CHAPTER 4

COMMISSION'S OBERVATIONS AND ANALYSIS

4.1 The Commission has assessed the generation tariff for TVNL for the FY 2004-05 based on the revised petition submitted on May 18, 2004 along with subsequent changes and additional information received from TVNL. During the proceedings of tariff determination, the Commission interacted orally as well as in writing with the petitioner.

4.2 The Commission visited the Tenughat Thermal Power Plant on 24th June 2004. Prior to this visit, a discussion was held with the staff of TVNL, wherein a questionnaire was sent to TVNL on 17th June 2004. TVNL responded to most of the issues raised, before the date of public hearing (26th of June 2004). The Commission has analyzed the tariff petition submitted by TVNL on the basis of its observations of the plant visit. These are summarized in the sections below.

4.3 Schedule maintenance plan and Rotor Damage:

Observation

(a) **Schedule maintenance plan**

TVNL has not been able to provide any Scheduled Maintenance Plan to the Commission. As such, adequacy of maintenance and its impact on performance of equipment including damage of the rotor could not be ascertained. According to TVNL, on an average each generation unit can operate for 200 out of 365 days in a year.

(b) **Rotor Damage**

The Commission has observed that at present only one unit out of two is being operated. Rotor of one the units has been damaged and been sent to the BHEL (manufacturer) at Haridwar. It is expected that, this unit will become operational by December 2004.

Commission's View

The Commission observes that a normal rotor is robust equipment having an operational life of over 20 years. Since the TVNL plant rotor is only eight years old, it appears that there must have been some deviations from normal operational or maintenance practices leading to the rotor damage. The major implications of rotor damage get reflected in the heavy cost incurred in its repair and prolonged shutdown period of the unit using the rotor, leading to loss of revenue.

According to JSERC regulation and the CERC regulation on the norms of operation, the target availability for recovery of full capacity charges in a thermal power generating station should be 80%. The Commission understands that the plant operation was commenced in 1998 and these regulations are applicable for new plants. Though TVNL

should operate at 80% PLF it is not possible to achieve it in one go from 36.62% in 2003-'04 and proposed 46.61% in 2004-'05, hence the Commission considered the PLF at 68.5% for the current year.

Further, the Commission is of the view that poor maintenance of the generation plant should not get reflected in the tariff fixation exercise. Therefore, the Commission would not consider non-availability of one of the units while calculating the generation tariff and would take into account the Plant availability factor, when both the units are operational.

4.4 One out of two units operational:

The Commission discussed the issue of low PLF with the TVNL officers, and has arrived at the following observations and conclusions:

Observation

Inadequate Power Evacuation and Lack of demand from the JSEB

Power evacuation from TVNL could take place through Patratu line or Biharshariff line only. TVNL contention is that the power generated from both units could not be evacuated due to low capacity of equipment at substation at Patratu. However, it was observed that during 1997-99, both units of TVNL were in operation and power was being evacuated as per generation. Further, the petitioner has mentioned the necessity for a third evacuation transmission line .

According to TVNL, restriction in demand from JSEB often resulted in reducing power generation at TVNL. TVNL supported their point by providing log sheet from 3rd of February 2004 to 13th June 2004 in which nine instances of power generation restrictions have been depicted.

Commission's View

The Commission feels that it is the responsibility of TVNL to have a proper planning for power evacuation, specially, when the petitioner is planning to go in for expansion of the existing plant. It is therefore necessary that prior to its expansion, the petitioner undertake a study to assess various possibilities for power evacuation and also judiciously invest for upgrading the dedicated line for power evacuation.

The Commission would also like to highlight that in the Tariff Order for JSEB, the Commission had directed the TVNL and JSEB to augment the existing transmission capacity, so that the plant could evacuate 380-400MW of electricity. As such power evacuation should not be problem when both the units run simultaneously.

With regard to the lack of demand from the Board, the Commission is of the view that, with the emergence of the Electricity Act 2003, TVNL could sell its power in the open market. However, for this, it is advisable that TVNL invests on new-dedicated line that connects either to the power grid system or connects to the state 220 KV line or to some other consumer. This would provide an opportunity to TVNL to sell surplus power to other regions/ consumers.

Observation

Bottlenecks in Coal Supply

Both units cannot be run simultaneously because of bottleneck in coal supply through roads for feeding both units. The Commission has observed that more than Rs 60 Crores has been spent on railway siding, however, the line is still not operational. After a discussion with officials of RITES and TVNL, the Commission feels that there is no sound reason for the railway line not having been commissioned even after such a long time.

Commission's View

The Commission is of the view that, inability of commissioning the railway line has led to time and cost over run. Further, the Commission would like to emphasize that transport of coal through roads is highly uneconomical as also the amount of coal which gets transported from the mines to the TVNL plant, is not sufficient to run both the units of the plant. The Commission, therefore, directs TVNL to make the railway line operational at the earliest by 1st April 2005, so that adequate coal is available for running both the plants of TVNL and this would also bring down the transportation and fuel costs substantially.

4.5 High oil consumption

Observation:

The Commission observed that oil consumption at the TVNL plant was very high. To this, the TVNL officials clarified that high oil consumption was for flame stabilisation when the boiler was operating at very low loading.

Commission's View

According to the Commission, the reason given by TVNL on account of flame stabilisation does not explain the difference between such high oil consumption and normative consumption.

4.6 Power Supply to TVNL Colony and to nearby villages

Observation

The Commission observed that TVNL is not showing energy supply to TVNL colony and nearby villages separately and is being booked under auxiliary consumption. From discussion with TVNL, it emerged that they are supplying power to nearby villages as well as to their own colony. They were asked to provide last three years' monthly data of:

a) Power used for auxiliaries only
b) Power used for their own colony
c) Power supplied to nearly villages

Commission's View

Since TVNL was not able to provide any explanation in this regard, therefore the Commission has followed normative level of auxiliary consumption for the purpose of tariff determination.

4.7 Cost of Fuel

Observation

The cost of Grade 'D' coal including transportation to the Tenughat Thermal Power Station was mentioned as Rs.1102 per tonne, by the petitioner. However, with a hike in coal price, the cost of coal including transportation after 16th June 2004 was mentioned as Rs. 1224 per tonne. The Gross Calorific Value of LDO was mentioned as 10,500 Kcal/Kg. The calorific value of coal was mentioned as 4500Kcal/ kg.

Commission's View

As mentioned in Section 2.3.3, there arises 2 important observations with regard to the fuel cost – firstly, in reply to the queries on TVNL's tariff petition, it is indicated that due to a hike in the coal price (as declared by the CCL on June 16, 2004), the cost of coal including transportation to the Tenughat Thermal Power Station would increase to Rs. 1,224/MT after 16.06.04. On account of this rise in the coal price, the additional cost per unit of coal would be to the tune of 8.29 paise/kWh. Secondly, secondary specific fuel consumption, as per latest CERC guidelines should be 2ml/Kwh. However, TVNL shows a figure of 8.17ml/Kwh for the FY 2003-04, which has an adverse impact on the fuel cost.

It has been indicated by the petitioner that the Power station is located at the Pithead and coal is available for the power station from the nearby mines of Central Coalfields Limited. Based on this information, the Commission has analyzed the petitioner's Fuel cost data by comparing the Gross Calorific Value of the different grades of coal along with the grade wise Basic Price of coal at the Pit-head of Central Coalfields Limited (CCL). This is summarized in the table below:

Table 11: CCL grade-wise Calorific Values and rates (excluding transportation costs) of Coal

Coal Grades	Calorific Values (kcal/kg)	Price (in Rs.Tonnene, before 15.06.04)	Price (in Rs.Tonnene, post 15.06.04)
A	6200	1330	1600
B	5600 – 6200	1203	1440
C	4940 – 5600	1006	1240
D	4200 – 4940	857	1040
E	3360 – 4200	609	820
F	2400 – 3360	487	620
G	1300 – 2400	348	420

Source: Coal India Limited, 29th Sep. 03, 15th June 04

The Price of Grade D coal (excluding transportation costs) as quoted by the petitioner however is Rs.989.50 per tonne, before June 15, 2004 and Rs. 1107.50 per tonne, after June 15, 2004. These are both on the higher side as compared

to CIL's data.

4.8 High Cost of Water

Observation

High cost of water i.e. Rs. 61 crores per year was discussed. TVNL replied that Irrigation Department was charging for water supplied to the Plant. More than 90% of the water was returned back. However, the Irrigation Department did not give any credit for the return water. The water usage at TVNL is as stated below:

a. Demineralised Water (DM Water) for use in Boiler : 956 m^3/day.
b. Domestic Water : 117 m^3/day
c. Ash Disposal : 5608 m^3/day
d. Power House consumption : 6554 m^3/day.

Commission's View

The Commission is surprised to observe the high cost towards water charges, which is 70% of the total O&M cost, and is very high, by any standards. The Commission directs the TVNL, to explore various possibilities to reduce the exorbitantly high water charges. Some of possible options that the petitioner could look for are appropriate cooling tower, water storage and recycling system etc.

4.9 Status of Instrumentation and Boiler Efficiency Computation

Observation

On a thorough investigation of the TVNL thermal power plant, the Commission found that the plant was supplied with extensive instrumentation. However, the Commission observed that the plant was functioning only with basic minimum instrumentation. This is because:

a) There were certain instruments, which were not installed even during time of commissioning. "Swas room " was one such set of instrumentation, which was never installed completely and commissioned. Swas room is not functional since inception.

b) Certain instrumentation was not functioning and it appeared there was no plan to make it operational.

It was observed that TVNL does not have a system of computing boiler efficiency at regular intervals.

Commission's View

The Commission is of the view that due to lack of instrumentation, it becomes difficult to diagnose operational problems. A recent occurrence of condenser tube leakage could not be detected and this led to extensive problems, regular downtime and faulty diagnosis such as replacement of boiler tube etc.

According to the Commission, boiler efficiency should be computed at least once every quarter by the indirect method. This is because, it is a more reliable method of computation since losses and inefficiencies at various phases (levels) can be pin pointed and therefore rectified.