



Tenughat Vidyut Nigam Limited (TVNL)

(A Government of Jharkhand Undertaking)

Hinoo, Doranda, Ranchi-834 002

Annual Revenue Requirement

FY 2009-10

Submitted to

Jharkhand State Electricity Regulatory Commission (JSERC)

2nd Floor, Rajendra Jawan Bhawan-Cum Sainik Bazar
Main Road, Ranchi-834 001

2009

**BEFORE THE JHARKHAND STATE ELECTRICITY
REGULATORY COMMISSION**

Filing No: _____

Case No: _____

IN THE MATTER OF:

Petition/Application for approval of Tariff for the financial year 2009-10, under Section 64 of the Electricity Act, 2003, read with Regulation 5 of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004 issued by the Honourable Jharkhand State Electricity Regulatory Commission (JSERC), hereinafter referred to as Honourable Commission.

AND

IN THE MATTER OF:

Tenughat Vidyut Nigam Limited (“TVNL”)

Hinoo, Doraanda, Ranchi

Jharkhand – 834 002

.....**PETITIONER**

The Petitioner respectfully submits

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1. Executive Summary

The Petitioner owns and operates an installed power generation capacity of 420 MW with two units of 210 MW each. Historically the generating units have been operating at much below their potential because of transmission constraints and frequent tripping of transmission lines. However, after 2006-07, the plant has shown an impressive performance and now both the units are able to dispatch simultaneously.

Table 1 provides the performance of the generating units during the period 2000-2010.

Table 1: Generation Performance (MU)

| Year | Generation (MUs) | | Total | Station PLF (%) | Auxiliary Consumption (%) |
|---------|------------------|---------|-------|-----------------|---------------------------|
| | Unit -I | Unit-II | | | |
| 2000-01 | 741 | 589 | 1330 | 36.11 | 16.09 |
| 2001-02 | 305 | 851 | 1156 | 31.39 | 15.79 |
| 2002-03 | 185 | 1183 | 1368 | 37.18 | 15.58 |
| 2003-04 | 616 | 731 | 1248 | 36.62 | 16.00 |
| 2004-05 | 1326 | - | 1326 | 36.04 | 17.60 |
| 2005-06 | 1240 | 289 | 1529 | 41.56 | 14.23 |
| 2006-07 | 1412 | 1303 | 2715 | 73.80 | 12.04 |
| 2007-08 | 226 | 1569 | 1795 | 48.68 | 9.95 |
| 2008-09 | 826 | 1397 | 2223 | 60.43 | 8.37 |
| 2009-10 | 1500 | 990 | 2490 | 67.68 | 9.00 |

Projected performance of the Petitioner (FY 2009-10):

Table 2: Generation Parameters for FY'10

| Year | Generation (MU) | PLF (%) | Auxiliary Consumption (%) | Heat Rate (kCal/kWh) | Specific Coal Consumption (kg/kWh) | Specific Oil Consumption (kg/kWh) |
|---------|-----------------|---------|---------------------------|----------------------|------------------------------------|-----------------------------------|
| 2009-10 | 2490 | 67.68 | 9 | 3100 | 0.720 | 2.500 |

The fixed costs for the year 2009-10 are summarized below:

Table 3: Summary of Fixed Costs (Rs.Crores)

| | 2009-10 |
|-----------------------------|---------|
| Interest on Loan | 83.15 |
| Depreciation | 45.55 |
| O&M Expenses | 124.09 |
| Interest on Working Capital | 18.04 |

| | |
|------------------|---------------|
| Return on Equity | 19.42 |
| Income Tax | Nil |
| Total | 290.28 |

The landed cost of coal for FY10 is projected to be Rs.1300.00/MT which is higher by Rs.5/MT only than last year. The cost of oil is expected to be at the same level as of last year i.e Rs.39045.20/KL respectively.

Table 4: Summary of Variable Costs (Rs.Crores)

| S.No | Item | Unit | 2008-09 (Actual) | 2009-10 |
|----------|---------------------------------|----------------|---------------------|--------------|
| 1 | Coal Cost per Unit | Rs./kWh | 1.014. | 1.032 |
| | Oil Cost per Unit | Rs./kWh | 0.1180. | 0.107 |
| 2 | Total Fuel Cost per Unit | Rs./kWh | 1.132 | 1.139 |

The non-tariff income is projected to be at Rs. 200 Lakhs during the FY 10. The sum of fixed and energy costs gives the total revenue requirement of the company for the FY 2009-10. The revenue requirement less other income will be the revenue to be raised through tariff. This has been worked out in the Table 5 below:

Table 5: Revenue Requirement

| Particular | 2009-10 (Rs. Lakhs) |
|-------------------------------------------------------|------------------------|
| Fixed Charges | 29033.91 |
| Energy Charges | 25807.74 |
| Revenue Requirement | 54835.58 |
| Other Income | 200 |
| Revenue to be raised through Tariff in FY 2007 | 546365.58 |

The Petitioner has estimated a revenue requirement of Rs 546.37 Crores after adjusting for its non-tariff income and derived the following fixed and energy components of tariff:

Table 6: Proposed Tariff Increase

| Tariff Component | Rs./kWh |
|----------------------------------------|--------------|
| Fixed Charges Proposed | 1.272 |
| Energy Charges Proposed | 1.139 |
| Tariff Proposed | 2.411 |
| Existing Tariff as approved in 2007-08 | 2.05 |
| Increase in Tariff requested | 0.361 |

The Petitioner requests the Honourable Commission to approve the estimated Rs. 0.36 per kWh increase in its tariff.

Background

1.1 Introduction

Tenughat Vidyut Nigam Limited (hereinafter referred to as “Petitioner”), a wholly owned Generating Company of Government of Jharkhand was constituted in 1987 under Indian Company’s Act, 1956. The Petitioner owns and operates an installed power generation capacity of 420 MW with two units of 210 MW each. The units were commissioned as detailed below:

Unit I - September 1996

Unit II - September 1997

With the creation of Jharkhand state on 15th November 2000 from the erstwhile Bihar State, the Petitioner has become an undertaking of Government of Jharkhand. But all the papers relating to Tenughat Thermal Power Station (TTPS) are still lying with Bihar State Electricity Board, Patna and in spite of the orders of the Jharkhand High Court the documents are not made available to the Petitioner. As such the details of estimated costs of various items related to the project are not available with the Petitioner. However, based on expenditure details available with TTPS the total cost of the project including interest during construction (IDC) is estimated at Rs.1355.58 crores. This has been audited by Chartered Accountants. The Capital Cost of the project is discussed later in the petition.

The petitioner would like to inform the Hon’ble Commission the investment made by BSEB of the amount Rs.168 Crores, which though included in our earlier submission under capital cost, was never treated as an investment. This was due to the fact that the matter has been sub judice since the time TVNL was transferred. Recently there are certain developments and an amount of Rs.427 Cr has been raised by Bihar State Electricity Board which includes an initial investment of 168 Cr and carrying cost. The issue is still being debated and an early order from Central and State Government is expected. Petitioner wants to bring this into consideration of Hon’ble Commission and as and when the final order is notified, Petitioner would seek Hon’ble Commission’s directions for its treatment as its impact on tariff is expected to be higher.

1.2 Need for the Petition

The Honorable Commission has notified the regulations on Terms and Conditions for Determination of Thermal Generation Tariff on 28th July 2004 in exercise of the powers conferred by Section 61 and 62 read with Section 181 of the Electricity Act, 2003. The sub-clause (2) of Clause 5 of these regulations require the generating company, in case of existing generating station, to make an application for determination of tariff as per Appendix I to these regulations for getting the same approved by the Honourable Commission. In compliance to this provision, the Petitioner is filing this petition.

The Honourable Commission had passed tariff order dated January 03, 2008 for the financial year 2007-08 approving a tariff of Rs 2.05 per unit, which is inclusive fixed charges of Rs.1.17 per kWh and variable cost of Rs 0.88 per kWh for the year 2007-08. The Petitioner seeks revision in tariff on account of breakdown maintenance and overhaul of one of its unit resulting in lower overall electricity generation, increase in new capital works and higher operation, repair and maintenance expenditure on account of aging of the existing units of the plant.

For the FY09, petitioner had proposed a tariff of 2.327/kWh based on actual expenses incurred. For the FY10, petitioner proposes a tariff of Rs.2.411/kWh which is 0.361 paisa more than approved figure of 2007-08..i.e Rs.2.05/kWh

2. Generation Performance and Projection

2.1 Generation Performance

The Petitioner has existing generation facility of 420 MW (2x210 MW) coal based thermal power plant at Bokaro and is also envisaging a plan for extension of another three units (Stage II) of 210 MW each.

Table 1 provides the performance of the generating units for the past four years and the projected generating units for 2009-10.

Table 7: Generation Performance Actual (MU)

| Year | Generation (MUs) | | Total | Station PLF (%) | Auxiliary Consumption (%) |
|---------|------------------|---------|-------|-----------------|---------------------------|
| | Unit -I | Unit-II | | | |
| 2005-06 | 1240 | 289 | 1529 | 41.56 | 14.23 |
| 2006-07 | 1412 | 1303 | 2715 | 73.80 | 12.04 |
| 2007-08 | 226 | 1569 | 1795 | 48.86 | 9.95 |
| 2008-09 | 826 | 1397 | 2223 | 60.43 | 8.37 |
| 2009-10 | 1500 | 990 | 2490 | 67.68 | 9.00 |

With the overhauling of unit I, petitioner expects the generation performance to further improve for FY 10. Also, unit II would be under capital maintenance for a period of three months, thereby generating only 990 MU.

2.2 Plant Load Factor (PLF)

A PLF of 67.68% is being projected for the plant in FY10. This increase is projected largely due to the availability of the first unit and better performance of unit II. As Unit II is expected to be available only for 9 months, the projected PLF is still lower than the normative value.

Table 8: Projected Generation Performance for FY10

| Year | Generation (MUs) | PLF (%) |
|---------|------------------|---------|
| 2007-08 | 1795 | 48.86% |
| 2008-09 | 2223 | 60.43% |
| 2009-10 | 2490 | 67.68% |

2.3 Auxiliary Consumption

The auxiliary consumption is specific to a particular power station and depends on its configuration, age and related technical parameters. Auxiliary power is required for different equipments like feed pumps, cooling water pumps, air fans, coal grinding mills, ash handling equipments, common auxiliaries etc. of the generating station. The auxiliary consumption was 8.37% in FY 2008-09. Petitioner projects its auxiliary consumption at 9% for FY 10

Table 9: Auxiliary Consumption for FY'10

| Year | Auxiliary Consumption (%) |
|---------|---------------------------|
| 2008-09 | 8.37 |
| 2009-10 | 9.00 |

2.4 Heat Rate

The actual heat rate for the generating plant has been 3075 kCal/kWh for the FY 2008-09, In the year 2009-10, petitioner proposes a heat rate of 3100 Kcal/kWh and hence would maintain the last year performance.

Table 10: Projected Heat Rate for FY'10

| Year | Heat Rate (kCal/kWh) |
|---------|----------------------|
| 2009-10 | 3100 |

2.5 Specific Coal Consumption

The Petitioner sources D grade coal from the collieries of Central Coal Fields Limited with calorific value of about 4200 kCal/kg.

Table 11: Specific Coal Consumption

| Year | Specific Coal Consumption (kg/kWh) |
|---------|------------------------------------|
| 2000-01 | 0.705 |
| 2001-02 | 0.706 |
| 2002-03 | 0.695 |
| 2003-04 | 0.680 |
| 2004-05 | 0.685 |
| 2005-06 | 0.688 |
| 2006-07 | 0.656 |
| 2007-08 | 0.689 |

| | |
|---------|-------|
| 2008-09 | 0.715 |
| 2009-10 | 0.720 |

The Hon'able Commission has followed a trend of fixing a very stiff target for specific coal consumption. CEA reports on performance of thermal power plants have always brought out the fact that eastern region plants have a higher average values. The petitioner has always been achieving better figures in the region. Petitioner thereby requests the Honorable Commission to consider the specific coal consumption of 0.720 Petitioner in its generation plant for FY 10

Table 12: Specific Coal Consumption for FY'10

| Year | Specific Coal Consumption (kg/kWh) |
|---------|------------------------------------|
| 2009-10 | 0.720 |

2.6 Secondary Fuel Consumption

Due to the large number of outages experienced by the station due to transmission line trippings etc., the Petitioner has not been able to achieve the norm of 2 ml/kWh fixed by the Honourable Commission for specific oil consumption. The Petitioner observed a specific oil consumption of 2.78 ml/kWh during FY 2008-09 The following Table 7 below provides the trend in specific oil consumption over the last 7 years.

Table 13: Specific Oil Consumption

| Year | Specific Oil Consumption (ml/kWh) |
|---------|-----------------------------------|
| 2004-05 | 2.33 |
| 2005-06 | 3.39 |
| 2006-07 | 2.31 |
| 2007-08 | 1.95 |
| 2008-09 | 2.78 |

Petitioner is planning to reduce its oil consumption and improve the specific oil consumption figure. Petitioner projects a specific oil consumption of 2.5 ml/kWh.

Table 14: Projected Specific Oil Consumption for FY'10

| Year | Specific oil consumption (ml/kWh) |
|---------|-----------------------------------|
| 2009-10 | 2.50 |

2.7 Summary

The Petitioner projects the following for the FY 2008-09:

Table 15: Projected Generation Parameters for FY'07

| Year | Generation (MU) | PLF (%) | Auxiliary Consumption (%) | Heat Rate (kCal/kWh) | Specific Coal Consumption (kg/kWh) | Specific Oil Consumption (ml/kWh) |
|-------------|------------------------|----------------|----------------------------------|-----------------------------|-------------------------------------------|------------------------------------------|
| 2000-10 | 2500 | 67.68% | 9 | 3100 | 0.720 | 2.50 |

3. Fixed Charges

3.1 Project Cost

The station comprises of 2 units of 210 MW each, the first unit was commissioned in September 1996 and the second unit in September 1997. The project cost as admitted by the petitioner in 2008-09 was Rs.1393.70 Crores. In the year 2009-10 assets worth Rs 4.70 Crores were capitalized during the year. An amount of Rs.2.35 Crores has been considered for this year, remaining amount would be considered in next year.(Details attached in depreciation schedule). Also remaining capitalization of the amount Rs.0.12 Crores of the year 2008-09 has been considered in this year. Hence in total, additional capitalization of Rs.2.47 Crores has been considered in this year. Despite the total addition has been from equity, the petitioner following the norms has applied normative debt equity ratio for calculating the additional debt and equity.

The details of funding the project cost are given in Table 16 below:

Table 16: Project Cost – Funding

| S.No. | Funding Source | Amount (Rs. Crores) |
|--------------------------|----------------------------------------------------|------------------------|
| Phase 1: 2x210 MW | | |
| 1 | Project cost at the start of 2009-10 | 1393.70 |
| 2 | Additional Capitalization in 2009-10 | 2.47 |
| 3 | Total Project Cost | 1396.17 |
| 5 | Outstanding Debt Component at the start of 2008-09 | 638.90 |
| 6 | Debt Component for additional capitalization | 1.729 |
| 7 | Total Debt | 640.63 |
| 8 | Equity Component at the start of 2009-10 | 138.036 |
| 9 | Equity Component of additional capitalization | 0.741 |
| 10 | Total Equity | 138.77 |

The Petitioner regrets to inform the Hon'ble Commission that the expansion plans has been stalled as of now.

3.2 Elements of Fixed Costs

The fixed costs include:

- Interest on Loan
- Depreciation
- O&M Costs
- Interest on Working Capital
- Return on Equity
- Tax on Income

The details are submitted below for consideration of Honourable Commission

3.3 Interest on Loan

The loan outstanding as on 31.03.2009 is Rs 638.90 Crores. The interest on the outstanding loan is Rs.83.06 Crores. As per the terms and conditions the State Government loan is repayable in 15 equal installments. But the Petitioner could not meet the repayment obligation due to insufficient funds on account of non-payment of electricity charges by the Jharkhand State Electricity Board (JSEB).

Table 17: Loan Outstanding and Interest Charges (Rs.Crores)

| S.No | Name of the Institution | Balance at the beginning of the year | Loan received during the year | Repayment During the year | Balance O/S at the end of the year | Rate of Interest % | Interest for the year |
|----------------------|-------------------------|--------------------------------------|-------------------------------|---------------------------|------------------------------------|--------------------|-----------------------|
| 2005-06 | | | | | | | |
| 1 | Bihar Govt. Loan | 608.90 | - | - | 608.90 | 13 | 79.16 |
| 2 | Jharkhand Govt. Loan | 30.00 | 19.00 | - | 49.00 | 13.25 | 6.49 |
| Total 2005-06 | | 638.90 | 19.00 | - | 657.90 | | 85.65 |
| 2006-07 | | | | | | | |
| 1 | Bihar Govt. Loan | 608.90 | | - | 608.90 | 13 | 79.16 |
| 2 | Jharkhand Govt. Loan | 49.00 | 8.00 | - | 57.00 | 13.25 | 7.55 |
| Total 2006-07 | | 657.90 | 8.00 | - | 665.90 | | 86.71 |
| 2007-08 | | | | | | | |
| 1 | Bihar Govt. Loan | 608.90 | | - | 608.90 | 13 | 79.16 |
| 2 | Jharkhand Govt. Loan | 30.00 | | | 30.00 | 13 | 3.9 |
| Total 2007-08 | | 638.90 | | | 638.90 | | 83.06 |

| 2008-09 | | | | | | | |
|----------------------|----------------------|---------------|--|---|---------------|----|--------------|
| 1 | Bihar Govt. Loan | 608.90 | | - | 608.90 | 13 | 79.16 |
| 2 | Jharkhand Govt. Loan | 30.00 | | | 30.00 | 13 | 3.9 |
| Total 2008-09 | | 638.90 | | | 638.90 | | 83.06 |
| 2009-10 | | | | | | | |
| | Bihar Govt. Loan | 608.90 | | - | 608.90 | 13 | 79.16 |
| | Jharkhand Govt. Loan | 30.00 | | | 30.00 | 13 | 3.9 |
| Total 2009-10 | | 638.90 | | | 638.90 | | 83.06 |

The Petitioner's inability to repay loan is due to non-recovery of dues from JSEB. Therefore the Petitioner requests the Honourable Commission to approve the interest charges for 2009-10.

Also, an additional debt of Rs.0.74 Crores on account of additional capitalization has been treated as normative debt. This amount would be repaid in 15 installments. The first repayment would start from 2010. The weighted average of interest rate for the petitioner is 13% and the same % has been applied for calculating the interest.

Table 18: Loan Outstanding and Interest Charges for 2009-10 (Rs.Crores)

| S.No | Name of the Institution | Balance at the beginning of the year | Loan received during the year | Repayment During the year | Balance O/S at the end of the year | Rate of Interest % | Interest for the year |
|------|-------------------------------------|--------------------------------------|-------------------------------|---------------------------|------------------------------------|--------------------|-----------------------|
| 1 | Bihar Govt. Loan | 608.90 | | - | 608.90 | 13 | 79.16 |
| 2 | Jharkhand Govt. Loan | 30.00 | - | - | 30.00 | 13 | 3.9 |
| 3 | Normative Debt on account of | 0.74 | | | 0.74 | 13 | 0.09 |
| 4 | Total 2009-10 | 639.64 | - | - | 639.64 | | 83.15 |

3.4 Depreciation

The Petitioner has calculated the depreciation on its fixed assets on historical capital cost of the asset. Depreciation is calculated annually as per the straight line method as per rates of depreciation prescribed in the schedule attached at Appendix-II of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004, and depreciation cost has been arrived at accordingly.

Table 19a: Depreciation for the Plant (Rs. Lakhs)

| S.No. | Asset Classification | Asset at beginning of 2008-09 (Rs.Lakhs) | Asset Capitalized in 2008-09 | Asset Retirement if any | Asset at the beginning of 2009-10 (Rs.Lakhs) | Rate of Depreciation (%) | Depreciation Amount (Rs.Lakhs) |
|----------|---------------------------------|------------------------------------------|------------------------------|-------------------------|----------------------------------------------|--------------------------|--------------------------------|
| 1 | Land | 3864.76 | 0.00 | | 3864.76 | 0.00% | 0 |
| 2 | Buildings | | | | | | |
| (a) | Factory | 4210.34 | 0.00 | | 4210.34 | 3.60% | 151.57 |
| (b) | Residential Non- | 2282.46 | 0.00 | | 2282.46 | 1.80% | 41.08 |
| (c) | Residential | 1761.07 | 0.00 | | 1761.07 | 1.80% | 31.70 |
| | | 8253.87 | | | 8253.87 | | 0.00 |
| 3 | Roads | | | | 0.00 | 1.80% | 0.00 |
| (a) | Pucca Road Boundary Walls & | 1776.79 | 0.00 | | 1776.79 | 1.80% | 31.98 |
| (b) | Others | 223.03 | 0.00 | | 223.03 | 1.80% | 4.01 |
| | | 1999.82 | | | 1999.82 | | |
| 4 | Plant and Machinery | | | | 0.00 | | 0.00 |
| (a) | Machinery | 107232.27 | 0.00 | | 107232.27 | 3.60% | 3860.36 |
| (b) | D.G. Set | 216.16 | 0.00 | | 216.16 | 6.00% | 12.97 |
| (c) | Refrigeration Internal | 2.41 | 0.00 | | 2.41 | 6.00% | 0.14 |
| (d) | Wiring Overhead | 0.11 | 0.00 | | 0.11 | 6.00% | 0.01 |
| (e) | Lines Hydraulic | 4890.78 | 0.00 | | 4890.78 | 3.60% | 176.07 |
| (f) | Works Tools and | 7924.36 | 0.00 | | 7924.36 | 1.80% | 142.64 |
| (g) | Tackles | 41.13 | 0.00 | | 41.13 | 3.60% | 1.48 |
| (h) | Miscellaneous Equipment | 8.86 | 0.00 | | 8.86 | 6.00% | 0.53 |
| (i) | Air Conditioners | 32.84 | 0.99 | | 33.83 | 18.00% | 5.91 |
| (j) | Cycle | 0.02 | 0.00 | | 0.02 | 6.00% | 0.00 |
| (k) | Dozer | 282.25 | 0.00 | | 282.25 | 18.00% | 50.81 |
| (l) | Electronic Weigh Bridge | | 3.90 | | 3.90 | 6.00% | 0.00 |
| (m) | Computer | 26.72 | 2.12 | | 28.84 | 6.00% | 1.60 |
| 5 | Furniture & Fixtures | | | | | | |
| (a) | Office Equipment** | 16.14 | | | 23.80 | 6.00% | 0.97 |
| (b) | Furniture** | 45.57 | | | 54.96 | 6.00% | 2.73 |
| | Total (A) | 61.71 | 673704.06 | | 78.76 | | 3.70 |
| | Grand Total | 130973.31 | | | 130997.37 | | 4516.84 |

As per the JSERC regulations, the residual life of an asset is considered as 10% and depreciation is allowed upto a maximum of 90% of the historical capital cost of the asset. Therefore, depreciation is not calculated on the assets where the cumulative depreciation has reached 90% of the historical cost of such assets.

Table 19 b : Depreciation for Head Office (Rs. Lakhs)

| S.No. | Asset Classification | Asset at beginning of 2008-09 (Rs.Lakhs) | Asset Capitalized in 2008-09 (Rs.Lakhs) | Asset Retirement if any (Rs, Lakhs) | Asset at the beginning of 2009-10 (Rs. Lakhs) | Rate of Depreciation (%) | Depreciation Amount (Rs.Lakhs) |
|-------|---------------------------|------------------------------------------|-----------------------------------------|-------------------------------------|-----------------------------------------------|--------------------------|--------------------------------|
| 1 | Furniture & Fixtures | 38.82 | 7.66 | | 46.48 | 6.00% | 2.79 |
| | Close Circuit | | | | | | |
| 2 | Camera | 5.78 | 9.39 | | 15.17 | 6.00% | 0.91 |
| 3 | Photocopy Machine | 3.86 | | | 3.86 | 6.00% | 0.23 |
| 4 | Refrigerator | 0.64 | | | 0.64 | 6.00% | 0.04 |
| | Miscellaneous Equipment | | | | | | |
| 5 | | 5.91 | | | 5.91 | 6.00% | 0.35 |
| | Telephone & Mobile Sets | | | | | | |
| 6 | | 7.59 | | | 7.59 | 6.00% | 0.46 |
| 7 | EPBX System | 5.69 | | | 5.69 | 6.00% | 0.34 |
| 8 | Fax Machine | 0.61 | | | 0.61 | 6.00% | 0.04 |
| 9 | Typewriter | 0.52 | | | 0.52 | 6.00% | 0.03 |
| 10 | Television | 1.81 | | | 1.81 | 6.00% | 0.11 |
| | Computer & Accessories | | | | | | |
| 11 | | 16.18 | | | 16.18 | 6.00% | 0.97 |
| 12 | Generator | 2.57 | | | 2.57 | 6.00% | 0.15 |
| | Air Conditioner & Coolers | | | | | | |
| 13 | | 16.73 | | | 16.73 | 18.00% | 3.01 |
| 14 | Car | 14.15 | | | 14.15 | 18.00% | 2.55 |
| 15 | Cycle | 0.02 | | | 0.02 | 6.00% | 0.00 |
| 16 | V.Set | 0.57 | | | 0.57 | 6.00% | 0.03 |
| | Capital Work in Progress | | | | | | |
| 17 | | 470.00 | 0.00 | | 470.00 | 0.00% | 0.00 |
| | Total (B) | 591.44 | 17.05 | | 608.49 | | 12.01 |

Table 19 c : Depreciation on Additional Capitalization (Rs. Lakhs)

| ACCOUNT HEAD | Budget 2009-2010 | Depreciation Rate (%) | Depreciation (2009-10) |
|-----------------------|------------------|-----------------------|------------------------|
| Plant & Machinery | 0.00 | 3.6% | 0.00 |
| New EPABX | 0.00 | 6% | 0.00 |
| New Dozer | 210.00 | 18% | 37.80 |
| Air Compressor for TH | 0.00 | | 0.00 |
| New Engine for Dozer | 0.00 | 18% | 0.00 |

| | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----|--------------|
| Pay Loader | 0.00 | 6% | 0.00 |
| Electronic Weigh Bridge | 0.00 | 6% | 0.00 |
| Airconditioner | 10.00 | 18% | - |
| Air Compressor for CHP | 20.00 | 6% | 1.20 |
| Lift | 10.00 | 6% | 0.60 |
| High Mast towers | 20.00 | 6% | 1.20 |
| Furniture & Fixtures | 10.00 | 6% | 0.60 |
| Computer & other office equip | 10.00 | 6% | 0.60 |
| Office Equipment | 10.00 | 6% | 0.60 |
| Land | 0.00 | - | - |
| Ambassdor car/Jeep | - | 18% | - |
| Mobile Sets | - | | - |
| Tools & Tackles | - | | - |
| Miscellaneous Equipment | - | | - |
| V-Sat | - | | - |
| Dust Suppression system for C-5A at SCH | 20.00 | 6% | 1.20 |
| Dust Suppression system for TH system | 40.00 | 6% | 2.40 |
| ILMS for C-4A/B | 25.00 | 6% | 1.50 |
| Modified and improved VF | 35.00 | 6% | 2.10 |
| Magnetic Separator and Metal Detector in CHP | 50.00 | 6% | 3.00 |
| Total (A) | 470.00 | | 52.80 |
| Depreciation to be taken into tariff (Prorata basis-assuming mid year as ref point and hence dividing the total depreciation by 2) | | | 26.40 |

Table 19: Total Depreciation (Rs.Crores)

| S.No | Item | Depreciation Amount (Rs.Cr.) |
|--------------|--------------------------------------------|------------------------------|
| 1. | Deprecaion for Plant | 45.17 |
| 2. | Depreciation for HO | 0.12 |
| 3. | Depreciation for Additional Capitalization | 0.26 |
| Total | | 45.55 |

It is requested that the Honourable Commission may kindly approve the depreciation at Rs. 45.55 Crores for the year 2009-10.

3.5 Operation and Maintenance (O&M) Expenses

The O&M expenses include expenditure incurred in the operation and maintenance of the generating station, including employee cost, repairs and maintenance, consumption of stores and spares, water charges, ash disposal, pollution control cess, insurance and other administrative and general expenses of the Petitioner corporate office at Ranchi. The maintenance expenditure has increased substantially due to the age of the plant and numerous outages experienced. Petitioner has projected Rs.124.09 Cr as O&M expense.

Table 20: 2009-10 O&M Expenses

| Items | (Rs. Crores) |
|-----------------------------------|---------------|
| Employee Cost | 28.20 |
| R&M Expenses | 18.25 |
| A&G Expenses | 16.09 |
| O&M including Capital Expenditure | 61.55 |
| b | 124.10 |

The major components of the O&M expenses have been explained below:

a) Employee cost: The actual employee cost for FY 2008-09 was Rs.15.32crores The employee cost increases continuously on account of inflation, increment in salaries and wages, honorarium/incentives and increased demand for trained manpower on account of increased development in infrastructure sectors. For the year 2009-10 Petitioner projects employee expense of Rs.28.20 Crores. This increase is largely due to the expected impact of VI pay revision on the salary part. As it has been considered to disburse arrears in two tranches, 60% of the total arrears have been taken in this year amounting to Rs.6.50 Crores remaining 40% shall be taken in FY 2010-11.

b) Repairs and Maintenance (R&M): The Petitioner has to carry out regular repairs and maintenance of its generating plant to ensure maximum generation by optimum utilization of generating assets. The Petitioner undertakes preventive maintenance activities for all critical assets in addition to breakdown maintenance. The actual R&M costs in the year 2008-09 were Rs.11 25 Crores. For the FY 10 petitioner requests the Honorable Commission to approve Rs.18.24 Crores inclusive of R&M expenditure and other maintenance expenditures to keep its plant running. This increase is due to increased expenditure on Ash disposal, which is expected to cost Rs.7.10 Crores.

c) Administrative and General (A&G) Expenses: A&G expenditure represents cost of general administration such as rent, rates, taxes, legal expenses, professional fees, conveyance and traveling expenses, printing and stationery, bank charges, etc. For 2009-10 ,the Petitioner projects an expense of Rs.16.09 Crores This increase is largely due to security enhancement as salary to CISF is expected to be at Rs.8.00 Crores which is approx 50% of total expense.

d) O&M Expenses: The petitioner projects an expense of Rs. 14.96 Crores on account of Annual Maintenance Contract and Other Operation and Maintenance Contract. This increase is largely due to NTPC operational assistance which would cost around Rs.3.50 Crores.

e) Capital Maintenance: The year wise details of capital maintenance expenses and the amounts proposed to be charged to revenue account are detailed in the table below:

Table 21: Year wise Capital Maintenance Expenditure (Rs. Lakhs)

| | | Year | Amount | Proposed to be charged to Revenue in 5 annual installments | | | | | |
|---------|---------|---------|---------------|------------------------------------------------------------|----------------|----------------|----------------|----------------|----------------|
| | | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
| 2002-03 | 886.45 | 177.29 | 177.29 | 177.29 | 177.29 | 177.29 | | | |
| 2003-04 | 45.46 | | 9.09 | 9.09 | 9.09 | 9.09 | 9.09 | | |
| 2004-05 | 1209.48 | | - | 241.90 | 241.90 | 241.90 | 241.90 | 241.9 | |
| 2005-06 | 3267.00 | | - | - | 653.40 | 653.40 | 653.40 | 653.4 | 653.4 |
| 2006-07 | 2856.29 | | - | - | - | 571.26 | 571.26 | 571.26 | 571.26 |
| 2007-08 | 5519.20 | | - | - | - | - | 1103.84 | 1103.84 | 1103.84 |
| 2008-09 | 6134.86 | | | | | | | 1226.9 7 | 1226.97 |
| 2009-10 | 5520 | | | | | | | | 1104 |
| Total | | 177.29 | 186.38 | 428.28 | 1081.68 | 1652.94 | 2597.49 | 3797.37 | 4659.47 |

The amount proposed to be charged during 2009-10 is Rs.46.59 crores.

3.6 Interest on Working Capital:

In accordance with clause (v) of Regulation 21 of the JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations, 2004, working capital in case of coal based fired generation stations shall cover:

- Cost of coal for 1½ months for pithead generating stations and 2 months for non-pithead generating stations, corresponding to the target availability
- One month stock of secondary fuel oil
- O&M expenses for 1 month
- Maintenance spares @ 1% of plant and equipment cost as on 01.04.2004 or the date of commercial operation, whichever is later; and
- Receivables equivalent to 2 months of fixed and variable charges for sale of electricity calculated on target availability

The interest on working capital worked for the year 2008-09 was Rs.15.19 Crores and for the year 2009-10, petitioner expects it to be at Rs.18.04 Crores as detailed in the Table 22 below:

Table 22: Interest on Working Capital (Rs. Lakhs)

| S.No | Particulars | 2008-09 | 2009-10 |
|------|------------------------------------------------------------------|----------------|----------------|
| 1 | Cost of Coal for 1½ months | 2582.21 | 2922.04 |
| 2 | Secondary Fuel Oil for 1 month | 201.08 | 202.55 |
| 3 | Operation & Maintenance Expenses for 1 month | 701.01 | 1034.15 |
| 4 | Maintenance Spares @ 1% of Plant and Equipment | 1172 | 1172.00 |
| 5 | Receivables Equivalent to 2 Months of Fixed and Variable Charges | 7899.82 | 9105.79 |
| 6 | Total Working Capital | 12556.12 | 14436.53 |
| 7 | Interest on Working Capital @ 12.5% | 1569.51 | 1804.57 |

3.7 Return on Equity

Table 23: Return on Equity (Rs.Crores)

| Particular | Proposed for 2009-10 (Rs.Crores) |
|------------------------------|----------------------------------|
| Equity at the end of 2008-09 | 138.036 |
| Additional Equity | 0.741 |
| Total Equity | 138.77 |
| Return on Equity @14% | 19.43 |

3.8 Income Tax

There is no assessable income for Income tax purpose and hence no tax on income is proposed for the year 2009-10.

3.9 Elements of Fixed Costs

The fixed costs for the year 2009-10 are summarized below:

Table 24: Summary of Fixed Costs (Rs.Crores)

| Particular | 2009-10 |
|-----------------------------|---------------|
| Interest on Loan | 83.15 |
| Depreciation | 45.55 |
| O&M Expenses | 124.10 |
| Interest on Working Capital | 18.05 |
| Return on Equity | 19.43 |
| Income Tax | - |
| Total | 290.28 |

The proposed fixed charges of Rs.290.28 Crores and expected net generation of 2265 MUs The Petitioner requests the Honourable Commission to kindly approve this.

4. Variable Charges

4.1 Coal Consumption

The generating unit uses coal from the collieries of Central Coalfields Ltd. (CCL). The coal is transported through road over a distance of about 34 to 49 kms. The completion of MGR system to transport coal is delayed and efforts are being made to complete this as early as possible. The Petitioner received Rs.8 crores from the Government of Jharkhand towards construction of MGR system in 2006-07.

In the tariff order for the year FY 2008-09 the petitioner registered specific consumption of coal at 0.715 kg/kWh based on the heat rate of 3075 kcal/kWh. The normative levels are far from the ground situations experienced by most plants in India. The normative level of heat rate may be applicable for the stations operating at high level of efficiency and high plant load factor.

The Tenughat Thermal Power Station is operating under various constraints.

- Momentary outages due to tripping of transmission lines.
- Outages due to other reasons.
- Backing down of the units under instructions of JESB due to lack of load.

Table 25: Specific Coal Consumption & Heat Rate for FY'09

| Year | Specific Coal Consumption (kg/kWh) | Heat Rate (kCal/kWh) |
|---------|---------------------------------------|----------------------|
| 2009-10 | 0.720 | 3100 |

The transport of coal on a bumpy road in fully loaded trucks is resulting in loss of coal by spilling from the trucks. In addition, there is loss due to wind, evaporation of moisture, during rainy season the coal powder gets washed out. All these factors result in loss of coal in transport and storage. The coal is weighed at loading end and at receiving end, the difference accounts for loss in transit. The experience has shown that the loss accounts to about 0.3 % of coal transported. TVNL requests the Honourable Commission to allow 0.3 % of total coal transported towards transit loss in FY 2009-10.

4.2 Specific Consumption of Oil

The specific consumption of secondary fuel (oil) during the last two years is given below:

Table 26: Specific Oil Consumption

| Year | Specific Consumption (ml/kWh) |
|---------|-------------------------------|
| 2007-08 | 1.96 |
| 2008-09 | 2.78 |
| 2009-10 | 2.50 |

The station authorities had brought down the oil consumption considerably during FY 2006-07 to 2.31 ml/kWh from the 6 – 14 ml/kWh levels experienced during FY 2000-01 to FY 2003-04. The norm of 2.0 ml/kWh may be workable for a station working efficiently. It may be difficult to limit the oil consumption to 2.0 ml for a station like TTPS with a numerous outages due to transmission line trippings, backing down of units, etc. For the FY 09, petitioner registered a specific oil consumption of 2.78 ml/kWh . Petitioner is working to reduce this level of consumption and hence is targeting to achieve a level of 2.50 ml/kwh for FY 10.

4.3 Fuel Prices and Costs

The delivered cost of coal was Rs.1295.50 / MT. The delivered cost of oil at the thermal station by the oil companies was Rs. 39045/kL during the year 2008-09

Petitioner projects landed cost of coal at Rs.1300/MT which is only an increase of Rs.5/MT and delivered cost of oil is expected to be at the level of Rs.39045/kL.

The cost of coal and oil consumption based on the projected prices for FY 2009-10 indicated above and the coal and consumption worked against the electricity generation results in an aggregate fuel cost of Rs.259.71 Crores for FY 2009-10 as detailed in the Table 27 below:

Table 27: Variable Cost

| S.No | Item | Derivation | Unit | 2008-09 | 2009-10 |
|------|---------------------------|-----------------------|--------|---------|---------|
| 1 | Installed Capacity | IC | MW | 420 | 420 |
| | PLF | PLF | % | 60.43% | 67.68% |
| | Generation | $A = IC * PLF * 8.76$ | MU | 2223 | 2490 |
| | Auxiliary Consumption | B | % | 8.37% | 9.00% |
| | Net Generation | $C = A * (1 - B)$ | MU | 2037 | 2266 |
| 2 | Specific Coal Consumption | D | kg/kWh | 0.715 | 0.720 |
| | Total Coal Consumption | $E = A * D * 1000$ | MT | 1589801 | 1792859 |

| | | | | | |
|---|--------------------------------------------------------|-------------------------------|-----------------|-----------------|-----------------|
| | Total Coal Consumption including transit losses @ 0.3% | $E'' = E * 1.003$ | MT | 1594570 | 1798238 |
| | Delivered Coal Price | F | Rs./MT | 1295.50 | 1300.00 |
| | Total Coal Cost | $G = E * F$ | Rs.lakhs | 20657.66 | 23377.09 |
| 3 | Specific Oil Consumption | H | ml/kWh | 2.78 | 2.5 |
| | Total Oil Consumption | $I = A * H$ | kl | 6181 | 6225 |
| | Delivered Oil Price | J | Rs./kl | 39045.20 | 39045.20 |
| | Total Oil Cost | $K = I * J$ | Rs.lakhs | 2413.43 | 2430.64 |
| 4 | Coal Cost per Unit | $L = G / C$ | Rs./kWh | 1.014 | 1.032 |
| | Oil Cost per Unit | $M = K / C$ | Rs./kWh | 0.118 | 0.107 |
| 5 | Total Fuel Cost per unit | $O = L + M$ | Rs./kWh | 1.132 | 1.139 |
| | Total Fuel Cost | $N = G + K$ | Rs.lakhs | 23071.09 | 25807.74 |

The proposed variable/energy charges of Rs.258.07 Crores and expected generation of 2265 MUs would result in a energy tariff charge of Rs.1.139/kWh for FY 2009-10. The Petitioner requests the Honourable Commission to kindly approve this.

5. Revenue Requirement

5.1 Fixed Charges

The aggregate fixed charges for the year amount to Rs.290.28 Crores. The Petitioner therefore requests the Honourable Commission to approve the fixed charges at Rs.290.28 Crores and fixed tariff charge at Rs.1.272 per kWh for the FY 2009-10 after accounting for non tariff income of Rs.2.00 Crores.

5.2 Variable/Energy Charges

The aggregate variable/energy charges computed for the year amount to Rs. 258.07 Crores resulting in energy tariff charge of Rs.1.139 /kWh. Petitioner therefore requests the Honourable Commission to approve the variable/energy charges at Rs. 258.07 Crores and energy tariff charge at Rs.1.139/kWh for the FY 2009-10.

5.3 Other Income

The non-tariff income is estimated at Rs.200 lakhs during the FY 2009-10

5.4 Revenue Requirement & Proposed Tariff

The sum of fixed and energy costs gives the total revenue requirement of the company for the FY 2009-10. The revenue requirement less other income will be the revenue to be raised through tariff:

Table 28: Revenue Requirement

| Particular | (Rs. crores) |
|----------------------------------------------------------|---------------------|
| Fixed Charges | 290.28 |
| Energy Charges | 258.07 |
| Revenue Requirement | 548.36 |
| Other Income | 200 |
| Revenue to be raised through Tariff in FY 2009-10 | 546.36 |

The Petitioner has estimated a revenue requirement through tariffs of Rs.546.36 crores after adjusting for its non-tariff income and derived the following fixed and energy components of tariff:

Table 29: Proposed Tariff Increase

| Tariff Component | Rs./kWh |
|-------------------------------------|----------------|
| Fixed Charges Proposed | 1.257 |
| Energy Charges Proposed | 1.139 |
| Tariff Proposed | 2.411 |
| Existing Tariff | 2.05 |
| Increase in Tariff requested | 0.361 |

The Petitioner requests the Honourable Commission to approve the above modest Rs.0.361/kWh increase in its tariff.

Annexures

ANNEXURE I

FORM –1: Summary Sheet

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

Region: Eastern, **State:** Jharkhand, **District:** Ranchi

Rs.Lakhs

| S.No. | Particulars | Actuals | | | | | Projected |
|-------|--------------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
| 1.1. | Depreciation (FORM-11) | 4365.29 | 4368.96 | 4377.45 | 4388.05 | 4528 | 4551 |
| 1.2 | Interest on Loan (FORM-12) | 8319.51 | 8313.18 | 8564.93 | 8670.93 | 8305.68 | 8315.30 |
| 1.3 | Return of Equity | 1400 | 1400.00 | 1400.00 | 1400.00 | 1932.00 | 1943.00 |
| 1.4 | Advance against Depreciation (FORM-13) | - | - | - | - | - | - |
| 1.5 | Interest on Working Capital(FORM-14) | 1087.34 | 1015.16299 | 1687.39 | 1518.77 | 1562.91 | 1804.57 |
| 1.6 | O & M Expenses (FORM-15) | 5487.56 | 5816.82 | 6165.83 | 6535.78 | 8391.68 | 12409.83 |
| | Total | 20659.70 | 20914.12 | 22195.60 | 22513.53 | 24188.27 | 29027.84 |
| | Less: Non Tariff Income | 56.18 | 60.67 | 116.96 | 117.30 | 419 | 200 |
| | Fixed Charges to be recovered | 20603.52 | 20853.45 | 22078.64 | 22396.23 | 23769.27 | 28827.84 |
| 2 | Calculation Of Rate of Energy Charge (Rs./Kwh)1 | 1.128 | 2.55 | 1.02 | 1.08 | 1.139 | 1.139 |
| 2.1 | Rate of Energy Charge from Primary Fuel(REC)P2 | 1.07 | 1.66 | 0.948 | 1.00 | 1.021 | 1.032 |
| | Net Energy Export (in MU) | 1092.61 | 1529 | 2715 | 1679 | 2037 | 2266 |
| 2.2 | Rate of Energy Charge from Secondary Fuel (REC) | 0.058 | 0.89 | 0.073 | 0.080 | 0.118 | 0.107 |
| 2.3 | Rate of Energy Charge ex-bus (REC) 3A, 3B, 3C | | | | | | |

1. Details of calculations, considering equity as per regulations, to be furnished

2. If multi-fuel is used simultaneously, give 2.1 in respect of every fuel individually

3A. The rate of energy charges shall be computed for open cycle operation and combined cycle operation separately incase of gas/liquid fuel fired plants.

3B. The total energy charge shall be worked out based on ex-bus energy scheduled to be sent out in case of plants covered by ABT, and ex-bus energy delivered sent out in case of plants not covered by ABT as the case may be.

3C. Any escalation in fuel cost to be considered for subsequent years or FPA to take care of the escalation.

*Includes interest on GPF

PETITIONER

FORM 2: Plant Characteristics

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

Basic characteristics of the plant: Coal Based Plant with conventional steam generator

Fuel type: Coal

| Details | Module number Or Unit number | | | | | | |
|------------------------------------------------------------|------------------------------|------------------------|-----|-----|-----|-----|-----|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Rate capacity (MW) | 210 | 210 | | | | | |
| Date of synchronization | Apr. 94 | Oct. 96 | | | | | |
| Capacity at the date of synchronization | 210 | 210 | | | | | |
| Date of entry into commercial operation | Sept. 96 | Sept. 97 | | | | | |
| Date of stabilisation | Sept. 96 | Sept. 97 | | | | | |
| Capacity at the date of stabilization | 210 | 210 | | | | | |
| Has any performance test been performed | No | Yes | | | | | |
| If yes, capacity at test (MW) | - | 210 | | | | | |
| Type of cooling system for condenser ³ | Once through | | | | | | |
| Type of Boiler Feed Pump ⁴ | Motor driven | | | | | | |
| Type of cooling system for electric generator ⁵ | H ₂ cooling | H ₂ cooling | | | | | |
| Any other special feature ⁶ | | | | | | | |

Has the station received any notice or shut down the power station or penalty imposed for violation of any environmental standard by the Central / State Statutory Authorities: NO

If yes, furnish full details: N.A.

1. Describe the basic characteristics of the plant e.g. in the case of a coal based plant whether it is a conventional steam generator or circulating fluidized bed combustion generator or sub-critical once through steam generator etc.
2. Coal or natural gas or naphtha or lignite etc.
3. Closed circuit cooling, once through cooling, sea cooling etc
4. Motor driven, Steam turbine driven etc.
5. Air cooled, water cooled, hydrogen cooled etc.
6. Any special feature such as merry-go-round, scrubbers etc. Specify all such features

PETITIONER

FORM-3: Normative Parameters

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| Particulars | | Year Ending March As notified by JSERC | | | |
|----------------------------------------------------------|----------|-------------------------------------------|---------|---------|---------|
| | | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
| | | (1) | (2) | (3) | (5) |
| Target Availability | % | 80 | 80 | 80 | 80 |
| Normative PLF | % | 80 | 80 | 80 | 80 |
| Auxiliary Consumption | % | 9.0 | 9.0 | 9.0 | 9.0 |
| Station Heat Rate | kCal/kWh | 2500 | 2500 | 2500 | 2500 |
| Hours of Operaiton at Target Availability | | | | | |
| Hours of Operation at Target PLF Unit I / Unit II | | | | | |
| Specific Oil Consumption | ml/kWh | 2.0 | 2.0 | 2.0 | 2.0 |
| O & M charges (% of CC for plants less than 5 years old) | % | 2.5% | 2.5% | 2.5% | 2.5% |
| Based on actuals for plants more than 5 years | % | 3.72% | 4.36% | 4.36% | 4.36% |
| Coal Stock + Expense in months for Working Capital (WC) | MT | 1.5 | 1.5 | 1.5 | 1.5 |
| Oil stock in months for WC | KL | 1 | 1 | 1 | 1 |
| Spares stock for WC as % of Plant & Equipment | % | 1 | 1 | 1 | 1 |
| Receivables in Months for WC | Months | 2 | 2 | 2 | 2 |
| Rate of Return on Equity | % | 14 | 14 | 14 | 14 |

CC - Capital Cost

WC - Working Capital

PETITIONER

FORM-6: Financial Package upto COD

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

Project Cost as on COD¹ - Rs.1355.58 Crs.

Date of Commercial Opertion² - Unit # 1 : Sept. 1996, Unit # 2 : Sept. 1997

| | | | | | As Admitted on COD | |
|-----------------------------------------------------------------------------------------------------------------------|-----------|-----------|----------------------------------|-----------|----------------------------------|-----------|
| Financial Package as Approved | | | Financial Package as on COD | | | |
| Currency and Amount ³ | | | Currency and Amount ³ | | Currency and Amount ³ | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Loan-I (Bihar Govt) | Indian Re | 608.89 Cr | Indian Re | 608.89 Cr | Indian Re | 608.89 Cr |
| Loan-II (PFC) | Indian Re | 158.00 Cr | Indian Re | 158.00 Cr | Indian Re | 158.00 Cr |
| Loan III (on account of IDC) | Indian Re | 320.29 Cr | Indian Re | 320.29 Cr | Indian Re | 320.29 |
| Equity- | | | | | | |
| Foreign | - | - | - | - | - | - |
| Domestic | Indian Re | 100 Cr | Indian Re | 100 Cr | Indian Re | 100 Cr |
| Investment made by Bihar State Electricity Board of (Rs. 168.39 Cr.) has not been considered as matter is sub judice. | | | | | | |
| | | | | | | |

1 Say US \$ 200m + Rs.400 Cr or Rs.1200 Cr including US \$ 200 m at an exchange rte of 1US \$= Rs.40/-

2. Date of Commercial Operation means Commercial Operation of the last unit

3 For example: US \$, 200 m etc.

PETITIONER

**FORM-7: Statement Giving Details of Project Specific Loans
(As on COD)**

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| Particulars (1) | Package 1 (2) | Package 2 (3) | Package 3 (4) | Package 4 (5) | Package 5 (6) | Package 6 (7) |
|------------------------------------|-------------------------|------------------|------------------|------------------|------------------|------------------|
| Source of Loan 2 1) | Govt. of Bihar | | | | | |
| 2 | P.F.C. | | | | | |
| Currency 3 | Indian Re | | | | | |
| Amount of Loan | 766.89 Cr | | | | | |
| Interest Type 4 | Fixed | | | | | |
| Fixed Interest Rate, if applicable | 13 % | | | | | |
| Base Rate, if Floating interest 5 | | | | | | |
| Margin, if Floating Interest 6 | | | | | | |
| Are there any Caps/Floor 7 | | | | | | |
| Moratorium Period 8 | 6 years on Govt. loan | | | | | |
| Moratorium effective from | 01-4-88 on Govt. loan | | | | | |
| Repayment Period 9 | 21 years for Govt. loan | | | | | |
| Repayment Frequency 10 | Yearly for Govt. loan | | | | | |
| | monthly for P.F.C. loan | | | | | |
| Base Exchange Rate 11 | | | | | | |
| Date of Base Exchange Rate | | | | | | |

1. In case the project has been completed and any tariff notification(s) has already been issued in the past by GOI, the details in this form would pertain to loan package as on COD

2. Source of loan means the agency from who the loan has been taken such as WB., ABD, OECF, KWF, SBI, ICICI, IFC, PFC etc.

3. Currency refers to currency of loan such as US \$, dm, Yen, Indian Rupee etc.

4. Interest type means whether the interest is fixed or floating

5. Base rate means the base as PLF, LIBOR, etc. over which the margin is to be added

6. Margin means the points over and above the floating rate.

7. At times caps/floor are put at which the floating rates are frozen. If such a condition exists, specify the limits.

8. Moratorium period refers to the period during which loan servicing liability is not required.

9. Repayment period means the repayment of loan such as 7 years, 10 years, 25 years etc.

10. Repayment frequency means the interval at which the debt servicing is to be done such as monthly, quarterly half yearly, annual etc.

11. Base exchange rate means the exchange rate prevailing as on the date of COD

PETITIONER

FORM-9: Statement of Additional Capitalisation after COD

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| | Year | Work/Equipment added after COD (In Rs.) | Amount Capitalised/ Proposed to be capitalized (In Rs.) | Justification | Admitted cost |
|---------|--------------|--------------------------------------------|---------------------------------------------------------------|---------------|-----------------------|
| (1) | (2) | (3) | (4) | (5) | (6) |
| Closing | 1997-98 | | 15417600440 | | 15417600440 |
| 1 | 1998-99 | 17931781 | 17931781 | | |
| 2 | 1999-00 | 38254870 | 38254870 | | |
| 3 | 2000-01 | 6114383 | 6114383 | | |
| 4 | 2001-02 | 9339766 | 9339766 | | |
| 5 | 2002-03 | 16997615 | 1431927 | | |
| 6 | 2003-04 | 6393904 | 1561640 | | |
| 7 | 2004-05 | 64498768 | 10773760 | | |
| 8 | 2005-06 | 112743201 | 15607373 | | |
| 9 | 2006-07 | 148892000 | 8853000 | | |
| 10 | 2007-08 | 557650000 | 44900000 | | |
| 11 | 2008-09 | 2406000 | 2406000 | | |
| 12 | 2009-10 | 4700000 | 4700000 | | |
| | Total | 978,816,288 | 15,574,774,940 | | 15,417,600,440 |

1 In case the project has been completed and any tariff notification(s) has already been issued in the past by GOI, fill column 6 giving the cost as admitted for the purpose of tariff notification already issued by (Name of the authority) (Enclose copy of tariff order).

Note:

1. Fill the form in chronological order.

2. In case initial spares are purchased along with any equipment, then the cost of such spares should be indicated separately, e.g. Rotor - 50 Crs
Initial spares - 5 Crs

PETITIONER

FORM-11: Statement of Depreciation

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

In Rs.

| Financial Year (Starting from COD) | Depreciation on Capital Cost as on COD (In Rs) | Depreciation on Additional Capitalisation | | Details of FERV | |
|---------------------------------------|------------------------------------------------------------|-------------------------------------------------------|------------------------|----------------------------------------------------------|------------------------------------|
| | | Amount of Additional Capitalisation (In Rs.) | Depreciation Amount | Amount of FERV on which depreciation charged | Depreciation amount (In Rs.) |
| (1) | (2) | (3) | (4) | (5) | (6) |
| 2004-05 | | 10773760 | | | |
| 2005-06 | | 15607373 | | | |
| 2006-07 | | 8853000 | | | |
| 2007-08 | | 44900000 | | | |
| 2008-09 | 452700000 | 69000 | 452769000 | | |
| 2009-10 | 452886000 | 2640000 | 455526000 | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | Total | 82,843,133 | | | |
| | | | | | |

Note: Details of calculations to be furnished

PETITIONER

FORM-12: Statement Showing Computation of Interest on Various Loans

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| Particulars | Loan 1 | | | | Loan-2 | | | | Total interest Due | Total Repayment |
|-------------|-----------------|-----------|-----------------|----------------|-----------------|-----------|-----------------|---------------|--------------------|-----------------|
| | Opening Balance | Repayment | Closing Balance | Interest due | Opening Balance | Repayment | Closing Balance | Interest due | | |
| | | | | | | | | | | |
| Rs. | 60890 | 0 | 60890 | 7915.68 | 3000 | 0 | 3,000.00 | 390.00 | 8,305.68 | 0.00 |

Govt. of Bihar: Rs.608.89 cr.
 Govt. of Jharkhand: Rs.30.00 cr.
 Total: 638.90 cr.

PETITIONER

FORM-13: Statement of Advance Against Depreciation (AAD)

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| Year | 1/12 of the Original Scheduled Loan(s) | Originally Scheduled Repayment the Loan(s) | Min. of Col. (2) and (3) | Depreciation during the year | (In Rs.) AAD1=(4) - (5) |
|------|----------------------------------------|--------------------------------------------|--------------------------|------------------------------|----------------------------|
| 0-1 | 639075000 | 1917656000 | 639075000 | 506306241 | 132768759 |
| 1-2 | 639075000 | 1204256000 | 639075000 | 506338750 | 132736250 |
| 2-3 | 639075000 | 731888000 | 639075000 | 506840406 | 132234594 |
| 3-4 | 639075000 | 568898000 | 568898000 | 506840406 | 62057594 |
| 4-5 | 50740833 | 545405000 | 50740833 | 436529000 | -385788167 |
| 5-6 | 50740833 | 485405000 | 50740833 | 437687114 | -386946281 |
| 6-7 | 50740833 | 485405000 | 50740833 | 437745000 | -387004167 |
| 7-8 | 50740833 | 485405000 | 50740833 | 438805000 | -388064167 |
| 8-9 | 50740833 | 485405000 | 50740833 | 452769000 | -402028167 |
| 9-10 | 50740833 | 485405000 | 50740833 | 455526000 | -404785167 |
| | Total | | 2536863833 | 4685386917 | -1894818919 |

Note: 1 If the amount under the col (6) is negative, it will be shown as zero

(Rs. in Crores)

1. Loan received from Govt. of Bihar during the period from 87-88 to 98-99
Less: Loan transferred to Share Capital vide L.No.287 dt 4.3.92 of
Energy Dept. Govt. of Bihar

708.89

100

608.89

2. Loan taken from M/s.PFC during the period from 88-89 to 91-92

158

(This loan has been completely repaid as on 31.03.2003)

766.89

Note: Advance against Depreciation is not claimed since repayment is not made against State Government Loan.

PETITIONER

FORM-14: Statement of Calculation of Average Rate of Interest (CC) on Working Capital Loans

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| (1) | (2) | Year ending March | |
|--------|--------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------|
| | | 2008-09 (Actual) | 2009-10 (Projected) |
| | | (6) | (7) |
| | INTEREST ON WORKING CAPITAL | | |
| | Fuel Cost - 1 month | 2582.21 | 2922.04 |
| | Fuel Stock - 1 or 1/2 month | | |
| | Oil stock - 1 month | 201.08 | 202.55 |
| | O & M expenses - 1 month | 701.01 | 1034.15 |
| | Spares 1 year = 40% of O & M Less 1/5th of initial capitalised spares for first 5 years | 1172.00 | 1172.00 |
| | Receivables- 2 months | 7899.82 | 9105.79 |
| | Total Working Capital (Rs. in lakh) | 12556.12 | 14436.53 |
| | | 1569.52 | 1804.57 |
| | INTEREST ON WORKING CAPITAL@12.5% (Rs cr) | | |
| SL.NO. | Source of Loan for Working Capital | AMOUNT (Rs.in Crs) | RATE OF INTEREST (Cash Credit) (%) |
| (1) | (2) | (3) | (4) |
| a | | | |
| b | | | |
| | TOTAL | | |
| | Weighted Average Rate of Interest | | |

PETITIONER

FORM-15: Calculation of Operation and Maintenance Expenses

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| (1) | Average | Base | Base | Tariff Period | | | | | | | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|--|
| | 95-96 to 99-00 (7) | 1999-00 (8) | 2000-01 (9) | 2001-02 (10) | 2002-03 (11) | 2003-04 (12) | 2004-05 (13) | 2005-06 (14) | 2006-07 (15) | 2007-08 (17) | 2008-09 (18) | 2009-10 (18) | |
| CASE I. O & M data available for 1995-96 to 1999-2000 | | | | | | | | | | | | | |
| (Base O & M on the basis of actual data) | | | | | | | | | | | | | |
| A) Total O & M Expenses | | | | | | | | | | | | | |
| B) Abnormal O & expenses | | | | | | | | | | | | | |
| - On account of water charges | | | | | | | | | | | | | |
| - On account of other factors | | | | | | | | | | | | | |
| C) Calculation of Base O & M (A-B) | E | X=Ex(1.1) ² | Xx 1.06 | Xx (1.06) ² | Xx (1.06) ³ | Xx (1.06) ⁴ | Xx(1.06) ⁵ | Xx(1.06) ⁶ | Xx(1.06) ⁷ | Xx(1.06) ⁸ | Xx(1.06) ⁸ | Xx(1.06) ⁸ | |
| CASE II: Recent Plants for which O & M data for five year data for 1995-96 to 1999-2000 is not available and other new plants which come up during the tariff period | | | | | | | | | | | | | |
| Year of Commissioning | | | | | | | | | | | | | |
| Calculation of Base O & M | | Y | Yx 1.06 | Yx(1.06) ² | Yx (1.06) ³ | Yx (1.06) ⁴ | Yx (1.06) ⁵ | Yx (1.06) ⁶ | Yx (1.06) ⁷ | Yx (1.06) ⁸ | Yx (1.06) ⁹ | Yx (1.06) ¹⁰ | |
| | | 4.1E+08 | 4.35E+08 | 460746478 | 488391267 | 517694743 | 548756427 | 581681813 | 616582722 | 653577685 | 692792346 | 734359887 | |

Notes:

1. Abnormal O & M expenses such as on account of sharp increase in water charges etc which are abnormal in nature and for which the utility shall file a separate petition

2. Base O & M(Y) = (0.025x Capital cost) escalated at the rate of 10 percent per annum after the year of commissioning to bring it to 1999-2000 level

For example if the capital cost of the plant commissioned in 1996-97 is Rs.100 cores then the base for 1999-2000 is computed as: Base O & M for 1999-2000 ('Y' in the format) = (0.025*100)* (1.10)³

Capital cost as on 31.03.1998 = 13555792566.49 - say 1355.8 Crores

Base O & M for 1999-2000 (in format) = (0.025x13555792566.49)x (1.10)² = 466382413

PETITIONER

FORM-16: Calculation of Operation and Maintenance Expenses

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station(Rs lakhs)

| | | | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 |
|------------|---------------------------------------------------------------------|-----|---------|----------|---------|---------|----------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| (A) | Breakup of O& M expenses | | | | | | |
| 1 | Employee cost (a) | | 1004.99 | 1333 | 1326.8 | 1531.98 | 2820.10 |
| | --do-(b) Pension & Gratuity | | 72.39 | | | | |
| | -do-© Labour for O & M | | 604.38 | | | | |
| 2 | Repair and Maintenance | | 200.00 | 211.596 | 430.77 | 1125.61 | 1824.61 |
| 3 | Stores consumed | | | | | | |
| 4 | Power Charges | | 1.56 | 1.98 | 9.74 | 16.65 | 2.00 |
| 5 | Water Charges & Cess | | 2000.00 | 0.25 | 19.43 | | |
| 6 | Communicaiton/ Telephone expenses | | 5.14 | 11.1 | 11.68 | 23.07 | 20.00 |
| 7 | Travelling expenses | | 6.60 | 9.23 | 11.48 | 22.70 | 35.00 |
| 8 | Insurance | | 148.00 | 87.37 | 25.2 | 27.71 | 30.00 |
| 9 | Others | | | | | 26.93 | 281.96 |
| 10 | Pollution Control ces | | 288.00 | 25 | 30 | | |
| 11 | Ash Disposal | | 58.17 | 166.09 | 131.04 | | |
| 12 | Rent, Rates and Taxes. | | 4.62 | 10.18 | 9.81 | 89.98 | 31.00 |
| 13 | Security expenses | | 222.17 | 246.5 | 298.08 | 522.43 | 848.90 |
| 14 | Professional expenses(Admn. Exp.) | | 8.26 | 5.59 | 13.71 | 6.81 | 17.50 |
| 15 | Printing and Stationery | | 10.31 | 9.35 | 16 | 11.31 | 13.50 |
| 16 | Corporate office expenes allocation | | 230.10 | | | 302.47 | 329.50 |
| 17 | Other Expenses (Deferred Revenue Expenses, Capital Maintenance etc) | | 1081.68 | 1652.94 | 2579.49 | 4704.57 | 6155.87 |
| 18 | Total O&M Expenses | | 6717.09 | 3770.176 | 4913.23 | 8412.12 | 12409.83 |
| | LESS: RECOVERED (IF ANY) | | | | | | |
| | NET Expenses | | 6717.09 | 3770.176 | 4913.23 | 8412.12 | 12409.94 |

PETITIONER

FORM-17: Details /Information to be Submitted in respect of Fuel for Computation of Energy Charges

Name of the Company: Tenughat Vidyut Nigam Limited

Name of the Station: Tenughat Thermal Power Station

| Month | | For preceeding 3rd Month | | | | | For preceeding 2nd Month | | | | | For preceeding 1st Month | | | | | |
|-----------------------------------------------------------------------|------------------|--------------------------|---------|-----|-----|-----|--------------------------|-----|-----|-----|-----|--------------------------|-----|-----|-----|-----|--|
| Grade of Coal | | "C" | "D" | "E" | "F" | "G" | "C" | "D" | "E" | "F" | "G" | "C" | "D" | "E" | "F" | "G" | |
| Quantity of Coal / Lignite | | (MMT) | | | | | | | | | | | | | | | |
| Amount charged by the coal Co. | | (Rs.) | | | | | | | | | | | | | | | |
| Transportation by rail/ship/road | | (Rs.) | | | | | | | | | | | | | | | |
| Weighted average GCV of coal/Lignite for a grade | | (k. Cal/Kg) | 4300 | | | | | | | | | | | | | | |
| Unit price corresponding to the grade of coal charged by the Coal Co. | Base Price | (Rs/MT) | 1139.15 | | | | | | | | | | | | | | |
| | Any other charge | (Rs/MT) | | | | | | | | | | | | | | | |
| | Royalty | (Rs/MT) | | | | | | | | | | | | | | | |
| | Cess or duty | (Rs/MT) | | | | | | | | | | | | | | | |
| | Sales Tax | (Rs/MT) | | | | | | | | | | | | | | | |
| Transportation by rail/ship/road | Transportation | (Rs/MT) | 160.85 | | | | | | | | | | | | | | |
| | Total | (Rs/MT) | 1300.00 | | | | | | | | | | | | | | |
| | Distance | (Km) | 40 | | | | | | | | | | | | | | |
| | Amount | (Rs/Km/MT) | | | | | | | | | | | | | | | |
| | | (Rs/MT) | | | | | | | | | | | | | | | |

Note:

- 1.Furnish copies of relevant coal/lignite price notifications or the fuel supply agreement, tariff rates of Railways or other transport authorities as applicable
- 1.Similar details to be furnished for natural gas/ liquid fuel for CCGT station and secondary fuel oil for coal/lignite based thermal.

PETITIONER