

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram:

- 1. Shri. Ashok Basu, Chairperson**
- 2. Shri Bhanu Bhushan, Member**
- 3. Shri A.H. Jung, Member**

**IA No. 43/2006
In
Petition No. 184/2004**

In the matter of

Declaration of Nathpa Jhakri HPS as Run-of-River Station with pondage and revision of the order dated 17.6.2005 in Petition No. 184/2004 to allow the capacity index accordingly.

And in the matter of

Satluj Jal Vidyut Nigam Limited, Shimla

.....Petitioner

vs

1. Punjab State Electricity Board, Patiala.
2. Haryana Vidyut Prasaran Nigam Limited, Panchkula.
3. Delhi Transco Limited, New Delhi.
4. Jaipur Vidyut Vitaran Nigam Limited, Jaipur.
5. Ajmer Vidyut Vitaran Nigam Limited, Ajmer.
6. Jodhpur Vidyut Vitaran Nigam Limited, Jodhpur.
7. Himachal Pradesh State Electricity Board, Shimla.
8. Power Development Department, J & K Govt., Srinagar.
9. Engineering Deptt., UT Secretariat, Chandigarh.
10. Uttar Pradesh Power Corporation Ltd., Lucknow
11. Uttaranchal Power Corporation Limited, Dehradun.
12. Principal Secretary (MPP & Power), Govt. of Himachal Pradesh, Shimla.
13. Member Secretary, Northern Regional Electricity Board (NRPC), New Delhi.
14. Executive Director, Northern Regional Load Despatch Centre, New Delhi.

..... Respondents

The following were present

1. Shri S.P. Singh, SJVNL
2. Shri R.S. Chauhan, SJVNL
3. Shri R.K. Bansal, SJVNL
4. Shri Anil Gupta, SJVNL
5. Shri Suresh Kumar, SJVNL
6. Shri J.P. Mahajan, SJVNL
7. Shri S.N. Ghosh, SJVNL
8. Shri S.L. Sharma, SJVNL
9. Shri Sanjay Kumar, SJVNL
10. Shri Y. Kumar, SJVNL
11. Shri N.C. Bansal, SJVNL
12. Shri H.R. Satija, SJVNL
13. Shri A.R. Srivastava, SJVNL
14. Shri P.K. Tandon, HPSEB
15. Shri Padamjit Singh, PSEB
16. Shri T.P.S. Bawa, PSEB
17. Shri V.K. Garg, DTL
18. Shri Venkat S. Tata, NRLDC
19. Shri S.R. Narasimhan, NRLDC
20. Shri Jasbir Singh, NRLDC

ORDER
(DATE OF HEARING: 3.8.2006)

This interlocutory application has been made by the petitioner for relaxation of the capacity index of Nathpa Jhakri Hydroelectric Project during 2004-05 and 2005-06 due to unprecedented flood situation and high siltation and for a declaration that the generating station is a 'Run-of-the-river with pondage' type, in exercise of the powers of the Commission under Regulation 12 of the Central Electricity Regulatory Commission (Determination of Tariff) Regulations, 2004.

2. The generating station, located in the State of Himachal Pradesh, is a joint venture between Government of India and Government of Himachal Pradesh. The generating station, executed by the petitioner as a Run-of-River with

pondage type has been designed to provide annual energy generation of 6951 MUUs in a 90% dependable year and 1500 MW peak power to the Northern Regional Grid. The generating station commenced its commercial operation w.e.f. 18.5.2004.

3. The petitioner approached the Commission in Petition No. 184/2004 for approval of the provisional tariff of Rs.2.35 kWh as agreed to at NREB forum for the period from 1.4.2004. The Commission, in its order dated 17.6.2005, decided to accept the provisional tariff of Rs.2.35 kWh from 1.4.2004 to 31.3.2006, subject to adjustment after final determination of tariff. The Commission also approved the provisional annual fixed charge for the year 2004-05 and 2005-06 of Rs.1335.25 crore and Rs.1414.83 crore respectively.

4. The petitioner had submitted that since the reservoir of the generating station did not have sufficient pondage to provide three hours peaking for all six units simultaneously, the generating station should be treated as purely Run-of-River type for tariff purposes until the dam height was increased to provide requisite pondage. Taking note of the submission of the petitioner which was not opposed by the respondents, the Commission directed that the normative capacity index of purely Run-of-River type generating stations would apply for recovery of capacity charges and payment of incentive.

5. The petitioner has submitted that due to red alert situation during 2004-05 and high flood and siltation during 2005-06, the generating station remained

completely/partially shut down for a considerable period as a result of which it could not achieve the normative capacity index. Accordingly, the petitioner has sought relaxation of capacity index during 2004-05 and 2005-06.

Non-operation of the generating station due to red alert situations during 2004-05

6. The petitioner has submitted that on 31.7.2004, an artificial lake was formed in Pareechu river, a tributary of river Satluj. Since there was news of impending catastrophe because of the bursting of the lake, red alert was sounded all along the upper reaches of the river Satluj, upstream of Bhakra reservoir. Consequently, the petitioner had to shut down all the generating units of the generating station and evacuate the power house. Flood protection measures were also taken at the main access tunnel and other areas. Since the flood warning and red alert situations continued for a number of days, the petitioner had to either shut down or operate the generating station at low capacity from 31.7.2004 to 22.8.2004, which resulted in substantial loss of energy as well as capacity index. The issue was discussed in 133rd TCC and 136th NREB meetings and it was decided that the energy charges on account of spillage would be payable in terms of Regulation 41 of Central Electricity Regulatory Commission (Determination of Tariff) Regulations, 2004. However, the petitioner was advised to approach the Commission for compensation on account of loss of capacity index during the aforesaid period.

7. During the hearing, the representative of Respondent No. 1 contended that the red alert conditions had been exaggerated by the petitioner. When Pareechu lake breached in June, 2005, it took 30 hours for water to reach the Nathpa Dam against 1.5 hours needed to close down the power house. Moreover, even during the red alert period, the generating station was under operation for certain period of time. It was urged that there was no justification in the claim of the petitioner for compensation for loss of capacity index on account of red alert situations.

8. The Commission desired to know the administrative authority which declared the red alert situation; whether any written instructions were sent to the petitioner; whether the employees of the generating station and the residents of nearby villages were evacuated for danger of such alert; what specific decisions were taken by the management of the petitioner company for shutting down the generating station and the duration thereof. The Commission further desired to know the reasons for partial operation of the generating station for 4 to 20 hours for 15 days out of the 23 days for which red alert is stated to have been declared. The petitioner, vide affidavit dated 13.10.2006 has submitted reply to the queries of the Commission.

Non-operation of the generating station due to high silt and flood during 2005-06

9. The petitioner has submitted that due to excessive rain in the last week of June, 2005 in the catchment area of river Satluj, the generating station had to be closed down on 22.6.2005 on account of high silt. Intimation was also received

on 25.6.2005 that the artificial lake created due to blockage of Pareechu river had actually breached and the water column had risen by 40 to 50 feet. In anticipation of heavy flood, the generating station had to be isolated immediately and precautionary measures were taken so that the flood of such a high magnitude could be passed through the dam without causing any colossal damage. At around 4 PM, the floodwater reached the dam site and the discharge of the flood was estimated to be around 4500 cumecs against a normal discharge of 600 to 700 cumecs. It contained 1,51,000 ppm silt particles with 83000 ppm coarse particles. Except for some damage to the infrastructure facilities, there was no damage to the main equipments or human lives. As the high silt contents continued, it became necessary to keep the generating station under shut down conditions. Though the discharge gradually started receding, silt concentration again rose to the order of 66321 ppm on account of the flood in Baspa river on 5.7.2005 and the suspended silt load was hovering around 7000 to 9000 ppm up to 14.7.2005. The generating station was put into operation at low capacity after 14.7.2005 but had to be again shut down as the silt content crossed 13000 ppm on account of fresh flood in the river Satluj on 14.8.2005 due to flooding of its tributary Maling Nallah. The petitioner has submitted that since the generating station had to remain closed or put under partial operation for a period of 73 days from 22.6.2005 to 3.9.2005 for the reasons beyond its control, the capacity index achieved during the period was either zero or very low, even though, the generating station was available for generation.

10. In reply to the Commission's query regarding the desilting arrangements at the generating station, the petitioner has clarified that design of the project was based on hydrological data of the river for the period 1970 to 1996 during which high silt was observed only for twenty five days in the year 1982. De-silting chambers at Nathpa Dam are designed to handle maximum silt content of 5000 ppm. Whenever silt load is higher than this permissible limit, the machines had to be closed for safety of turbine and other under-water plants. The petitioner has further clarified that as a medium term measure, a diversion tunnel upstream of Nathpa Dam has been contemplated, which would divert water of high silt content to the river. As regards long term solutions, the petitioner is stated to have made a proposal to the Government of India and Government of Himachal Pradesh for taking up early construction of a high dam at Khab, which would be able to arrest silt to the tune of 12 million cubic meters.

11. The representative of Respondent No. 1 contested the submission of the petitioner on the ground that the petitioner had already encountered high silt contents in the year 2000 when the generating station was under construction, and during 2004-05 after commissioning. Therefore, the generating station, particularly, the catchment area treatment, design of intake and de-silting chambers were required to be modified taking into account the increase in silt level. The representative of Respondent No. 1 urged that relaxation of capacity index for closure of the generating station on account of silt should not be allowed by the Commission.

12. The Commission has noted that the hydroelectric stations of NHPC like Salal in J&K, Bairasiul and Chamera in HP and Chibro and Khodri of Uttaranchal Jal Vidyut Nigam which are located in the Himalayan Region are resorting to periodical shut downs due to excessive siltations during high flows. However, NHPC has never claimed relaxation of capacity index due to excessive floods and high siltations. Moreover, it is the responsibility of the petitioner to take care of the problems of high siltation at the stage of design and construction of the generating station to ensure continued availability of the generating station for generation. The Commission is of the view that a reasonable margin has been provided in the norms for capacity index to take care of the forced outages of the generating station which would cater to the situations occasioned due to flood and siltation. The Commission is, therefore, not inclined to relax the capacity index as it would result in higher cost of electricity to the consumers without the benefits of electricity actually being available to the beneficiaries.

13. The Commission had accorded approval to the provisional tariff of Rs.2.35/kWh for 2004-05 and 2005-06 as the said rate was agreed to between the parties at the NREB forum. Based on the saleable approved design energy figures for these two years at the rate of Rs.2.35/kWh, provisional Annual Fixed Charges were determined as Rs.1335.25 crore for 2004-05 and Rs.1414.83 crore for 2005-06. This tariff has been allowed to be continued till 31.3.2007.

14. The petitioner was directed to submit the data regarding ex-bus scheduled generation, capacity index and the monthly recovery made during 2004-05 and

2005-06. The petitioner has submitted the details under affidavit dated 1.11.2006. The details of recovery made by the petitioner are summarized below:-

2004-05:

	Design Energy (MU)	Ex. Bus Energy (MU)	Saleable Energy (MU)	Capacity Index(%)	AFC provisional (Rs. Crs.)	Capacity Charges	Energy Charge(@ 69.47 paise)	Incentive (Rs. Crs.)	Saleable per unit cost (paise)
As per Commission Order dated 17.6.2005	6535.1	6456.72	5681.92	85%	1335.25	940.53	394.72	-	235
Actual (As per SJVNL)	-	5077.80	4467.65	85.21%	1335.25	1024.88	310.37	1.82	299*

2005-06:

	Design Energy (MU)	Ex. Bus Energy (MU)	Saleable Energy (MU)	Capacity Index(%)	AFC provisional (Rs. Crs.)	Capacity Charges	Energy Charge (@73.79 paise)	Incentive (Rs. Crs.)	Saleable per unit cost (paise)
As per Commission Order dated 17.6.2005	6924.6	6841.52	6020.54	90%	1414.83	970.57	444.26	-	235
Actual (As per SJVNL)	-	4020.44	3533.94	61.68%	1051.70	790.93	260.77	-	298*

* Has been computed based on the total recovery & actual saleable energy in respective year.

15. From the above data, it is observed that during the year 2004-05, the actual saleable energy was 4467.65 MUs against the design saleable energy of 5681.92 MUs whereas the generating station achieved the actual capacity index of 85.21% against the normative capacity index of 85%. The total recovery was Rs.1337.07 crore (including incentive of Rs.1.82 crore) against the annual fixed charge of Rs.1335.25 crore allowed in the Commission's order dated 17.6.2005. The saleable per unit cost of energy recovered by the petitioner was 299 paise/unit against the provisional tariff of 235 paise/unit accepted by the

Commission for determination of annual fixed charge. During the year 2005-06, the actual saleable energy was 3533.94 MUs against the design saleable energy of 6020.54 MUs. The generating station achieved a capacity index of 61.68% against the normative capacity index of 90% accepted by the Commission for determination of annual fixed charge. The total annual fixed charges recovered during 2005-06 was Rs.1051.70 crore against the annual fixed charges of Rs.1414.83 crore allowed by the Commission. However, per unit cost of saleable energy works out to Rs.298 paise as against the mutually agreed rate of Rs.235 paise which was accepted by the Commission for determination of the annual fixed charges. Since the petitioner has already recovered @ Rs.2.99 and Rs.2.98 per kWh during the period 2004-05 and 2005-06 against the rate of Rs.2.35 per kWh provisionally accepted in the Commission's order dated 17.6.2005, the Commission finds no justification to relax the capacity index of the generating station as prayed by the petitioner. Accordingly, the prayer of the petitioner for relaxation of capacity index during 2004-05 and 2005-06 is rejected.

Nathpa Jhakri Station to be declared as Run-of-River with Pondage

16. The Commission vide order dated 17.6.2005 in Petition No. 184/2004 had directed as under:-

- “11. The petitioner has submitted that presently the reservoir of Nathpa Jhakri HEP does not have sufficient pondage so as to provide 3 hours of peaking for all the six units simultaneously, even though adequate water inflow is available to do so. The petitioner is in the process of enhancing the pondage capacity by increasing the height of the dam. Therefore, until the dam height is increased to provide sufficient pondage to give 3 hours of peaking for all the six units, the generating station may be treated as purely run-of-river type for tariff purposes.

12. In view of the above difficulty expressed by the petitioner, the Normative Capacity Index of purely Run-of-River type generating station for recovery of full Capacity Charges as well as for incentive purpose shall be applicable for the project, as below:

- | | | | |
|-----|---|---|------|
| (a) | During first year of commercial operation | - | 85% |
| (b) | Subsequent year of commercial operation | - | 90%” |

17. The petitioner has now submitted that even though it started operation of the generating station as a purely Run-of-River station as per the directions of the Commission and made declaration to NRLDC accordingly, the latter did not agree for such operation on the ground that the Commission's order was for the purpose of tariff only and not for operational purpose and allowed capacity index as a Run-of-River project with pondage only. In the 140th NREB meeting, the Chairman of the Board asked the petitioner to utilize the available pondage and provide peaking to the extent permitted by the pond level in the interest of the grid. The petitioner has submitted that since it operated the generating station as Run-of-River with pondage as per the directions of the NRLDC, the target capacity index should be considered as 85% instead of 90%. NRLDC, during the course of hearing on 3.8.2006, endorsed the averments of the petitioner and recommended that since the generating station was providing peak power to the extent of storage available at Nathpa dam, the generating station may be treated as Run-of-River with pondage for tariff purposes.

18. We have already noted in Para 15 that the petitioner has been paid @ Rs.2.99 and Rs.2.98 per kWh during the period 2004-05 and 2005-06, against the rate of Rs.2.35 per kWh accepted by the Commission for determining the

annual fixed charges to enable application of Availability Tariff. The objective of the latter is to promote efficiency, and maximization of plant availability, and certainly not for enhancing the generating company's revenue when it has not performed to the expected level. In the present case, the station has delivered much less than its rated capability, and has started a limited amount of peaking operation only after considerable cajoling by NRLDC.

19. As noted earlier, it was only on petitioner's plea that the Commission had specified Capacity Index norms corresponding to purely Run-of-the-River stations. Now that the petitioner has pleaded in the interlocutory application for treatment of the station as a Run-of-the-River station with pondage, and NRLDC has endorsed the same, we are inclined to accept this request with effect from 1.4.2006. We make it clear that for the purpose of tariff for 2004-05 and 2005-06, the station would continue to be treated as purely Run-of-River type as per our order dated 17.6.2005 in Petition No.184/2004.

20. During the hearing, the beneficiaries submitted that although there was no constraint on availability of water, they were not getting the benefit of peaking power due to the incomplete dam at Nathpa together with continued problem of high siltation. NRLDC submitted that on account of the inadequate dam height, the generating station was able to provide, during the lean inflow months (November-March) three hours of peak power of only 800 MW to 1000 MW in the form of 1½ hour morning peak and 1½ hours evening peak. On the present status of completion of dam, the petitioner informed that due to the instructions of

the local administration to carry out restricted blasting at the dam site, diversion of labour for restoration of damages in the dam area due to bursting of Pareechu lake and frequent agitation by the local people, the dam height up to FRL 1495.5 M could not be achieved by the stipulated date. The petitioner has further submitted that the work on dam height was expected to be completed by 31.3.2007, against the earlier commitment to complete the work by July, 2006.

21. In view of the above discussion, we reject the prayer of the petitioner for relaxation of capacity index during 2004-05 and 2005-06. However, we allow the petitioner's prayer to treat the generating station as Run-of-River with pondage for tariff purposes, but with effect from 1.4.2006 only. The petitioner is also directed to complete the work on the height of the dam by 31.3.2007, failing which the Commission would be constrained to restrict the tariff for the generating station depending on shortfall in peaking support, if any.

22. This disposes I.A. No. 43/2006 in Petition No. 184/2004.

Sd/-
(A.H. JUNG)
MEMBER

Sd/-
(BHANU BHUSHAN)
MEMBER

Sd/-
(ASHOK BASU)
CHAIRPERSON

Dated, New Delhi the 5th February, 2007