean compulsion regardless of the circumstances.

29. Counsel for REL submitted that, although the REL representative had signed the report in his capacity as a member of the Committee, that could not be construed as his accepting the conclusions. In any case, it is for the Commission to decide whether the Report should be accepted or not.



30. Shri. Cooper further stated that, as far as TPC is concerned, to the extent that REL's power is transmitted on those lines, it would be to take care of a demand which is being catered to currently by TPC. Therefore, to the extent that REL transmits more, it will only mean that there will be a corresponding reduction in the transmission by TPC. There will be no over loading so far as TPC's lines are concerned. Another factor which has been overlooked is the question of load growth. Even today, as per MSEB, there is no surplus capacity and the system is incapable of taking it, and yet the load growth is being serviced through their transmission lines, which are allegedly deficient in catering to the supply. If the load growth can be met from the existing transmission lines, he queried as to why MSEB are not making available surplus capacity to other parties.

31. MSEB representatives stated that the contention of REL that MSEB will be meeting their own load growth on the existing system is wrong. He clarified that for their future load growth, MSEB are planning for strengthening and additional infrastructure. The Commission queried as to the time frame for increasing capacity so that open access can be provided in future, and observed that transmission access is open from day one. As STU, MSEB had to plan for these things well in advance and recover the cost through their ARR, and pointed out that similar issues had come up in the wind energy matter also. MSEB representatives submitted that the current loading is given in the Report, and that infrastructure addition and strengthening is undertaken based on demand from consumers. In this above context, the Commission referred to the earlier RoP (para 11) in which mention has been made of MSEB's plans. The Commission directed that MSEB should file their plans for adding and strengthening transmission capacity with full details and time-frame so that the extent and phasing of actual provision of open access becomes clear.

32. Shri. J.D. Kulkarni of TPC, referring to page 14 of the Report, submitted that the Committee has properly observed that :

"As the power flow on the gateway to TPC system is itself beyond the capacity, the question of evaluating transmission capacity in TPC was not done. The SIL loading was taken as 132 MW as per CEA guidelines. REL representative stated that line loading as a function of length, as per CEA guidelines should be considered. However, the rest of the Committee members stated that contingencies should also be considered as per CEA guidelines. In the present case the contingency of one of the 220 kV Kalwa-Salsette D/c line being out was considered which resulted in overloading beyond capacity. Hence other contingencies like tripping of one 500 MW unit etc. were not considered as they are more severe than the line contingency".

Tarapur Boisar is a long line. Thus, the Committee had found that even without any contingency such as a generating unit tripping, the load demanded is not possible. Shri. Kulkarni further submitted that all this was explained in Committee to REL.

33. Shri. Kulkarni of TPC further stated that, as regards the flow of current, REL are bringing power from outside and TPC are drawing from the grid. The power flow on the interconnection would be whatever power REL will be bringing from outside even without considering a single contingency. He pointed out that the Committee had also stated that the contingency should also be considered as per the CEA guidelines. He submitted that in case TPC do not back down, then a lesser quantum is going to flow on the interconnection. While conducting the study, the Committee has not considered full backing down by TPC. In fact the Committee has considered that TPC will also be selling about 300 to 400 MW outside. Shri. Kulkarni further stated that there is absolutely no margin available on the interconnection. Moreover, on the Tarapur-Boisar line, MSEB said that it is not possible to bring additional power. It would bring the nuclear power unit itself into danger. He also pointed out that, according to the Report, access could possibly be provided, but to the limited extent of 50 - 100 MW, and that no dissent note had been added by the REL representative.



34. Concluding the hearing, the Commission observed that, while it was inclined to accept the Report, it seems that the possibility of transmission open access to the MSEB system could be explored to a limited extent for the time being after considering MSEB's plans for strengthening the system.

35. After careful consideration of the various contentions urged during these proceedings, the Commission finds the analysis contained in the Report to be based on sound principles and justification, and also takes into account the various factors and contingencies to be kept in view since even relatively small disturbances in the present situation may have serious repercussions for grid stability far beyond the points of injection or routes of access, as will be seen from the conclusions in Chapter 3 of the Report (cited at Para 21 above), and also the discussion leading upto it. The main issues urged by REL during the hearing had also been raised by REL in the Committee, as has been recorded, and the Committee has dealt with them appropriately considering the totality of the circumstances. The Commission finds no reason, therefore, to disagree with the conclusions of the Report.

36. As will be seen from the Report, and as discussed at the hearing, there is scope for exploring, at least to a limited extent, the potential for providing some access in the short term on the MSEB system, but even this would require further details of MSEB's plans for strengthening it. These details are also necessary to assess the extent and phasing of transmission open access that it would be possible to provide over a longer period so as to operationalize the mandate of the new legal framework.

37. Subsequent to the hearing, under letter dated 28th January, 2005, MSEB have submitted limited information of a very broad nature with regard to augmentation of transmission facilities around the Boisar sub-station being carried out by both MSEB and the Power Grid Corporation of India Ltd. The details provided are not adequate to enable any assessment of the kind required. MSEB should, therefore, submit to the Commission (with a copy to both REL and TPC) details of their future transmission plans, along with maps and phasing and supported by further load flow/system studies, within 3 months of this Order. It may be mentioned that such planning is also essential for MSEB to fulfil their role as STU under EA, 2003. As noted at para 5 above, in their affidavit dated 5th May, 2004 MSEB had also stated that they are conducting further load flow studies for various contingencies in the present scenario. The Commission also notes that Transmission Open Access Regulations are in the process of finalization which would require such plans to be drawn up for a period covering the next 5 years, the details of which would be accessible to the public. Clearly, the availability in the TPC system would have to be processed only after ascertaining the access possibility in the MSEB system because of the inter-linkages involved.

38. In view of the above and the various considerations that have been brought out in the dispute regarding surplus capacity subsequent to the Commission's Order dated 23rd January, 2004 under Section 35, the Commission is not in a position to allow open access on the MSEB system for transmitting 800 MW power (Padge to Boisar, Padge to Borivali, Padge to Trombay points) as sought by REL. However, if they so desire, REL may apply for a more limited open access in the context of resolution of the dispute regarding the availability of surplus capacity, taking into account the exercise by MSEB and clearly indicating their source of supply and input and output points. REL should also take into account the factors indicated by the concerned Licensees during the hearing as well as the limitations brought out in the load flow studies mentioned in the Committee's Report.

Sd/-
(Dr. Pramod Deo)
Member



(A.M. Khan)
Secretary, MERC