Jharkhand State Electricity Regulatory Commission

Order

on

Petition for

Approval of Final Capital Cost,

True Up of ARR for FY 2012-13 and FY 2013-14

and

Annual Performance Review for FY 2014-15

And

ARR and Tariff Determination for FY 2015-16

for

Adhunik Power and Natural Resources Limited

(APNRL)

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BEFORE
Jharkhand State Electricity Regulatory Commission, Ranchi

Case (Tariff) No.: 05 of 2015

In the matter of:

Petition for Approval of Capital Cost of 540 MW (2x 270 MW) coal based thermal power plant in Jharkhand, True up of Aggregate Revenue Requirement for FY 2012-13 & FY 2013-14;
And
Annual Performance Review for FY 2014-15;
And
Aggregate Revenue Requirement and Tariff determination for FY 2015-16;

In the matter:
Adhunik Power and Natural Resources Limited (APNRL),
Connaught Place, New Delhi ……………….. ……………… Petitioner

PRESENT

Hon'ble Mr Justice Narendra Nath Tiwari - Chairperson
Hon'ble Mr R.N. Singh - Member (T)

Order dated 01st September 2016

In this Petition, Adhunik Power and Natural Resources Limited (hereinafter referred to as APNRL) has prayed for Approval of Capital Cost of 540 MW (2x 270 MW) coal based thermal power plant in Jharkhand, True up of Aggregate Revenue Requirement for FY 2012-13 & FY 2013-14. Annual Performance Review for FY 2014-15 and Aggregate Revenue Requirement and Tariff determination for FY 2015-16

List of Abbreviations

Abbreviation	Description
A&G	Administrative and General
ARR	Aggregate Revenue Requirement
COD	Commercial Operation Date
IDC	Interest during Construction
FY	Financial Year
GCV	Gross Calorific Value
GFA	Gross Fixed Assets
GoI	Government of India
JSERC	Jharkhand State Electricity Regulatory Commission
Kcal	Kilocalorie
Kg	Kilogram
kWh	Kilowatt-hour
MAT	Minimum Alternative Tax
Ml	Millilitre
MT	Million Tonnes
MUs	Million Units
MW	Megawatt
NAPAF	Normative Annual Plant Availability Factor
O&M	Operations and Maintenance
PLF	Plant Load Factor
PPA	Power Purchase Agreement
R&M	Repair and Maintenance
RoE	Return on Equity
Rs	Rupees
SBI	State Bank of India
SERC	State Electricity Regulatory Commission
SLM	Straight Line Method
CERC	Central Electricity Regulatory Commission
DTS	Dedicated Transmission System

A1: INTRODUCTION

Jharkhand State Electricity Regulatory Commission

1.1 The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as the "JSERC" or "the Commission") was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act, 1998 on August 22, 2002. The Commission became operational with effect from April 24, 2003.

1.2 The Government of Jharkhand vide its notification dated August 22, 2002 had defined the functions of JSERC as per Section 22 of the Electricity Regulatory Commission Act, 1998 to be the following, namely:-

- to determine the tariff for electricity, wholesale, bulk, grid or retail, as the case may be, in the manner provided in section 29;
- to determine the tariff payable for the use of the transmission facilities in the manner provided in section 29;
- to regulate power purchase and procurement process of the transmission utilities and distribution utilities including the price at which the power shall be procured from the generating companies, generating stations or from other sources for transmission, sale, distribution and supply in the State;
- to promote competition, efficiency and economy in the activities of the electricity industry to achieve the objects and purposes of this Act.

1.3 The Electricity Act, 2003 (hereinafter referred to as "the Act" or "EA, 2003") came into force with effect from June 10, 2003; and the Commission is now deemed to have been constituted and functioning under the provisions of the Act as the earlier Electricity Regulatory Commission Act of 1998 stands repealed and the functions of SERCs are now defined under Section 86 of the Act.

1.4 The JSERC discharges the functions to be discharged by the State Commission as specified under Section 86 of the Act, which are to: -

- determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:

(a) Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

- regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;

- facilitate intra-state transmission and wheeling of electricity;

- issue licences to persons seeking to act as transmission licensees, distribution licensees and electricity traders with respect to their operations within the State;

- promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;

- adjudicate upon the disputes between the licensees and generating companies; and to refer any dispute for arbitration;

- levy fee for the purposes of this Act;

- specify State Grid Code consistent with the Grid Code specified under Clause (h) of sub-section (1) of Section 79;

- specify or enforce standards with respect to quality, continuity and reliability of service by licensees;

- fix the trading margin in the intra-state trading of electricity, if considered, necessary;

- discharge such other functions as may be assigned to it under this Act.

1.5 The Commission has to also advise the State Government as per sub section 2 of Section 86 of the Act, on all or any of the following matters, namely :-

- promotion of competition, efficiency and economy in activities of the electricity industry;
- promotion of investment in electricity industry;
- reorganisation and restructuring of electricity industry in the State;
- matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.

1.6 The State Commission ensures transparency while exercising its powers and discharging its functions.

1.7 In discharge of its functions, the State Commission is also guided by the National Tariff Policy as brought out by GoI in compliance to Section 3 of the Act. The objectives of the National Tariff Policy are to:

- ensure availability of electricity to consumers at reasonable and competitive rates;
- ensure financial viability of the sector and attract investments;
- promote transparency, consistency and predictability in regulatory approaches across jurisdictions and minimize perceptions of regulatory risks;
- promote competition, efficiency in operations and improvement in quality of supply.

Adhunik Power and Natural Resources Limited

1.8 Adhunik Power and Natural Resources Limited (hereinafter referred to as "the Petitioner" or "APNRL" is a company incorporated under the provisions of the Indian Companies Act, 1956.

1.9 Originally incorporated as "Adhunik Thermal Energy Ltd." (ATEL), in the year 2007, ATEL was renamed to "Neepaz Thermal Energy Limited" (NTEL) and subsequently renamed as "Adhunik Power & Natural Resources Ltd." (APNRL) in the year 2008 after complying with the applicable provisions of the Companies Act, 1956.

1.10 ATEL signed a Memorandum of Understanding (hereinafter referred to as "the MoU") with Government of Jharkhand in October 2005 to develop a 1,000 MW coal based thermal power plant in October 2005. Further in January 2007, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MOU further for a period of 12 months. In February 2008, the Petitioner and Government of Jharkhand agreed to extend the validity period of the MOU further for a period of three years upto October 31, 2010. Subsequently in May 2011, the validity of the MOU was again extended for a period of three years from November 1, 2010 to October 31, 2013. In November 2013, the validity of MoU was again extended for a period of three years from November 1, 2013 to October 31,2016.

1.11 Accordingly, APNRL has set up a 540 MW coal based power plant in Stage-1 (consisting of Unit 1 and Unit 2 of 270 MW each) and is planning to develop an additional 540 MW coal based power plant in Stage-2. Unit 1 of the power plant was synchronized on November 13, 2012 and COD for the same was declared on January 21, 2013. Unit 2 of the power plant was synchronized on March 29, 2013 and COD for the same was declared on May 19, 2013.

1.12 Further, as per the provisions of the MOU, the Government of Jharkhand or Distribution Licensees authorized by it will have the first right of claim on purchase upto 25% of power delivered to the system by the proposed power station.

1.13 Further, the extension of the MoU stipulates that the Government of Jharkhand moved to Government of India for the policy decision through suitable arrangements for making available to the State 12% of the total power generated at variable cost by APNRL. Hence, as stated above, as per MoU and its extension's conditions, JSEB will have first right of claim on purchase upto 25% of power delivered to the system, out of which 12% power will be made available to the state at variable cost only.

1.14 Pursuant to the MoU signed between Government of Jharkhand and APNRL, APNRL signed a Power Purchase Agreement (hereinafter also referred to as "the PPA") with Jharkhand State Electricity Board (now Jharkhand Urja Vikash Nigam Limited or "JUVNL"/ Jharkhand Bijli Vitran Nigam Limited "JBVNL") on September 28, 2012 for supplying contracted capacity of 122.85 MW (25% of 491.4 MW, i.e., Gross Capacity of 2 Units of 270 MW each, totaling to 540 MW less Normative Auxiliary Consumption) from Stage 1 of the Project on long term basis.

1.15 As per the terms of the PPA 63.882 MW capacity, i.e., 13% of Net Capacity of Stage 1 shall be supplied to JUVNL/JBVNL at total tariff and the balance 58.968 MW capacity, i.e., 12% of total Net Capacity of Stage 1 shall be supplied at variable cost only.

1.16 As per clause 3.1 (ii) and (iii) of the PPA entered into by the Petitioner quoted below and JSEB (now JUVNL/JBVNL) the tariff payable shall be determined by the State Commission :

3.1(ii)"The tariff for sale of power by seller to procurer for the contracted capacity of 63.882 MW shall be payable by the procurer as determined by JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010 as amended from time to time or any other competent authority authorized from time to time. The annual fixed charges determined in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010 shall be recoverable from the net saleable capacity of 432.432 MW (i.e. Gross capacity minus auxiliary consumption minus 12% power to be supplied to procurer at energy charge)".

3.1(iii) The energy charge for sale of power by seller to procurer for the contracted capacity of 59.968 MW shall be payable by the procurer as determined by the JSERC in accordance with the "Jharkhand State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2010", as amended from time to time."

Overview of the Thermal Station

1.17 The Petitioner has achieved COD of its two units of 270 MW each. Both these units are subject to ARR and Tariff determination. The following table summarizes the information pertaining to both the units:

S. No.	Unit	Installed Capacity(MW)	Status of Operation	Actual Date of Commercial Operation
1	Unit 1	270	Operational	January 21, 2013
2	Unit 2	270	Operational	May 19, 2013

The Petitioner's Prayers

1.18 The Petitioner in its tariff petition dated April 30th, 2015 has prayed before the Commission for the following:

a) Accept the Petition for Approval of Final Capital Cost of 540 MW (2x270MW) coal based thermal power plant in Jharkhand. True-up of ARR for FY 2012-13 and FY 2013-14, Annual Performance Review for FY 2014-15 and Final ARR and Tariff Determination for FY 2015-16 for supplying the regulated Contracted Capacity of 122.85 MW from both the Units 1 & 2 to JUVNL/JBVNL [erstwhile JSEB] as proposed by APNRL.

b) Approve the True-up of ARR for 540MW (2x270) Stage I coal based thermal power plant in Jharkhand, for supplying the regulated contracted capacity of 122.85MW to JUVNL/JBVNL [erstwhile JSEB] for FY 2012-13 and FY 2013-14

c) Approve the Annual Performance Review of ARR for supplying the regulated contracted capacity of 122.85MW to JUVNL/JBVNL [erstwhile JSEB] for FY 2014-15

d) Approve the tariff for supplying the regulated contracted capacity of 122.85 MW to JUVNL/JBVNL [erstwhile JSEB] for FY 2015-16.

e) Approve the recovery of upward and downward variation in fuel prices and calorific value including fuel mix through Fuel Price Adjustment as part of monthly Energy Charges.

Scope of the present order

1.19 The Commission in this tariff order has approved the final capital cost of the 540 (2x270) MW coal based thermal power plant in Jharkhand, True up of ARR for FY 2012-13 and FY 2013-14, Annual Performance Review of FY 2014-15, ARR and Tariff Determination for FY 2015-16 for Unit 1 and Unit 2 of the Petitioner.

1.20 While conducting the True-up of ARR for FY 2012-13, FY 2013-14 and APR for FY 2014-15 the Commission has taken into consideration:

- Material placed on record
- Provisions of the Electricity Act, 2003;
- Provisions of the National Electricity Policy;
- Provisions of the Tariff Policy;
- Principles and provisions laid down in the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 (hereinafter referred to as 'Generation Tariff Regulations, 2010');

1.21 Accordingly, the Commission has scrutinized the Petition in detail and hereby issues the Tariff Order on True-up of ARR for FY 2012-13, FY 2013-14, APR for FY 2014-15, ARR and Tariff Determination for FY 2015-16.

A2: PROCEDURAL HISTORY

Background

2.1 The Commission had notified Provisional Order on Petition for approval of Capital Cost, Business Plan and MYT Petition for FY 2012-13 to FY 2015-16 for Adhunik Power and Natural Resources Limited (APNRL) on 26th May, 2014

2.2 The Petitioner has now submitted the Petition for approval of final Capital Cost of 540MW (2x270) Coal Based Thermal Power Plant in Jharkhand, True Up of ARR for FY 2012-13 and FY 2013-14, Annual Performance Review of FY 2014-15 and ARR and Tariff Determination for FY 2015-16 on 30th April, 2015

Information Gaps in the ARR Petition

2.3 In accordance with Section 64(3) of the Act, the State Electricity Regulatory Commission, within one hundred and twenty days of the filing of application for determination of tariff, is required to either accept it and issue a tariff order or reject the application for reasons to be recorded in writing. The Commission accepted the application submitted by the Petitioner for approval of final capital cost, true up and determination of tariff. As part of tariff determination exercise for the Control Period, several deficiencies/information gaps were observed in the tariff petition submitted by the Petitioner.

2.4 These information gaps were communicated to the Petitioner vide letter no.

(a) JSERC/Case (T) No 05 of 2015/276 dated 24th July, 2015

(b) JSERC/Case (T) No 05 of 2015/864 dated 2nd February, 2016

(c) JSERC/Case (T) No 05 of 2015/899 dated 24th February, 2016

2.5 The Commission also communicated the requisite clarifications required vide e-mail to the Petitioner.

2.6 The Petitioner subsequently submitted its response to the aforesaid letters and e-mails and provided the requisite additional data/information vide letter no.

(a) APNRL/JSERC/2015-16/595 dated 28th December 2015,

(b) APNRL/JSERC/2015-16/621 dt. 1st March, 2016

(c) APNR/JSERC/2016-17/631 dated 30th April, 2016

2.7 The Commission scrutinized the additional data/information and on its validation, has passed this Order on the petition filed by the Petitioner.

Inviting Public Comments/Suggestions

2.8 The Commission directed the Petitioner to make available copies of the petition to the members of general public on request, and also issue a public notice inviting comments/ suggestions on the petition for approval of the final Capital Cost, True Up of FY 2012-13 & FY 2013-14, APR for FY 2014-15 and ARR and tariff determination of FY 2015-16.

2.9 The aforesaid public notice was issued by the Petitioner in various newspapers on Further, a period of twenty one (21) days was given to the members of the general public for submitting their comments/suggestions.

Table 1 List of newspapers and dates on which the public notice by Adhunik appeared

Sl. No.	Newspaper (Jharkhand edition)	Date of Publication
1	Jharkhand News Line	26.01.2016 & 28.01.2016
2	Rshtriya Sagar	26.01.2016 & 28.01.2016
3	Morning India	26.01.2016 & 28.01.2016
4	The Pioneer	26.01.2016 & 28.01.2016

2.10 Subsequently, the Commission also issued a notice on its website www.jserc.org and various newspapers for conducting the public hearing on the Petition. The details of the newspapers where the notice was issued by the Commission are as under:

Table 2: List of newspapers and dates on which the public notice by JSERC appeared

Sl. No.	Newspaper (Jharkhand edition)	Date of Publication
1	Times of India (English)	15.07.2016
2	Hindustan	15.07.2016
3	Dainik Bhaskar	15.07.2016
4	Morning India (English)	16.07.2016
5	Dainik Jagran	16.07.2016
6	Prabhat Khabar	16.07.2016

Submission of Comments/Suggestions and Conduct of Public Hearing

2.11 A public hearing was held on August 03, 2016 at Ranchi and many respondents voiced their views on the petition filed by the Petitioner. The comments/suggestions submitted by the respondents and the Petitioner's response thereon along with the Commission's views on the response provided by the Petitioner are detailed in the Section A4: of this Order.

A3: SUMMARY OF THE PETITION

Capital cost of the project

3.1 In its petition dated April 30th, 2015, the Petitioner submitted that the capital cost of Unit-1 and Unit-2 of the project as on COD based on the audited annual accounts is Rs. 3,344.21 Crore. The project is funded through a combination of debt and equity. The summary of capital cost of the project as submitted is given in the table below.

Table 3: Summary of capital cost

Particulars	Unit-1		Unit-2		Total Project Cost	
	Rs Crore	%	Rs Crore	%	Rs Crore	%
Debt	1,243.53	74.79%	1,257.63	74.79%	2,501.17	74.79%
Equity	419.14	25.21%	423.90	25.21%	843.04	25.21%
Total	1,662.68	100.00%	1,681.53	100.00%	3,344.21	100.00%

Revenue requirement for FY 2012-13 to FY 2015-16

3.2 The summary of operational performance, fixed cost, energy charges and annual revenue requirement for Unit-1 and Unit-2 as submitted by the Petitioner in its tariff petition dated April 30th, 2015 is given below:

Table 4: Petitioner's Submission for operational performance, fixed cost, energy charges and annual revenue requirement for FY 2012-13 to FY 2015-16 for Unit 1

Particulars	Units	True Up FY 2012-13	True Up FY 2013-14	APR FY 2014-15	FY 2015-16
Operational Parameters					
Capacity	MW	270	270	270	270
Gross Generation	MUs	284.09	1,368.20	2,010.42	2,015.93
Plant Load Factor	%	58.12%	57.85%	51.88%	85%
Aux Power Consumption	%	10.85%	9.30%	9.00%	9.00%
Ex-Bus Generation	MUs	253.26	1,241.02	1,829.48	1,834.49
Weighted Average GCV of primary fuel	kCal/kg	3,565.64	3,570.87	3,377.40	3,348.20
Station Heat Rate	kcal/kWh	2,387.00	2,387.00	2,387.00	2,387.00
Calorific value of secondary fuel	Kcal/litre	9346.83	9346.83	9346.83	9346.83
Specific Coal Consumption	Kg/kWh	0.67	0.67	0.70	0.71
Secondary Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00
Details of Annual Fixed Cost					
Depreciation	Rs. Cr.	15.35	80.06	80.06	80.06
Interest on Loan	Rs. Cr.	31.07	159.57	148.82	138.06

Particulars	Units	True Up FY 2012-13	True Up FY 2013-14	APR FY 2014-15	FY 2015-16
Return on Equity	Rs. Cr.	15.58	81.22	82.20	82.20
Interest on working Capital	Rs. Cr.	6.85	34.55	34.16	34.53
O&M Expenses (including water charges)	Rs. Cr.	15.32	71.15	74.66	78.38
Cost of Secondary fuel oil	Rs. Cr.	1.82	8.62	13.00	12.92
Annual Fixed Cost	Rs. Cr.	**86.00**	**435.16**	**432.89**	**426.16**
Variable Charge					
Per Unit Variable Cost	Rs per kWh	**2.23**	**2.31**	**2.26**	**2.28**
Total Variable Charge	Rs Cr	**56.39**	**286.57**	**413.15**	**419.02**

Table 5: Petitioner's Submission for operational performance, fixed cost, energy charges and annual revenue requirement for FY 2013-14 to FY 2015-16 for Unit 2

Particulars	Units	True Up FY 2013-14	APR FY 2014-15	FY 2015-16
Capacity	MW	270	270	270
Gross Generation	MUs	1,157.26	2,010.42	2,015.93
Plant Load Factor	%	59.24%	41.66%	85%
Aux Power Consumption	%	9.41%	9.00%	9.00%
Ex-Bus Generation	MUs	1,048.32	1,829.48	1,834.49
Weighted Average GCV of primary fuel	kCal/kg	3,618.47	3,431.46	3,348.20
Station Heat Rate	kcal/kWh	2,387.00	2,387.00	2,387.00
Calorific value of secondary fuel	Kcal/litre	9,346.83	9,346.83	9,346.83
Specific Coal Consumption	Kg/kWh	0.66	0.69	0.71
Secondary Oil Consumption	ml/kWh	1.00	1.00	1.00
Details of Annual Fixed Cost				
Depreciation	Rs. Cr.	70.43	81.09	81.09
Interest on Loan	Rs. Cr.	141.52	152.85	142.04
Return on Equity	Rs. Cr.	71.34	83.13	83.13
Interest on working Capital	Rs. Cr.	31.60	34.26	33.97
O&M Expenses (including water charges)	Rs. Cr.	63.07	74.66	78.57
Cost of Secondary fuel oil	Rs. Cr.	7.27	12.78	12.92
Annual Fixed Cost	Rs. Cr.	**385.23**	**438.76**	**431.72**
Variable Charge				
Per Unit Variable Cost	Rs per kWh	**2.25**	**2.33**	**2.28**
Total Variable Charge	Rs Cr	**236.27**	**426.90**	**419.01**

Tariff for supply of energy to JUVNL

3.3 The tariff for supply of Regulated Capacity to JUVNL (erstwhile JSEB) for the first Control Period at Normative Availability submitted by the Petitioner in its petition is summarised in the tables below:

Table 6: Fixed Charges and rate of Energy Charges for JUVNL for Unit 1

Particulars	Units	True up FY 2012-13	True Up FY 2013-14	APR FY 2014-15	ARR FY 2015-16
Capacity Charges for 13% of Capacity at 85% Plant Availability Factor	Rs Crore	12.70	64.29	63.95	62.95
Rate of Energy Charges	Rs/kWh	2.23	2.31	2.26	2.28

Table 7: Fixed Charges and rate of Energy Charges for JUVNL for Unit 2

Particulars	Units	True Up FY 2013-14	APR FY 2014-15	ARR FY 2015-16
Capacity Charges for 13% of Capacity at 85% Plant Availability Factor	Rs Crore	56.91	64.82	63.78
Rate of Energy Charges	Rs/kWh	2.25	2.33	2.28

3.4 The Petitioner has submitted additional information in subsequent submissions as mentioned in paragraph 2.6 which have also been considered by the Commission while passing this Order

A4: PUBLIC CONSULTATION PROCESS

Injection Charges and Injection Losses

Public Comments/Suggestions

4.1 The objector submitted that regarding injection charges and injection losses, a case (13 of 2014) is still pending before the Hon'ble Commission. The objector further stated that Hon'ble Commission may not consider the injection losses and injection charges in the current petition.

Petitioner's Response

4.2 The petitioner responded as follows

"*As per the directions of Hon'ble JSERC in the provisional order dated May 26, 2014, the Transmission Charges are to be borne by Procurer. Transmission Charges means full Transmission Charges not part Transmission Charges, which itself includes Injection and withdrawal charges & losses altogether. JBVNL has made mis-interpretation that part of Transmission Charges would be borne by JBVNL not full, which is a violation of the directions of Hon'ble Commission. Because of such denial by JBVNL, APNRL went to Hon'ble Commission vide Case No. 13, next hearing of which is scheduled on 19th Aug.'16 before Hon'ble Commission".*

Commission's View

4.3 Commission understands that this issue is subject matter in Case No 13 of 2014 and the final judgement is still pending. The issue will be dealt in the case currently open before the Commission.

Dedicated Transmission System

Public Comments/Suggestions

4.4 The objector submitted that it is continuously perusing Jharkhand Urja Sancharan Nigam Ltd and the petitioner for completing the work. It further requested Hon'ble Commission to direct Jharkhand Urja Sacharan Nigam Ltd and M/s APNRL to complete the work immediately.

Petitioner's Response

4.5 The petitioner responded as follows

"*The Hon'ble Commission in its provisional order dated May 26, 2014 directed JUVNL to carry out a cost benefit analysis of routing the power from the power station through the Dedicated Transmission System vis-à-vis routing the power through the CTU as is being done currently and submit a report regarding the same to the Commission within two months of issuance of this Order. The Hon'ble Commission further directed the Petitioner and JUVNL to constitute a joint committee to resolve all the issues regarding the transmission of power from the power station to JUVNL. The Hon'ble Commission further mentioned that committee should look into the need for the proposed Dedicated Transmission System, the technical configuration of the proposed line and the sharing of costs of the transmission line and the Petitioner and JUVNL should, after mutual discussions and agreement, arrive at a way forward vis-à-vis the issue of the Dedicated Transmission System, and should submit a status report regarding the same to the Commission within two months of issuance of this Order*

JUVNL is yet to submit the Cost-Benefit Analysis report for the same. As directed by Hon'ble Commission, the Committee has met and the last meeting was held on 26th July 2016. The Committee is addressing matters in accordance with their requirements. Construction of DTS would follow such cost – benefit analysis,

In the meantime, we request the Hon'ble Commission to direct JUVNL/JBVNL to pay transmission charges (injection & withdrawal) & losses (injection & withdrawal) till suitable directions are issued by Hon'ble Commission regarding DTS…".

Commission's View

4.6 Commission had in its Tariff Order dated May 2014 for the petitioner has detailed the principle for constructing the dedicated transmission system for evacuation of power from the project. The rationale for construction of DTS should be a net reduction in the cost of power purchase.

4.7 The Commission directs the petitioner and JUVNL to expedite the resolution to this issue. The decision regarding construction of dedicated transmission system may be taken as per the provisions of the power purchase agreement signed by petitioner with JUVNL

Capital Cost

Public Comments/Suggestions

4.8 The objector submitted that the detailed break up of capital cost is showing the interest during construction and finance charges and the procurer is not liable to pay interest during construction and financing charges. Objector further requested Hon'ble Commission not to consider the interest during construction and finance charges.

Petitioner's Response

4.9 The petitioner responded as follows

"*The capital cost as per the PPA shall mean the capital cost approved by the State Commission. The State Commission determines the capital cost as per the Tariff Regulations framed by it. IDC and financing charges are calculated based on the regulations of Hon'ble Commission.*

As per clause 7.3(a) of JSERC Generation Tariff Regulations, 2010, IDC and Financing Charges are to be considered as part of Capital Cost. Clause 7.3(a) of JSERC Regulations, 2010 is reproduced below:

"7.3Capital cost for a Project shall include:

(a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan ....."

It is submitted that in any Project, Interest During Construction and Financing Charges is considered as integral part of Capital Cost as per industry practice. Further, the same practice is adopted by Central Electricity Regulatory Commission (CERC) as well as most of the State Electricity Regulatory Commissions (SERCs) across the country while approving the Capital Cost of the Project.

In view of the above, we request the Hon'ble Commission to kindly consider IDC and financing charges as per its notified regulation".

Commission's View

4.10 Commission has verified the claims of the petitioner in respect of the capital cost. The Commission has approved the capital cost in accordance with regulation 7.3 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 which states that capital cost shall include interest during construction and financing charges. The details of capital cost approved by Commission can be found out in Chapter A5 of this order.

Apportioning of Cost of Land

Public Comments/Suggestions

4.11 The objector submitted that the PPA between JBVNL and petitioner is to purchase power of 25% of generation and hence are liable to their part of land cost and land development cost as per PPA. The objector further requested Hon'ble Commission to consider part land cost and land development cost as per PPA for finalizing the order.

Petitioner's Response

4.12 The petitioner responded as follows

"The total Capital Cost is approved by the Hon'ble Commission and thereafter the Annual Capacity Charges are determined based on the regulations framed by the State Commission. It is pointed out that the tariff charged from the Respondent is only proportionate to the contracted capacity. In view of the same, the contention of the Respondent is without merits and ought to be rejected. It is also pointed out that as per the methodology adopted by Hon'ble JSERC in its Provisional Tariff Order dated May 26, 2014, the total fixed charges are computed for entire capacity and then tariff for regulated capacity is computed based on allocation of power as per PPA. Hence, this is a settled issue as per Hon'ble JSERC Order. Further, similar practice is adopted across the country by Central Electricity Regulatory Commission (CERC) as well as most of the State Electricity Regulatory Commissions (SERCs)*"*.

Commission's View

4.13 The Commission has calculated and allocated the fixed charges to JBVNL as per the contracted capacity stated in the PPA. The methodology of fixed capacity allocated to JBVNL has been detailed in Chapters A6 and A7 of this order.

Best Practices for Optimization of Capital Cost

Public Comments/Suggestions

4.14 The objector submitted that petitioner has stated about adopting best practices for optimization of capital cost. Objector further requested Commission to verify whether the best practices for procurement of materials and equipment were use or not as evidence are not given

Petitioner's Response

4.15 The petitioner responded as follows

"*APNRL has tried its level best to optimize Capital cost. Some of the steps taken are given below:*

- *For implementation of the Project, APNRL has opted for EPC and Non EPC mode of awarding Contract to optimise the project cost, as implementing project through only EPC route leads to the higher cost because there is a higher degree of risk of non-completion of project on scheduled time.*
- *APNRL endeavoured to optimise the project cost through negotiation with various BOP vendors to award the Contract on best competitive rates instead of placing an Order for entire BoP to a single Contractor.*
- *APNRL made a sincere effort to implement the Project on schedule. However, the implementation of the Project was delayed due to the reasons not attributable to APNRL project implementation planning, such as change in plant configuration due to adoption of proven technology and delay due to Land Acquisition which has been detailed in the earlier Petition filed by APNRL.*

- *APNRL's project is funded by several PSU Banks and Financial Institutions and as a matter of financial appraisal system followed by such institutions, each and every expenditure on the project has been verified and approved which also includes verification of purchase procedures and expenditures*."

Commission's View

4.16 Commission had earlier approved the provisional capital cost for the project in its order dated May 2014. The final capital cost as approved in Chapter A5 of this order after exercising due prudence check in accordance with the JSERC (Generation) Tariff Regulations 2010.

Consideration of Injection Losses for Finalization of Variable Energy Charge

Public Comments/Suggestions

4.17 The objector submitted that petitioner has factored the injection loss for computation of variable energy charge. Objector further requested Hon'ble Commission that it may not consider injection loss for finalizing the variable energy charge for FY 2012-13 and FY 2013-14 and asked Commission to consider variable energy charge as per the provisional order for FY 2012-13 and FY 2013-14.

Petitioner's Response

4.18 The petitioner responded as follows

"The Annual Fixed charges and Variable charges approved in the Provisional Tariff Order dated May 26, 2014, are on provisional basis. The numbers in the provisional petition was partially on actual figures and partially on estimation basis. Further, the Hon'ble Commission in provisional tariff order dated May 26, 2014 directed APNRL to file a petition for approval of final capital cost of the plant along with the audited accounts for the power plant. APNRL filed its final capital cost petition in compliance to the directions issued by Hon'ble JSERC in its provisional Tariff Order dated May 26, 2014. All the principles as well as operational norms adopted have been considered as approved by Hon'ble JSERC in the Provisional Tariff Order dated May 26, 2014. The variations are only on account of revision in final capital cost upon finalisation of cost and fuel parameters.

Further, APNRL has submitted the Audited financial statements and CA certificate with details of Unit wise Capital Cost separately for Unit 1 and Unit 2 to the Hon'ble Commission. Hence the True up for FY 2012-13 & FY 2013-14 and ARR & Tariff claimed for FY 2014-15 & FY 2015-16 is in accordance with the relevant provisions of JSERC Generation Tariff Regulations, 2010.

Auxiliary consumption for calculation is taken as Normative Auxiliary Consumption (i.e. 9.0%) as per the regulations of Hon'ble Commission.

JBVNL has denied paying the Injection losses by mis-interpreting the directions of Hon'ble Commission. The amount under this head have reached to more than Rs. 7.0 Cr. (without Interest) till March 2016. So APNRL have requested Hon'ble Commission for considering the injection losses for approving variable cost."

Commission's View

4.19 Commission has considered the claims of the petitioner for computation of energy charge. While determining the variable charge component, Commission has relied on the components of variable charge as stated in regulation 8.18 of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010.

Apportioning of Depreciation, Working Capital Cost

Public Comments/Suggestions

4.20 The objector submitted that PPA between JBVNL and APNRL is to purchase power of 25% of generation. The objector requested Hon'ble Commission to consider part of depreciation cost as per PPA and to approve depreciation as per the provision order for FY 2012-13 and FY 2014-15

Petitioner's Response

4.21 The petitioner responded that the total capital cost is approved by Commission and the annual capacity charges are determined based on regulations framed by State Commission. They also submitted that the tariff charged from objector is only proportionate to the contracted capacity. The petitioner further requested the Commission to consider depreciation as per its notified regulations.

Commission's View

4.22 The Commission has calculated and allocated the fixed charges to JBVNL as per the contracted capacity stated in the PPA. All the components of the fixed charges are calculated for the Unit as a whole and then apportioned according to the contracted capacity with the beneficiary. The details of fixed capacity allocated to JBVNL has been detailed in Chapters A6 and A7 of this order.

Annual Fixed Charges, Regulated Capacity Charges and Variable Charges

Public Comments/Suggestions

4.23 The objector submitted that annual fixed charges, regulated capacity charges and variable charges shall be taken as per provisional order given by Hon'ble Commission for FY 2012-13 and FY 2013-14. The objector further submitted that any increase in such charges will affect the power purchase cost of JBVNL and this will affect the JBVNL tariff to consumers.

Petitioner's Response

4.24 The petitioner responded that the petition was filed in accordance with provisions of Tariff Regulations of State Commission and the charges were calculated based on the regulations of the Commission.

Commission's View

4.25 The Commission observes that the charges as approved in the order dated May 2014 were provisional in nature and was subjected to finalization at the time of true up. The nature of claims of the petitioner was studied and the costs were finalized as per the relevant provisions of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010. The details of charges allocated to JBVNL have been included in Chapters A6 and A7 of this order.

Disallowance of Gap for FY 2012-13 and FY 2013-14

Public Comments/Suggestions

4.26 The objector submitted that the gap calculated Unit 1 – Rs 1.68Cr (FY 2012-13), Unit 1 – Rs 12.28Cr and Unit 2 – Rs 10.73Cr (FY 2013-14) is irrational and the gap should be avoided. The inefficiencies of the petitioner should not be passed on as it may affect the consumers of the state.

Petitioner's Response

4.27 The petitioner responded that the petition was filed in accordance with provisions of tariff regulations of State Commission and considering the directions passed by Commission. The petitioner further requested the Commission to consider revenue gap as per its notified regulations. The petitioner also denied the contention of the objector that the gap is due to inefficiency of the petitioner.

Commission's View

4.28 The Commission has studied the claims of the petitioner and has approved the capital cost, fixed and energy charges as per the provisions of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010. The details of charges allocated to JBVNL and the final gap or surplus arrived at have been included in Chapters A6 and A7 of this order.

Procurement of Cheaper Coal

Public Comments/Suggestions

4.29 The objector submitted that petitioner must use optimal method to procure cheaper coal as the increase in coal cost may increase the tariff to be paid to APNRL. The objector further stated that the variable charges should be taken as per provisional order given for FY 2012-13, FY 2013-14, FY 2014-15 and FY 2015-16.

Petitioner's Response

4.30 The petitioner responded as follows.

"APNRL would like to humbly submit that the fuel requirement of the Project was planned to be fulfilled from the captive Ganeshpur coal block, which was allotted to APNRL and Tata Steel on a 50:50 Joint Allocation basis. The Hon'ble Supreme Court in its Judgment in September 24, 2014 has cancelled the captive mine allocation to APNRL. APNRL has also received tapering coal linkage for 540 MW (2 x 270 MW) from Coal India Ltd. and FSAs have been signed with Central Coalfields Ltd.

APNRL requested Ministry of Coal (MoC) for conversion of its Tapering Linkage into Long Term Linkage vide its various letters. The same was followed up with request for waiver of premium towards coal supplied under tapering linkage to the company. MoC have considered the same and accordingly, decreased the premium from 40% to 20% and have also increased the quantum of tapering linkage, i.e. 50% from 25% of the contracted capacity and the tenure of tapering linkage of the Petitioner was also extended till June 2015.

APNRL has always endeavored to procure the cheaper coal available for operating the plant. APNRL has also complied with the Directive of Hon'ble Commission and hereby confirm that, the energy charge has not exceeded by more than 30% of base energy charge as approved by the Hon'ble Commission in the Order in any month and the weighted average price of use of fuel including alternative sources of fuel have never exceeded 20% of the energy charge rate based on weighted average fuel price for the previous month.

Hence, APNRL is making all efforts to procure the cheaper coal from alternate sources in the market."

Commission's View

4.31 The Commission has considered the objections and claims in this regard. Commission understands that the captive coal block allocated to the petitioner was cancelled vide an Hon'ble Supreme Court judgement. The petitioner has sourced coal from a tapering linkage allowed by Ministry of Coal. The coal blending of the petitioner in FY 2012-13 and FY 2013-14 has been considered by Commission and it could be seen that the petitioner relied on the cheapest source of coal.

4.32 However, the coal blend mix allowed by Commission for FY 2014-15 and FY 2015-16 is on a provisional basis and the petitioner is directed to ensure that the coal is sourced from the cheapest means available. The quantum of costly imported coal should be reduced to the maximum possible extent. At the same time the petitioner should bring an end to ambiguity prevailing over fuel supply by resorting to Long term linkages.

Incentive related to plant availability factor

Public Comments/Suggestions

4.33 The objector submitted that issue of incentive should be considered by Commission as per the regulations. The objector stated that it has executed PPA for 122.85MW and the petitioner has billed the objector for capacity charges as per the contracted capacity availability. The objector further stated that this practice is not in line with the regulations and the plant availability is not being furnished by ERLDC/ERPC.

4.34 The objector also enclosed the note of discussion held in 116th OCC meeting ERPC regarding plant availability of Maithon Power Limited (Similar to APNRL who has part of its full capacity tide under long term PPA and allocations are in MW) in which it was suggested to follow existing regulation.

4.35 The objector further requested that the petitioner may be directed to bill capacity charges with respect to total plant availability in accordance to the regulation.

Petitioner's Response

4.36 The petitioner responded as follows.

"As per the PPA between APNRL and JBVNL(erstwhile JSEB), definition of Availability is reproduced below (copy of the captioned PPA is attached as Annexure-3):

<u>*Availability Factor" or "Availability": shall have the meaning ascribed thereto in ABT (provided that in place of Installed capacity and Normative auxiliary consumption it shall be Contracted Capacity);*</u>

Thus, for power supply to JBVNL, APNRL's availability have to be contract specific not plant specific. APNRL have honored its contract 92.14% & 92.81% in FY 2012-13 & FY 2013-14 respectively (after the consent for offtake by JBVNL).

APNRL being a CTU connected plant selling power to more than one State, it come under preview of ERLDC. ERLDC denied giving Availability Certificate to APNRL because APNRL is not a Central Generating Unit (CGS), its contract are not based on plant capacity but are fixed quantum contracts and it have not signed 100% PPA in Long-term basis. Kindly note, APNRL also requested availability certificate from Jharkhand SLDC, which went unresponsive from Jharkhand SLDC.

Thus, for power supply to JBVNL, Contract Availability is applicable for the captioned PPA. Under the present PPA, the state draws power at a concessional rate as per the MOU between Government of Jharkhand and the Petitioner. The Petitioner has always supplied power based on Monthly Dispatch Schedule provided to JBVNL, which has not been rejected at any time. In the event of change in interpretation of Availability Factor departing from the PPA, it would have significant impact on the revenue realization from the power supplied at variable cost. Power has been supplied based on availability and hence the basis is Contracted Capacity"

Commission's View

4.37 The Commission has considered the calculation of incentive as per the provisions specified in JSERC (Generation Tariff) regulations, 2010. The petitioner failed to submit the requisite documents such as availability certificates from load dispatch centre / ERPC even after Commission pointing out the same in its data gaps. Due to non-availability of requisite documents Commission has considered the information submitted and approved the availability of 85% according to normative parameters. Incentive calculation has been done based on approved availability, of the Generation Station of the petitioner, against contracted capacity (as per provisions of the power purchase agreement between petitioner and JBVNL (erstwhile JSEB)).

A5: CAPITAL COST OF THE PROJECT

5.1 The Commission in its Provisional Order on Petition for approval of Capital Cost, Business Plan and MYT Petition for FY 2012-13 to FY 2015-16 for Adhunik Power and Natural Resources Limited (APNRL) dated 26th May, 2014 provisionally approved the capital cost of the project.

5.2 The Commission has analyzed the submissions of the Petitioner with respect to the approval of final Capital Cost of Unit-1 and Unit-II of its project and has undertaken the approval exercise in accordance with the applicable regulations. The component-wise description of the Petitioner's submission and the Commission's analysis thereof is provided hereunder.

Petitioner's submission

5.3 The Petitioner in the petition dated April 30th, 2015 submitted the total projected capital cost as on COD for Unit-1 and Unit-2 at Rs 3,344.21Cr. The major components of the capital cost submitted by the Petitioner are detailed hereunder:

a) Land and Site Development

b) Preliminary & Preoperative Expenses

c) Plant and Machinery

d) Civil Works & Infrastructure

e) Interest During Construction and Financing Charges

5.4 The break up summary of the total projected capital cost and the unit wise capital cost as submitted by the Petitioner in the Petition dated April 30th, 2015 is shown in the table below:

Table 8 Summary of the Capital Cost submitted by the Petitioner (Rs Cr)

Particulars	Unit 1 Estimated Cost till COD of the Project	Unit 2 Estimated Cost till COD of the Project	Total Cost till CoD of the Project
Land and Land Development	49.12	49.12	98.24
Pre operative Expenses	156.66	168.63	325.29
Plant & Machinery	990.31	981.60	1,971.91
Civil Works and Infrastructure	171.14	171.14	342.27
Total Project Hard Cost	**1,367.23**	**1,370.49**	**2,737.72**
Interest during Construction(IDC & Financing Charges)	295.44	311.04	606.49
Total Project Cost(Including IDC)	**1,662.68**	**1,681.53**	**3,344.21**

5.5 The Petitioner in the petition dated April 30th, 2015 submitted that COD of the plant was declared on January 21, 2013 for Unit 1 and on May 19, 2013 for Unit 2.

5.6 The Petitioner also submitted that the Petitioner has endeavored to optimize the capital cost of the Project. For implementation of the Project, the Petitioner has opted for EPC and Non EPC mode of awarding contract to optimize the project cost, as implementing project through only EPC route leads to the higher cost because there would be a higher degree of risk of non-completion of project on scheduled time. Further the Petitioner endeavored to optimize the project cost through negotiation with various BOP vendors to award the contract on best competitive rates instead of placing an Order for entire BoP to a single contractor.

5.7 The Petitioner claims to have made a sincere effort to implement the Project on schedule. However, the Petitioner submitted that the implementation of the Project was delayed due to the reasons such as change in plant configuration due to adoption of proven technology and delay due to Land Acquisition.

5.8 The Petitioner further quoted the CERC order dated June 04, 2012 which approved the benchmark norms as on December, 2011 for thermal power station / unit size(s) 500/600/660/800 MW. The order states that the hard cost of 500MW to 800 MW unit size varies from Rs 4.30 Cr/MW to Rs 5.40 Cr/MW project

5.9 The Petitioner further stated that the hard cost (total cost excluding IDC and financing charges) of the project works out to around Rs 5.07 Cr/MW.

Commission's Analysis

5.10 As per the provisions specified in Regulation 7.3 of the Generation Tariff regulations, 2010 (quoted below), the Commission shall approve the capital cost of a power project based on the actual expenditure incurred by the developer (including IDC) upto COD subject to prudence check by the Commission.

"7.3 Capital cost for a Project shall include:

(a) the expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan - (i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, - up to the date of commercial operation of the project, as admitted by the Commission, as admitted by the Commission after prudence check shall form the basis for determination of tariff;

(b) capitalised initial spares subject to the ceiling norms specified as under:

i. Coal-based/lignite fired thermal generating stations – 2.5 % of original project cost *ii. Gas Turbine/Combined Cycle thermal generating stations- 4.0% of original project cost*

iii. Hydro Generating stations – 1.50% of the original project cost

Provided that where the benchmark norms for initial spares have been published as part of the benchmark norms for capital cost under first proviso to clause 7.4 of these Regulations, such norms shall apply to the exclusion of the norms specified herein.

(c) additional capital expenditure determined under clause 7.5 and 7.6 of these Regulation

Provided that the assets forming part of the Project, but not in use shall be taken out of the capital cost:

7.4 The capital cost admitted by the Commission after prudence check shall form the basis for determination of tariff:

Provided that in case of the thermal generating station prudence check of capital cost may be carried out based on the benchmark norms to be specified by the Central Commission from time to time:

Provided further that in cases where benchmark norms have not been specified by the Central Commission, the Commission may specify the benchmark norms or allow the capital cost on the basis of a prudence check which shall include scrutiny of the reasonableness of the capital expenditure, financing plan, interest during construction, use of efficient technology, cost over-run and time over-run, and such other matters as may be considered appropriate by the Commission for determination of tariff:

Provided also that the Commission may issue guidelines for vetting of capital cost of hydro-electric projects by independent agency or expert and in that event the capital cost as vetted by such agency or expert may be considered by the Commission while determining the tariff for the hydro generating station:

...

Provided also that where the power purchase agreement entered into between the Generating Company and the Beneficiaries, provide for a ceiling of actual expenditure, the capital expenditure admitted the Commission shall take into consideration such ceiling for determination of tariff:"

5.11 The Petitioner submitted the capital cost of Unit 1 and Unit 2 as on COD at Rs 3344.21 Cr. The Petitioner also submitted the CA certificate for capital cost incurred as on COD i.e. Rs 3344.21 Cr.

5.12 The Commission observed that the audited accounts for FY 2013-14 states an amount of Rs 3,310.82 Cr in Gross Block as on 31st March 2014. The Commission directed the Petitioner to clarify the mismatch between gross block and the amount specified in the CA certificate. The Petitioner responded by submitting the following

- CA certificate with details of unit wise capital cost separately for Unit 1 and Unit 2 has already been submitted

- Amount of Rs 33.28Cr is a part of capital work in progress in the audited accounts.

5.13 The Commission observed that the CA certificate produced by the Petitioner states the capital cost incurred till COD of the project. However it does not provide any detail of capital work in progress. As per the CA certificate submitted by the Petitioner, the total incurred amount of Rs 3344.21 Cr has been distributed among cost of land, cost of mechanical works, BoP electrical, civil works and other assets.

5.14 Even after directions from the Commission vide the letters on discrepancy and additional information requirements, the Petitioner has been unable to provide adequate justification as to why the 'capital works in progress' have been considered as part of the capital cost of each of the Units and provide reliable details of the capital cost as on CoD of each unit of the project.

5.15 In light of the above issues the Commission is constrained to rely on the audited accounts of the Petitioner for prudence check and approval of the capital cost of the Petitioner. Accordingly the capitalisation achieved as on March 31st 2014 has been considered for approval of the capital cost of project. As per the accounts of FY 2013-14, the capitalised amount was Rs 3314.24 including intangible assets and excluding work in progress. The Commission has apportioned this capital cost further for Unit-I and Unit-II of the project the ratio in which the total amount is divided among the two units as per the CA certificate for capital cost incurred up to CoD of the Units.

5.16 The petitioner had also submitted the break-up of total capital cost into soft and hard costs. As per the submission the hard cost constituted 2737.37 Cr (81.86%) and soft cost constituted 606.49 Cr (18.13%). Commission further checked the audited accounts of the petitioner to study the nature and actual expenditure on interest during construction. Apropos the audited accounts the finance charges incurred during construction is coming under the account head pre-operative expenses.

5.17 The definition of pre-operative expenses as per the audited accounts of petitioner is shown below

The expenditure incurred during the construction period is classified as pre-operative expenditure, pending capitalization and will be apportioned to the assets on the completion of project

Pre-operative expenses by its very nature is capital in nature. Hence, Commission has verified the costs booked under this head in the accounts of petitioner till FY 2013-14. Commission found that an amount of Rs 889.23 Cr was booked under pre-operative expenses as per the audited accounts till FY 2013-14. This amount also includes the interest charges incurred during construction.

5.18 The total of interest during construction and pre-operative expenses as per the submission of petitioner vide its petition amounted to Rs 931.78 Cr whereas the actual cost booked under petitioner's account in the head of preoperative expense (including interest during construction) is Rs 889.23 Cr. This translates to an amount of Rs 42.54 Cr being claimed over and above the actual expenditure.

5.19 The total cost claimed by petitioner before apportioning soft costs and after apportioning soft costs is the same. The summary of petitioners claim of capital cost through separate heads of cost are shown in the below table

Table 9: Summary of Capital Cost by Petitioner

Particulars	Unit 1 Estimated Cost till COD of the Project	Unit 2 Estimated Cost till COD of the Project	Total Cost till CoD of the Project
Cost components before apportionment of soft costs			
Land and Land Development	49.12	49.12	98.24
Pre operative Expenses	156.66	168.63	325.29
Plant & Machinery	990.31	981.60	1,971.91
Civil Works and Infrastructure	171.14	171.14	342.27
Total Project Hard Cost	**1,367.23**	**1,370.49**	**2,737.72**
Interest during Construction(IDC & Financing Charges)	295.44	311.04	606.49
Total Project Cost(Including IDC)	**1,662.68**	**1,681.53**	**3,344.21**
Cost components after apportionment of soft costs			
Land & Site Development	49.12	49.12	98.24
Plant & Machinery in generating stations including plant foundations	1,330.46	1,351.12	2,681.58
Building & Civil Engineering works of a permanent character	283.10	281.29	564.39
Total Project Cost	**1,662.68**	**1,681.53**	**3,344.21**

5.20 Hence from the table and above findings it can be concluded that the amount of Rs 42.54 has been erroneously charged to asset components which has not been incurred. The Commission has reduced the capital cost to this amount from the gross block considered for approving the capital cost.

5.21 As discussed in para 5.15 an amount of Rs 3,314.24 Cr was considered towards capital cost which is further reduced by the amount of Rs 42.54 as stated in para 5.20. The approved capital cost is as shown in the table below.

Table 10: Capital Cost approved by Commission

Particulars	Unit 1 Cost till COD of the Project	Unit 2 Cost till COD of the Project	Total Cost till CoD of the Project
Land and Land Development	48.49	48.49	96.98

Particulars	Unit 1 Cost till COD of the Project	Unit 2 Cost till COD of the Project	Total Cost till CoD of the Project
Land owned under full title	37.43	37.43	74.86
Land held under lease	11.06	11.06	22.12
Plant & Machinery	1359.99	1381.11	2741.10
Civil Works and Infrastructure	209.94	208.57	418.51
Other Assets	7.55	7.55	15.11
Total Project Cost	**1625.98**	**1645.72**	**3271.69**

5.22 Based on the observations made above, the Commission has approved capital cost for Unit 1 and Unit 2 of the power plant at Rs 1625.98 Cr and Rs 1645.72 Cr respectively. Accordingly, the total capital cost of Stage-I of project is approved at Rs 3271.69 Cr.

A6: TRUE UP FOR FY 2012-13 AND FY 2013-14

Operational Parameters
Availability

Petitioner's submission

6.1 The Petitioner in the petition dated April 30th, 2015 did not submit the availability for Unit 1 and Unit 2. Further as a reply to the data gaps pointed out by Commission, the Petitioner has submitted that they have approached Jharkhand SLDC for issuing the monthly availability certificates but have not received the same.

Commission's Analysis

6.2 Regulation 8.6 of the Generation Tariff Regulations, 2010 (quoted below) prescribes the norm for approving the availability of a new generating station.

"8.6 The norms of operation for generating stations other than existing stations shall be as under:

(a) Normative Annual Plant Availability Factor (NAPAF): All thermal generating stations, NAPAF shall be 85%."

6.3 The petitioner was unable to submit requisite certificates from SLDC/ERPC for certifying the availability.

6.4 Accordingly, the Commission approves availability for Unit 1 and Unit 2 at Normative Annual Plant Availability Factor i.e. at 85%. The Commission also directs the petitioner to submit requisite certificates certifying availability against contracted capacity for FY 2012-13 and FY 2013-14 along with its next tariff petition. Commission may make appropriate adjustments as it deems appropriate.

Generation

Petitioner's submission

6.5 The Petitioner in the petition dated April 30th, 2015 submitted that the Petitioner has signed PPA with JUVNL/JBVNL (earlier JSEB) for the 122.85 MW capacity (25% of 491.4 MW, i.e., Gross Capacity of 2 Units of 270 MW each, totaling to 540 MW less Normative Auxiliary Consumption).

6.6 Further the Petitioner has submitted that the average PLF for Generation plant was 62.63% for Unit 1 in FY 2012-13, 57.85% for Unit 1 and 56.34% for Unit 2 in FY 2013-14.

6.7 The gross generation submitted by the Petitioner in its petition dated April 30th, 2015 is shown in the following table.

Table 11 Gross generation submitted by the Petitioner for Unit 1 and Unit 2

Particulars	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Unit 1	MW	270	270	270
Plant Load Factor	%	62.63%	57.85%	56.34%
Gross Generation	MU	284.09	1,368.20	1,157.26

Commission's Analysis

6.8 The Commission has considered the actual COD of Unit 1 and Unit 2, and the actual PLF as submitted by the Petitioner (for Unit 1 and Unit 2) for arriving at the gross generation for the year in which the Units were commissioned.

6.9 Accordingly, the generation for Unit 1 is approved at 280.03 MU for FY 2012-13 considering 69 days of operation and 1,368.20 MU for FY 2013-14 towards true up of gross generation.

6.10 Similarly, the gross generation from Unit 2 for FY 2013-14 is approved at 1,153.66 MU towards true up for 316 days of operation.

6.11 The table below shows the gross generation approved by the Commission for both the units towards true up of FY 2012-13 and FY 2013-14:

Table 12 Gross Generation of both units approved by the Commission towards True up

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
Generation(MU)	2012-13			2013-14		
Unit 1	380.05	284.09	280.03	2,010.42	1,368.20	1,368.20
Unit 2	-	-		1,740.53	1,157.26	1,153.66

Auxiliary Consumption, Station heat rate and Secondary Fuel Oil Consumption

Petitioner's submission

6.12 The Petitioner in the petition dated April 30th, 2015, submitted that the auxiliary consumption both for Unit 1 at 10.85% for FY 2012-13 and at 9.30% for FY 2013-14. Further, the Petitioner submitted the auxiliary consumption for Unit 2 for FY 2013-14 at 9.41%.

6.13 The Petitioner in the petition dated April 30th, 2015 submitted that the Station Heat rate both for Unit 1(FY 2012-13 and FY 2013-14) and Unit 2 (FY 2013-14) at 2,387 kCal/kWh.

6.14 The Petitioner also submitted the Secondary Fuel Oil Consumption for both for Unit 1(FY 2012-13 and FY 2013-14) and Unit 2 (FY 2013-14) at 1 ml/kWh.

Commission's Analysis

6.15 Regulation 8.6 of the Generation Tariff Regulations, 2010 (quoted below) prescribes the norm for approving the operational parameters including auxiliary consumption, station heat rate and secondary fuel oil consumption of a generating station.

"Auxiliary Energy Consumption

8.6(c) (i) ***Coal Based generating Stations***

200 MW Series	*With Natural Draft cooling Tower or without cooling towers*	*8.50%*
500 MW Series- Steam Driven Boiler Feed Pumps	*With Natural Draft cooling Tower or without cooling towers*	*6%*
500 MW Series- Electrically driven Boiler Feed Pumps	*With Natural Draft cooling Tower or without cooling towers*	*8.50%*

Provided further that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%:

(b) Gross Station Heat Rate:

(i) Coal-based and lignite-fired Thermal Generating Stations = 1.065 X Design

Heat Rate (kCal/kWh)

Where, the Design Heat Rate of a unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating(kg/cm2	*150*	*170*	*170*	*247*	*247*
SHT/RHT (0C)	*535/535*	*537/537*	*537/565*	*537/565*	*565/593*
Type of BFP	*Electrical Driven*	*Turbine driven*	*Turbine Driven*	*Turbine Driven*	*Turbine Driven*
Max Turbine Cycle Heat rate (kCal/kWh)	*1955*	*1950*	*1935*	*1900*	*1850*
Min. Boiler Efficiency					

Sub-Bituminous Indian Coal	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Bituminous Imported Coal	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Max Design Unit Heat rate (kCal/kWh)					
Sub-Bituminous Indian Coal	*2300*	*2294*	*2276*	*2235*	*2176*
Bituminous Imported Coal	*2197*	*2191*	*2174*	*2135*	*2079*

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken;

Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;

Provided also that if one or more units were declared under commercial operation prior to 1.4.2011, the heat rate norms for those units as well as units declared under commercial operation on or after 1.4.2012 shall be lower of the heat rate norms arrived at by above methodology and the norms as per clause 8.4 of these Regulations;

Note: In respect of units where the boiler feed pumps are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP.

...

(d) Secondary Fuel Oil Consumption for Coal based generating stations: 1.0 ml/kWh."

6.16 The Commission approves the auxiliary consumption as per the norms towards true up of FY 2012-13 and FY 2013-14. The Commission feels that the plant is relatively new and higher auxiliary consumption leads to reduced net generation from the plant. Hence, the auxiliary consumption is approved at 9%.

6.17 As per Regulation 8(i)(b) cited in paragraph 6.15 above, the Commission has determined the design heat rate considering the plant specifications mentioned in the performance guarantee provided by the manufacturer (M/s Bharat Heavy Electricals Ltd.) in "Annexure-B Performance Guarantee Schedule" of the services contract between the Petitioner and M/s Bharat Heavy Electricals Ltd. The manufacturer has guaranteed the Turbine Cycle Heat Rate (at 100% TMCR with zero percent make up) at 1943 kCal/kWh and boiler efficiency at 86.7% for both Unit 1 and Unit 2. The unit design heat rate has been arrived at 2241 kCal/kWh by using guaranteed turbine cycle heat rate and boiler efficiency. By multiplying the unit design heat rate with the factor specified in the said regulations i.e. 1.065, the Commission arrived at the heat rate of 2387 kCal/kWh and accordingly approves the same.

6.18 The Commission also approves the Secondary Fuel Oil Consumption at 1 ml/kWh as specified in the regulation cited in paragraph 6.15 above.

Coal Mix, Coal Cost, Transit loss and GCV

Petitioner's submission

6.19 The Petitioner submitted that the fuel requirement of the project was planned to be fulfilled from the captive Ganeshpur coal block which was allotted to the Petitioner and Tata Steel on a 50:50 joint allocation basis. Further the Petitioner submitted that the Hon'ble Supreme Court in its judgement dated September 24th, 2014 has cancelled the captive mine allocation to the Petitioner.

6.20 The Petitioner stated that it received tapering coal linkage for 540MW (2x270MW) from Coal India Ltd and FSAs have been signed with central coal field ltd (CCL). As per the tapering linkage policy of Ministry of Coal, coal is to be supplied on tapering basis, i.e, 75%, 50%, 25%, 0% in 1st , 2nd, 3rd, 4th year from year of normative date of production of coal respectively. The coal supplied herein was supplied at 40% premium to the price of coal of CCL which was subsequently revised to 20% premium. Further, pursuant to the cancellation of coal blocks by Hon'ble Supreme Court, Ministry allowed 50% coal to be supplied at 20% premium, which has been further extended till June 2015 only. The Petitioner hence submitted that it was forced to meet its coal requirement through combination of tapering linkage, spot market, washery rejects, imported coal etc.

6.21 In its petition dated April 30th , 2015, the Petitioner submitted the following coal mix towards the true up of ARR for FY 2012-13 and FY 2013-14 for Unit 1 and Unit 2:

Table 13 Coal Mix during the Control Period submitted by the Petitioner

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Domestic Coal-Linkage	83.56%	67.13%	70.65%
Captive Coal Allocation	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	16.44%	27.75%	24.50%

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Washery Rejects	0.00%	0.72%	1.03%
Imported Coal	0.00%	4.40%	3.82%

6.22 With regards to the landed cost of coal, the submission of the Petitioner is summarised in the following table as shown below:

Table 14 Landed Cost of coal (Rs/MT) of Unit 1 & Unit 2 submitted by the Petitioner

Particulars	Unit 1		Unit 2
	2012-13	2013-14	2013-14
Domestic Coal-Linkage	2,914.39	2,906.01	2,877.64
Captive Coal Allocation	0.00	0.00	0.00
Domestic Coal-Spot Market	2,910.12	3,299.43	3,323.76
Washery Rejects	0.00	1,689.71	1,689.98
Imported Coal	0.00	4,683.71	4,770.88

6.23 With regards to the GCV of coal, the Petitioner in its petition dated April 30th, 2015 submitted the projected GCV of coal from various sources as shown in the following table.

Table 15: GCV of Coal (kcal/kg) from various sources for Unit 1 and Unit 2 submitted by Petitioner

Particulars	Unit 1		Unit 2
	2012-13	2013-14	2013-14
Domestic Coal-Linkage	3,469.16	3,717.90	3,761.42
Captive Coal Allocation	0.00	0.00	0.00
Domestic Coal-Spot Market	4,055.90	3,215.24	3,230.68
Washery Rejects	0.00	2,647.00	2,647.00
Imported Coal	0.00	3,721.05	3,724.05

Commission's Analysis

6.24 The Petitioner was allotted a captive coal block (Ganeshpur) along with Tata Steel for supply of coal to the power plant. However, the captive mine allocation to the Petitioner was cancelled after the judgement made by Hon'ble Supreme Court on writ petition (CRL) No 120 of 2012. As per the latest information submitted by the Petitioner, the Petitioner has obtained a tapering coal linkage from Coal India limited and fuel supply agreements have been signed with Central Coal fields Ltd. Petitioner also submitted that it is forced to meet its coal requirement through combination of tapering linkage, spot market, washery rejects and imported coal.

6.25 The Commission understands that the captive coal block allocated to the Petitioner has been cancelled vide the Supreme Court judgement stated as above. Hence, the Petitioner is largely depending on the domestic linkage by means of tapering linkage with CCL. Meanwhile, the Commission observes that the Petitioner primarily used domestic coal from the CCL linkage and spot market to meet its coal requirements during FY 2012-13 and FY 2013-14. The percentage of coal requirement met through the CCL linkage was 83.56% in FY 2012-13 and 67.13% in FY 2013-14 for Unit 1 and 70.65% for Unit 2 in FY 2013-14. The Petitioner has also used imported coal in FY 2013-14.

6.26 The Commission approves the coal mix for FY 2012-13 and FY 2013-14 equal to the actual coal mix achieved by the Petitioner during the year. The summary of the coal mix approved by Commission towards true up of FY 2012-13 and FY 2013-14 is shown in the table below.

Table 16 Coal Mix for FY 2012-13 and FY 2013-14 approved by the Commission – Unit 1

Coal Mix – Unit 1	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13			2013-14		
Domestic Coal-Linkage	83.56%	83.56%	83.56%	65.00%	67.13%	67.13%
Captive Coal Allocation	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	16.44%	16.44%	16.44%	35.00%	27.75%	27.75%
Washery Rejects	0.00%	0.00%	0.00%	0.00%	0.72%	0.72%
Imported Coal	0.00%	0.00%	0.00%	0.00%	4.40%	4.40%

Table 17 Coal Mix for FY 2013-14 approved by the Commission – Unit 2

Coal Mix – Unit 2	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2013-14		
Domestic Coal-Linkage	65.00%	70.65%	70.65%
Captive Coal Allocation	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	35.00%	24.50%	24.50%

Coal Mix – Unit 2	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2013-14		
Washery Rejects	0.00%	1.03%	1.03%
Imported Coal	0.00%	3.82%	3.82%

6.27 The Commission approves normative transit loss of 0.8% for coal procured from domestic sources (other than coal obtained from captive coal block) in accordance with Generation Tariff Regulations, 2010. The Commission also notes that the Central Commission, in the CERC (Terms and Conditions of Tariff) Regulations, 2014, has set a norm of 0.2% for transit loss on imported coal. The Commission approves the same for any imported coal that may be used by the plant too.

Table 18 Coal Cost (Rs/MT) of Unit 1 approved by the Commission

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13			2013-14		
Domestic Coal-Linkage	2914	2,914.39	2,914.39	2914	2,906.01	2,906.01
Captive Coal Allocation	-	0.00	0.00	-	0.00	0.00
Domestic Coal-Spot Market	2910	2,910.12	2,910.12	2910	3,299.43	3,299.43
Washery Rejects	-	0.00	0.00	-	1,689.71	1,689.71
Imported Coal	-	0.00	0.00	-	4,683.71	4,683.71

Table 19 Coal Cost (Rs/MT) of Unit 2 approved by the Commission

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2013-14		
Domestic Coal-Linkage	2914	2,877.64	2,877.64
Captive Coal Allocation	-	0.00	0.00
Domestic Coal-Spot Market	2910	3,323.76	3,323.76
Washery Rejects	-	1,689.98	1,689.98
Imported Coal	-	4,770.88	4,770.88

Table 20 GCV (Kcal/L) of coal for Unit 1 approved by the Commission

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13			2013-14		
Domestic Coal-Linkage	3,469.00	3469.16	3469.16	3,469	3,717.90	3,717.90
Captive Coal Allocation	-	0.00	0.00	-	0.00	0.00
Domestic Coal-Spot Market	4,056.00	4055.90	4055.90	4,056	3,215.24	3,215.24
Washery Rejects	-	0.00	0.00	-	2,647.00	2,647.00

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13			2013-14		
Imported Coal	-	0.00	0.00	-	3,721.05	3,721.05

Table 21 GCV (Kcal/L) of coal for Unit 2 approved by the Commission

Particulars	As Per Petition	Revised submitted by the Petitioner	Approved in MYT Order
	2013-14		
Domestic Coal-Linkage	3,469.00	3761.42	3761.42
Captive Coal Allocation	0.00	0.00	0.00
Domestic Coal-Spot Market	4,056	3230.68	3230.68
Washery Rejects	0.00	2647.00	2647.00
Imported Coal	0.00	3724.05	3724.05

Base Energy Charge Rate (ECR) and Cost of Primary Fuel

Petitioner's submission

6.28 The Petitioner has in the Petition dated April 30th, 2015 projected the energy charge for the period FY 2012-13 & FY 2013-14 has made the following submission

"5.2. The energy charges of Rs. 2.134/kWh and Rs. 2.071 /kWh was approved by the Commission for Unit 1 for FY 2012-13 and FY 2013-14 in Provisional Order dated May 26, 2014. The energy charges considering the normative performance parameters and actual fuel prices and calorific value are in variation with the energy charges approved by the Commission. Such variation in the energy charges approved by the Commission and as claimed for the purpose of Truing up is only due to the variation in the actual prices and GCV of the fuel, which are not attributable to APNRL. Though the actual performance parameters were higher than the normative performance parameters, the Petitioner has computed the energy charges for truing up based on actual generation, actual auxiliary consumption, normative heat rate and normative secondary fuel oil consumption."

6.29 The Petitioner has submitted the following claim towards base energy charge rate of both units towards true up as shown below:

Table 22 Energy Charge Rate submitted by the Petitioner for Unit 1 & Unit 2

Particulars	Uom	Unit 1 FY 2012-13	Unit 1 FY 2013-14	Unit 2 FY 2014-15
Operational Parameters				
Aux Consumption	%	10.85%	9.30%	9.41%
Heat Rate	kCal/ kWh	2,387	2,387	2,387

Particulars	Uom	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2014-15
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00
Secondary Oil Consumption	kL/year	284.09	1,368.20	1,157.26
Calorific Value of Oil	kCal/L	9,346.83	9,346.83	9,346.83
Coal				
Weighted Average Calorific Value of Indian Coal	kCal/kg	3,565.64	3,570.87	3,618.47
Weighted Average cost of Indian Coal	Rs/Tonne	2,913.69	3,084.78	3,047.04
Energy Charge Rate considering coal Cost only	Rs/kWh	2.20	2.28	2.23
Injection Loss Considered	%	1.39%	1.15%	1.15%
Energy Charge rate	Rs/kWh	2.23	2.31	2.25

Commission's Analysis

6.30 As per the Generation Tariff Regulation, 2010, the energy (variable) charge shall cover primary fuel costs and shall be payable by every Beneficiary for the total energy scheduled to be supplied to such Beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month.

6.31 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Regulation 8.17 and 8.18 of the Generation Tariff Regulation, 2010 as quoted below:

"8.17 Total Energy charge payable to the Generating Company for a month shall be: = (Energy charge rate in Rs. /kWh) x {Scheduled energy (ex-bus) for the month in kWh.}

8.18 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formula:

(a) For coal based stations

ECR = (GHR – SFC x CVSF) x LPPF x 100/ {CVPF x (100 – AUX)}

Where, AUX - Normative auxiliary energy consumption in percentage

CVPF - Gross calorific value of primary fuel as fired, in KCal per kg, per litre or per standard cubic metre, as applicable.

CVSF - Calorific value of secondary fuel, in KCal per ml

ECR - Energy charge rate, in Rupees per kWh sent out.

GHR - Gross station heat rate, in KCal per kWh.

LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.

SFC - Specific fuel oil consumption, in ml per kWh" .

6.32 The Commission notes that the Petitioner, while calculating ECR, considered the cost of coal without including the transit loss of coal, and later grossed up ECR by 0.80%. This calculation is not in accordance with the Generation Tariff Regulations, 2010. As per the formula specified in the said regulations, the landed cost of coal, inclusive of any transit loss, shall be used for calculation of ECR. Further, no grossing up of ECR by transit loss is required.

6.33 The Commission further observed that the Petitioner has escalated the energy charge rate with the injection loss (%). However, Commission finds no merit in its submission in this regard and feels that the calculation of ECR after grossing up the injection loss is against the provisions of regulations. Commission hence has not considered the injection loss for grossing up the ECR.

6.34 Accordingly, the Commission has calculated the base ECR for the Control Period as per the formula stated above and after considering the operational parameters as approved in this order. The table below contain the base ECR approved by the Commission for the period FY 2012-13 & FY 2013-14 towards true up.

Table 23 Approved Energy Charge Rate for Unit 1

Parameters	UoM	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
		FY 2012-13			FY 2013-14		
Gross Generation	MU	380.05	284.09	280.03	2010.42	1368.20	1368.20
Heat Rate	KCal/kWh	2,387	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	KCal/l	9,553	9,346.83	9,346.83	9,553	9,346.83	9,346.83
Weighted average cost of coal	Rs/MT	2,913	2,914	2,914	2,913	3,085	3,085
Weighted average GCV of coal	kCal/L	3,566	3,566	3,566	3,674	3,571	3,571
Energy Charge Rate	**Rs/kWh**	**2.134**	**2.23**	**2.114**	**2.071**	**2.31**	**2.234**

Table 24 Approved Energy Charge Rate for Unit 2

Parameters	UoM	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
		FY 2013-14		
Gross Generation	MU	1,740.53	1,157.26	1,153.66
Heat Rate	KCal/ kWh	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00
Calorific Value of Oil	KCal/l	9,553	9,346.93	9,346.83
Weighted average cost of coal	Rs/MT	2,913	3,047.04	3,047.04
Weighted average GCV of coal	kCal/L	3,674	3,618.47	3,618.47
Energy Charge Rate	**Rs/kWh**	**2.071**	**2.25**	**2.178**

6.35 The energy charge rate as shown above has been approved by the Commission towards the true up of FY 2012-13 & FY 2013-14 for Unit 1 and Unit 2.

Determinants of Fixed Charges

Depreciation

Petitioner's submission

6.36 In its petition dated April 30th, 2015, the Petitioner submitted the depreciation for Unit 1 and Unit 2 has been computed on the basis of the JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations, 2010 and the depreciation rate has been considered same as notified in the Appendix – I of the regulations.

6.37 Further the Petitioner submitted that the depreciation for Unit 1 for FY 2012-13 has been computed on a pro-rata basis based on the number of days of operation in FY 2012-13 and the same methodology has been used for computation of depreciation for FY 2013-14 too.

6.38 The depreciation submitted by the Petitioner is given in the table below:

Table 25 Depreciation (Rs Cr) submitted by the Petitioner for Unit 1 and Unit 2

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Depreciation	15.35	80.06	70.43

Commission's Analysis

6.39 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Depreciation are given below:

"7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission;

Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant

7.29 The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.

7.31 Depreciation shall be calculated annually based on 'Straight Line Method' and at rates specified in Appendix-I to these Regulations for the assets of the generating station."

7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis.

6.40 Accordingly, the Commission calculated the depreciation for Unit 1 and Unit 2 by considering the approved final capital cost for Unit I and Unit II, and the depreciation rates specified in Appendix-I of Generation Tariff Regulations, 2010.

6.41 Further, the Commission calculated the depreciation for Unit 1 for FY 2012-13 on pro-rata basis (for 69 days) considering the actual COD of unit i.e. January 21, 2013. Similarly the Commission calculated the depreciation for Unit 2 for FY 2013-14 on pro-rata basis (for 316 days) considering the actual COD of unit i.e. May 19, 2013.

6.42 The following table shows the depreciation for Unit 1 and Unit 2 as calculated by the Commission as against that submitted by the Petitioner:

Table 26 Depreciation approved by the Commission for Unit 1

Asset Type	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13 (Rs Cr)			2013-14 (Rs Cr)		
Land owned under full title	-	-	-	-	-	-
Land held under lease	0.07	0.07	0.07	0.37	0.36	0.37
Plant and machinery	13.11	13.47	13.57	69.34	70.25	71.81
Building & civil works	1.82	1.81	1.33	9.61	9.46	7.01
Other Assets			0.08			0.40
Sub Total	**15.00**	**15.35**	**15.05**	**79.33**	**80.06**	**79.59**

Table 27 Depreciation approved by the Commission for Unit 2

Asset Type	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2013-14 (Rs Cr)		
Land owned under full title	-	-	-
Land held under lease	0.36	0.31	0.32
Plant and machinery	57.84	61.96	63.13
Building & civil works	8.42	8.16	6.03
Other Assets			0.35
Sub Total	**66.63**	**70.43**	**69.83**

Debt Equity Ratio

Petitioner's submission

6.43 The Petitioner in the petition dated April 30th, 2015 submitted that 74.79% of the project cost has been funded from debt and remaining 25.21% is the equity contribution. The following table shows the unit wise debt equity ratio submitted by the Petitioner.

Table 28 Debt Equity submitted by the Petitioner for Unit 1

Particulars	%	Amount (Rs Cr)
Debt	74.79%	1,243.53
Equity	25.21%	419.14
Total	**100.00%**	**1,662.68**

Table 29 Debt Equity submitted by the Petitioner for Unit 2

Particulars	%	Amount (Rs Cr)
Debt	74.79%	1,257.63
Equity	25.21%	423.90
Total	**100.00%**	**1,681.53**

6.44 However, the Petitioner later vide letter No APNRL/JSERC/2016-17/631 (reply to discrepancies) submitted that the debt-equity ratio is 72.95%:27.05% for total project cost of Rs 3,344.21 Cr. The Petitioner submitted that as per the audited accounts of FY 2014-15 the equity of Petitioner is Rs 904.51Cr (Share Capital of Rs 649.37Cr and Securities Premium Account of Rs 255.44Cr).

Commission's Analysis

6.45 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Debt Equity Ratio are quoted below:

"7.14 For the project declared under commercial operation on or after 1.04.2011, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that where equity deployed is less than 30% of capital cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment"

Explanation:-

Any expenditure incurred or projected to be incurred on or after 1.04.2011 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernization expenditure for life extension shall be serviced in the manner specified in clause 7.14 of this Regulation."

6.46 As per the relevant Regulation under Generation Tariff Regulations, 2010 quoted above the Commission may approve equity contribution upto 30% of the capital cost. The Petitioner has submitted the actual equity contribution at 25.21% for Unit 1 and Unit 2 respectively and later through additional submission revised it upwards to 27.05%.

6.47 The Commission has verified the actual equity contribution in the year at which the CoD was achieved. The equity contribution as per the audited accounts has been taken as the equity funding towards the capital cost of the project. The Commission observed an equity contribution of Rs 787 Cr in FY 2012-13 and Rs 859 Cr in FY 2013-14 as per the audited accounts for FY 2012-13 and FY 2013-14. Thus considering the approved capital cost of Rs 3,271.69 Cr the equity contribution will be 24.06% for FY 2012-13 and 26.25% for FY 2014-15. The remaining amount of the capital cost approved has been considered to be funded through debt.

6.48 The Commission has considered the debt: equity ratio of 75.94%:24.06% for FY 2012-13 and 73.75%:26.25% for FY 2013-14. Since Unit 1 achieved COD in FY 2012-13, debt-equity ratio of FY 2012-13 is applied to the capital cost of Unit. However, the debt-equity ratio will change as per the actual debt-equity ratio for FY 2013-14. This will be applicable for both the units. Accordingly, the Commission approves the debt equity ratio as shown in the table below for both units:

Table 30 Debt Equity ratio of Unit 1 (FY 2012-13) approved by the Commission

Particulars	Approved in MYT Order		Submitted by APNRL		Approved True Up By JSERC	
	%	Amount (Rs Cr)	%	Amount (Rs Cr)	%	Amount (Rs Cr)
Debt	72.86%	1,211.12	74.79%	1,243.53	75.94%	1234.78
Equity	27.14%	451.14	25.21%	419.14	24.06%	391.20

Particulars	Approved in MYT Order		Submitted by APNRL		Approved True Up By JSERC	
Total	**100.00%**	**1,662.26**	**100.00%**	**1,662.68**	**100.00%**	**1,625.98**

Table 31 Debt Equity ratio of Unit 2 (FY 2013-14) approved by the Commission

Particulars	Approved in MYT Order		Submitted by APNRL		Approved True Up By JSERC	
	%	Amount (Rs Cr)	%	Amount (Rs Cr)	%	Amount (Rs Cr)
Debt	72.32%	1,174.74	74.79%	1,257.63	73.75%	1213.64
Equity	27.68%	449.63	25.21%	423.90	26.25%	432.08
Total	**100.00%**	**1,624.37**	**100.00%**	**1,681.53**	**100.00%**	**1,645.72**

Interest on Debt

Petitioner's submission

6.49 The Petitioner, in the petition dated April 30th, 2015, submitted that the interest on debt has been claimed as per relevant clause of JSERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2010.

6.50 The Petitioner submitted that the project has been funded with total debt of Rs. 2,501.17 Cr and 843.04 Cr from equity contribution of the Petitioner.

6.51 The interest rates as submitted by the Petitioner for the computation of the interest on debt are based on the actual interest rates payable i.e. 13.11% and 13.43% for Unit 1 in FY 2012-13 and FY 2013-14 and 13.33% for Unit 2 in FY 2013-14. The following tables shows the interest on debt submitted by the Petitioner :

Table 32 Interest on Debt of both units as submitted by the Petitioner

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2014-15
Unit 1	31.07	159.57	141.52

Commission's Analysis

6.52 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Interest on Debt as quoted as under:

"7.19 The loans arrived at in the manner indicated in clause 7.13, 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.

7.20 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.

7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered

7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

6.53 The Commission has calculated the debt for each year based on the approved capital cost and considering the approved depreciation as repayment in line with the methodology specified in Generation Tariff Regulations, 2010.

6.54 In its additional submissions to the Commission, the Petitioner submitted the actual weighted average interest rate on its loan portfolio at 13.11% for FY 2012-13, 13.43 % for FY 2013-14 for Unit I and at 13.33% for FY 2013-14 for Unit 2. The Commission has considered the same for approving interest on debt for FY 2012-13, FY 2013-14 and FY 2014-15. The interest on debt approved by the Commission is shown in the tables below for both Units:

Table 33 Interest on Debt (Rs Cr) approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
Opening Balance	1,211.12	1,243.53	1,234.78	1196.13	1,228.18	1,219.73
Additions	-			-	-	(35.69)
Repayment	15.00	15.35	15.05	79.33	80.06	79.59
Closing Balance	1196.13	1,228.18	1,219.73	1116.80	1,148.12	1,104.45
Interest on Debt %	13.11%	13.11%	13.11%	13.43%	13.43%	13.43%
Rs Cr	**29.83**	**31.07**	**30.42**	**155.31**	**159.97**	**156.07**

Table 34 Interest on Debt approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14(Rs Cr)		
Opening Balance	1,174.74	1,257.63	1,213.64

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14(Rs Cr)		
Additions	-		
Repayment	66.63	70.43	69.83
Closing Balance	1108.12	1,187.20	1,143.81
%	13.33%	13.33%	13.33%
Amount in Rs. Cr	**131.73**	**141.52**	**136.03**

Return on Equity

Petitioner's submission

6.55 The Petitioner has submitted that the return on equity has been claimed as per the relevant clauses (7.15, 7.16, 7.17 & 7.18) of JSERC Generation Tariff Regulations, 2010.

6.56 The Petitioner submitted that it has calculated return on equity considering a post-tax return of 15.50% as per Generation Tariff Regulations, 2010.

6.57 The Return on equity for both units submitted by the Petitioner is shown in the following table:

Table 35 Return on Equity (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2014-15
Unit 1	15.58	81.22	71.34

Commission's Analysis

6.58 The provisions specified in the Generation Tariff Regulations, 2010 for approval of Return on Equity are as under:

"7.15 Return on equity shall be computed in rupee terms, on the equity base determined in accordance with clause 7.13, 7.14 of these Regulations. Petition for Approval of Capital Cost and Business Plan and MYT Petition for MYT Control Period for FY 2012-13 to FY 2015-16

7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations.

……………

Provided that in case of Projects commissioned on or after 1st April, 2011, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:

Provided further that the additional return of 0.5% shall not be admissible if the Project is not completed within the timeline specified above for reasons whatsoever:

7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate applicable to the Generating Company as per details shown as under:

(i)……….

(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12

Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.

7.18 Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations."

6.59 The Commission has worked out the gross normative equity of both Unit 1 and Unit 2 as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2010. The Commission has considered the return on equity at 15.50%.

6.60 However, while checking the audited accounts of the petitioner it has been observed that the petitioner has not paid any tax for the years FY 2012-13 and FY 2013-14. As such, Return on equity cannot be allowed to be grossed up with tax rate as considered by the petitioner. Further, the debt-equity considered by Commission ratio has been determined as detailed in the sections above.

6.61 The return on equity approved by the Commission is shown in the tables below:

Table 36 Return on Equity approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
Equity						
Opening Balance	451.14	419.14	391.20	451.14	419.14	391.20
Net Additions	-	-	-	-	-	35.69

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
Closing Balance	451.14	419.14	391.20	451.14	419.14	426.89
Average Equity	451.14	419.14	391.20	451.14	419.14	409.05
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t%)	20.01%	20.01%		20.01%	20.01%	
Grossed Up rate of return on equity	19.40%	19.38%	15.50%	19.40%	19.38%	15.50%
Return on equity	**16.54**	**15.58**	**11.46**	**87.52**	**81.22**	**63.40**

Table 37 Return on Equity approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14 (Rs Cr)		
Equity			
Opening Balance	449.63	423.90	432.08
Net Additions	-	-	-
Closing Balance	449.63	423.90	432.08
Average Equity	449.63	423.90	432.08
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%
Applicable tax rate (t%)	20.01%	20.01%	
Grossed Up rate of return on equity	19.40%	19.38%	15.50%
Return on equity	**75.52**	**71.34**	**57.98**

O&M Expenses

Petitioner's submission

6.62 The Petitioner in the petition dated April 30th 2015 submitted that while calculating O&M Expenses for Unit 1 & Unit 2, norms corresponding to 200/210/250 MW sets have been considered as the norm for estimating O&M expenses, as the unit size and characteristics are similar to 250 MW in line with the Hon'ble Commission's provisional order dated 26th May 2014.

6.63 The Petitioner also submitted that Unit-1 of the project got commissioned in January 2013 and, accordingly O&M expenses have been estimated on pro-rata basis for 4 months of the first financial year i.e. FY 2012-13 of COD of Unit 1 of the project.

6.64 The Summary of the O&M submitted by the Petitioner for both units in the said Petition is shown in the following table:

Table 38 O&M Expenses (Rs Cr) submitted by the Petitioner

O&M Expenses	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Unit 1	11.14	61.40	53.32

Commission's Analysis

6.65 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of O&M expenses are as under:

"New Generating Stations:

7.44 The O&M expenses (in Rs lakhs/ MW) permissible towards determination of tariff for Coal and Lignite fired (including those based on CFBC technology) shall be as follows:

Year	*200/ 210/ 250 MW sets*	*300/330/350 MW sets*	*500 MW sets*	*500 MW and above sets*
2011-12	*20.34*	*17.88*	*14.53*	*13.08*
2012-13	*21.51*	*18.91*	*15.36*	*13.82*
2013-14	*22.74*	*19.99*	*16.24*	*14.62*
2014-15	*24.04*	*21.13*	*17.17*	*15.46*
2015-16	*25.42*	*22.34*	*18.15*	*16.34*

6.66 The Generation Tariff Regulations, 2010 do not specify any norms specifically for 270 MW sets. Accordingly, the Commission has approved the O&M expenses based on the norms specified for 200/210/250 MW sets. The O&M expenses for the first year after commissioning have been approved on pro-rata basis.

6.67 The O&M expenses approved by the Commission for Unit 1 and Unit 2 are shown in the table below.

Table 39 O&M expenses approved by the Commission

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	2012-13(Rs Cr)			2013-14(Rs Cr)		
Unit 1	10.98	11.14	10.98	61.40	61.40	61.40
Unit 2	-	-	-	53.16	53.32	53.16
Total	**10.98**	**11.14**	**10.98**	**114.55**	**114.72**	**114.55**

Interest on Working Capital

Petitioner's submission

6.68 The Petitioner while computing the working capital and Interest thereon as per the Generation Tariff Regulations, 2010 has considered the working capital as the sum of the following:

(a) Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(b) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(c) Maintenance spares @ 20% of operation and maintenance expenses;

(d) Operation and Maintenance expenses for 1 month; and

(e) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

6.69 The Petitioner has considered the operation and maintenance expenses including water charges for the computation of interest on working capital.

6.70 The Petitioner in the petition dated April 30th, 2015 submitted that for calculation of Interest on Working Capital, the rate of interest has been considered at 14.75% for Unit 1 and 14.45% for Unit 2.

6.71 The Interest on working capital submitted by the Petitioner is shown in the table below:

Table 40 Interest on Working Capital (Rs Cr) submitted by the Petitioner for Unit 1

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Coal Cost for 2 months	77.17	69.37	77.86
Cost of secondary fuel oil for 2 months	2.53	2.11	2.42
Receivables for 2 months	152.85	142.57	152.82
O&M Expenses for 1 month	6.66	5.93	6.05
Maintenance Spares	3.06	14.23	12.61
Total Working Capital	242.26	234.21	251.77
Rate of Interest	14.75%	14.75%	14.45%
Interest on Working Capital	**6.85**	**34.55**	**31.60**

Commission's Analysis

6.72 The Commission has computed the interest on working capital for both Units 1 and 2 by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation 7.34 of the Generation Tariff Regulation, 2010:

(a) Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(b) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(c) Maintenance spares @ 20% of operation and maintenance expenses;

(d) Operation and Maintenance expenses for 1 month; and

(e) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

6.73 The Commission outlines the provisions laid out in the Generation Tariff Regulations, 2010 for approval of Interest on Working Capital as under:

"7.38 Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2011 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation, whichever is later during Transition period.

During Control Period rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2012 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation.

7.39 The interest on working capital shall be payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency or has exceeded the working capital loan based on the normative figures."

6.74 Accordingly the Commission calculated the Interest on Working Capital on the rates prevailing on the 21st January 2013 i.e. at 14.50% for Unit 1 as its actual COD occurred on January 21, 2013 and at 14.45% for Unit 2 which was the prevailing rate on April 1, 2013 considering the actual COD on May 19, 2013. The detailed calculation made by the Commission is shown in the tables below:

Table 41 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13			FY 2013-14		
Coal Cost for 2 months	65.07	77.17	46.53	63.15	69.37	46.36
Cost of secondary fuel oil for 2 months	2.13	2.53	1.58	2.13	2.11	1.44
Receivables for 2 months	136.16	152.85	112.02	134.34	142.57	112.14
O&M Expenses for 1 month	4.84	6.66	4.93	5.12	5.93	5.12
Maintenance Spares	2.20	3.06	2.20	12.28	14.23	12.28
Total Working Capital	**210.39**	**242.26**	**167.26**	**217.02**	**234.21**	**177.33**
Rate of Interest	14.75%	14.75%	14.50%	14.75%	14.75%	14.45%
Interest on Working Capital	**5.87**	**6.85**	**4.58**	**32.01**	**34.55**	**25.62**

Table 42 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14		
Coal Cost for 2 months	63.15	77.86	44.02
Cost of secondary fuel oil for 2 months	2.46	2.42	1.40
Receivables for 2 months	133.40	152.82	110.58
O&M Expenses for 1 month	5.12	6.05	5.21
Maintenance Spares	10.63	12.61	10.63
Total Working Capital	**214.76**	**251.77**	**171.84**
Rate of Interest	14.45%	14.45%	14.45%
Interest on Working Capital	**26.87**	**31.60**	**21.50**

Cost of Secondary Fuel Oil

Petitioner's submission

6.75 The Petitioner in the petition dated April 30th, 2015 submitted that the secondary fuel would be procured through local suppliers. The cost of LDO is considered at Rs 64,176.41/kL and at Rs 62,997.01/kL for FY 2012-13 and FY 2013-14 as per the audited accounts.

6.76 The table below shows the cost of secondary fuel oil as submitted by the Petitioner for both Unit 1 and Unit 2:

Table 43 Cost of secondary Fuel Oil submitted by the Petitioner for Unit 1 and Unit 2 towards True Up

Particulars	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Unit Capacity	MW	270	270	270
Gross Generation	MU	284.09	1,368.20	1,157.26
Normative Secondary Fuel Oil Consumption	ml/kWh	1.00	1.00	1.00
Secondary Fuel Oil Consumption at Normative Plant Availability	kL	284.09	1,368.20	1,157.26
Secondary Fuel Oil Landed Cost	Rs./kL	64,176.41	62,997.01	62,851.21
Secondary Fuel Oil Cost at Normative Plant availability	Rs. Cr.	**1.82**	**8.62**	**7.27**

Commission's Analysis

6.77 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of cost of secondary fuel oil are as under:

"7.49 Expenses on secondary fuel oil in Rupees shall be computed corresponding to normative secondary fuel oil consumption (SFC) specified in clause 8.4, 8.6 of these Regulations, in accordance with the following formula:

= SFC x LPSFi x NAPAF x 24 x NDY x IC x 10

Where,

SFC – Normative Specific Fuel Oil consumption in ml/kWh

LPSFi – Weighted Average Landed Price of Secondary Fuel in Rs./ml considered initially

NAPAF – Normative Annual Plant Availability Factor in percentage

NDY – Number of days in a year

IC - Installed Capacity in MW"

7.50 Initially, the landed cost incurred by the Generating Company on secondary fuel oil shall be taken based on actuals of the weighted average price of the three preceding months and in the absence of landed costs for the three preceding months, latest procurement price for the generating station, before the start of the year."

6.78 The Petitioner has submitted the CA certificate towards month wise cost incurred towards secondary fuel oil. The Commission has considered the same for the purpose of projection of cost of secondary fuel oil for Unit 1 and Unit 2.

Table 44 Cost of secondary fuel oil approved by the commission for Unit 1

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
Gross Generation at NAPF (MU)	380.05	284.09	280.03	2010.42	1,368.20	1,368.20
Specific Consumption of LDO at NAPF (ml/kWh)	1.00	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPF (kL)	380.05	284.09	280.03	2010.42	1,368.20	1,368.20
LDO Landed Cost (Rs/kL)	63503	64,176.41	64,176	63503	62,997.01	62,997.01
LDO Cost (Rs Cr)	**2.41**	**1.82**	**1.80**	**12.77**	**8.62**	**8.62**

Table 45 Cost of secondary fuel oil approved by the commission for Unit 2

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14(Rs Cr)		
Gross Generation at NAPF (MU)	1740.53	1,157.26	1,154
Specific Consumption of LDO at NAPF (ml/kWh)	1.00	1.00	1.00
LDO Consumption at NAPF (kL)	1740.52	1,157.26	1,154
LDO Landed Cost (Rs/kL)	63,503	62,851.21	62,851.21
LDO Cost (Rs Cr)	**11.05**	**7.27**	**7.25**

Additional Water Charges

Petitioner's submission

6.79 The Petitioner further stated that CERC (Terms and Conditions of Tariff) Regulations, 2014 stipulates that water charges for thermal generating stations shall be allowed separately. The relevant extracts of the regulation as submitted by the Petitioner is reproduced as below

"29. Operation and Maintenance Expenses:

(1) Normative Operation and Maintenance Expenses of Thermal Generating Stations…

(2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:

Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc, subject to prudence check. The details regarding the same shall be furnished along with the petition…"

6.80 The Petitioner in its petition dated April 30th, 2015 has stated that it incurred additional water charges to the extent of Rs 4.18 Cr and Rs 9.75Cr for Unit 1 in FY 2012-13 and FY 2013-14 and Rs 9.75Cr for Unit 2 in FY 2013-14.

6.81 The Petitioner submitted that an agreement was signed between Adhunik and Govt of Jharkhand for supply of water vide agreement dated 29th Aug'08. The required water was to be withdrawn or pumped by the company from the river Subarnarekha.

6.82 The Petitioner further submitted that the Water Department of Gov. of Jharkhand vide its Notification No: 2/PMC/jalapurti175/2007 dated 01.04.2011 devised various categories for water offtake and the Petitioner was asked to pay @ Rs 26.40 per thousand gallon. The same was opposed by the Petitioner and a stay order was issued by Hon'ble High Court of Jharkhand. The Petitioner submitted that it is paying the water charges at the pre-revised rate of Rs 4.50 per thousand gallons and accordingly they have claimed water charges.

Table 46: Additional Water Charges (Rs Cr) Claimed by the Petitioner for FY 2012-13 and FY 2013-14

Particulars	Unit 1		Unit 2
	FY 2012-13	FY 2013-14	FY 2013-14
Additional Water Charges	4.18	9.75	9.75

Commission's Analysis

6.83 The Commission has reviewed the submissions of the Petitioner as far as additional water charges as concerned.

6.84 JSERC Generation Tariff Regulations, 2010 clearly specify that any surplus and deficit on account of O&M expenses shall be to the account of the generating company and shall not be trued up in ARR. The relevant extracts from the regulation are reproduced below.

"True Up during Control period

6.14:

The true up across various controllable parameters shall be conducted as per principles stated below: -

(a) any surplus and deficit on account of O&M expenses shall be to the account of the generating company and shall not be trued up in ARR; and"

6.85 The Commission states that the normative O&M cost per MW as approved in the JSERC (Generation Tariff) regulations, 2010 has been arrived after duly considering all such cost parameters and any further variation on the O&M cost towards any component is not considered by Commission.

Annual Fixed Charges

6.86 Regulation 8.2 of the Generation Tariff Regulations, 2010 states that the annual fixed charges of a thermal generating station shall consist of the following

(a) Return on Equity;

(b) Interest and Financing Charges on Loan Capital;

(c) Depreciation;

(d) Operation and Maintenance Expenses;

(e) Interest Charges on Working Capital; and

(f) Cost of Secondary Fuel Oil.

6.87 The tables below show the annual fixed charges submitted by the Petitioner and approved by the Commission for each unit for the entire capacity of 270 MW.

Table 47 Annual Fixed Charges of Unit 1 for 270 MW

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
O&M Expenses	10.98	15.32	10.98	61.40	71.15	61.40
Depreciation	15.00	15.35	15.05	79.33	80.06	79.59
Interest on Loan	29.83	31.07	30.42	155.31	159.57	156.07
Return on Equity (pre - tax)	16.54	15.58	11.46	87.52	81.22	63.40
Cost of Secondary Fuel	2.41	1.82	1.80	12.77	8.62	8.62
Interest on Working Capital	5.87	6.85	4.58	32.04	34.55	25.62

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2012-13(Rs Cr)			FY 2013-14(Rs Cr)		
Annual Fixed Charges	**80.63**	**86.00**	**74.28**	**428.36**	**435.16**	**394.70**

Table 48 Annual Fixed Charges of Unit 2 for 270 MW

Particulars	Approved in MYT Order	Submitted by APNRL	Approved True Up By JSERC
	FY 2013-14(Rs Cr)		
O&M Expenses	53.16	63.07	53.16
Depreciation	66.63	70.43	69.83
Interest on Loan	131.73	141.52	136.03
Return on Equity (pre tax)	75.52	71.34	57.98
Cost of Secondary Fuel	11.05	7.27	7.25
Interest on Working Capital	26.87	31.60	21.50
Annual Fixed Charges	**364.95**	**385.23**	**345.74**

Trued Up Tariff for Unit 1 and Unit 2 and Impact of True Up

Petitioner's Submission

6.88 The Petitioner has submitted in the petition dated April 30th , 2015 that the following charges as shown in the table may be approved towards the tariff for regulated capacity for JUVNL/JBVNL for Unit 1 & Unit 2

Table 49 Claim of Petitioner towards tariff for regulated capacity for JUVNL/JBVNL

Description	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Capacity Charges for 13% of Capacity at 85% PLF	Rs Crore	12.70	64.29	56.91
Rate of Energy Charges (considering the injection losses)	Rs/kWh	2.23	2.31	2.25

6.89 The Petitioner has also claimed incentive for higher plant availability factor. The Petitioner submitted that the capacity charges have been computed at the PAF equivalent to NAPAF of 85%. The Petitioner also submitted that the capacity charges have been claimed as per JSERC Generation Tariff Regulations, 2010 Clause 8.12.

6.90 Further the Petitioner submitted that the revenue billed by the Petitioner to JUVNL/JBVNL consists of the incentive too.

6.91 The Petitioner submitted that an amount of Rs 33.01 Cr was billed, towards consumption of power from Unit 1in FY 2012-13, to JUVNL/JBVNL. Further an amount of Rs 165.39 Cr and Rs 145.55 Cr was billed, for consumption of power from Unit 1 and Unit 2 (respectively) in FY 2013-14, to JUVNL/JBVNL.

6.92 The Petitioner further submitted a revenue gap of Rs 1.68Cr towards true up of FY 2012-13, for the power supplied to JUVNL. Similarly a revenue gap of Rs 12.28 Cr for power supplied from Unit 1 and Rs 10.73 Cr for power supplied from Unit 2 was claimed by Petitioner towards true up of FY 2013-14.

6.93 The Petitioner further submitted that the interest on under recovered amount shall be claimed as per the relevant provisions of JSERC Generation Tariff Regulations, 2010.

6.94 The Petitioner has submitted the following entitlement and amount to be recovered from JUVNL/JBVNL towards true up of FY 2012-13 and FY 2013-14

Table 50 Computation of Net Amount Payable by JUVNL/JBVNL by the Petitioner towards the regulated capacity

Description	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Gap/ (Surplus)	Rs Crore	1.68	12.28	10.73
Total Interest (Simple Interest)	Rs Crore	0.67	3.62	3.06
Total Amount Payable by JUVNL/JBVNL	Rs Crore	**2.35**	**15.90**	**13.79**

Commission's Analysis

Tariff for 12% of total net capacity

6.95 The tariff for 12% of the total net capacity shall be the variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) approved by the Commission in this order is given below:

Table 51 Approved tariff for 12% of total net capacity

Description	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.114	2.234	2.178

Tariff for 13% of total net capacity

6.96 The tariff for 13% of the total net capacity shall be the total tariff i.e. variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) and fixed charges as approved by the Commission in this order as noted below:

Table 52 Approved tariff for 13% of total net capacity – variable cost

Description	Unit	Unit 1		Unit 2
		FY 2012-13	FY 2013-14	FY 2013-14
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.114	2.234	2.178

Table 53 Approved tariff for 13% of total net capacity – fixed charges

Description	Derivation	Unit	Unit 1		Unit 2
			FY 2012-13	FY 2013-14	FY 2013-14
Gross Capacity	A	MW	270	270	270
Auxiliary Consumption	B	%	9.00%	9.00%	9.00%
Net Capacity	C= A x (1-B)	MW	245.70	245.70	245.70
12% of net capacity for supply to JUVNL at Energy Charge	D= C x 12%	MW	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	E=C-D	MW	216.22	216.22	216.22
Total Annual Fixed Charge	F	Rs Crore	**74.28**	**394.70**	**345.74**
Annual Fixed Charges/MW	G=F/E	Rs Crore/MW	0.34	1.83	1.60
13% of Net Capacity for supply to JUVNL at full tariff	H= C x 13%	MW	31.94	31.94	31.94
AFC for 13% of Net Capacity	I= G x H	Rs Crore	**10.97**	**58.31**	**51.08**

Impact of True Up

6.97 Commission has verified the bills the petitioner has issued to JUVNL/JBVNL for FY 2012-13 and FY 2013-14 for supply of power from Unit 1 and Unit 2 of the petitioner. The revenue billed by the petitioner to JUVNL/JBVNL has been taken as total revenue raised by the petitioner.

6.98 The commission has approved the impact of true up as shown in the following table considering the approved annual fixed charges, the per unit variable charges approved for the year and other factors.

6.99 **In accordance with Regulation 6.18 of JSERC 'Generation Tariff Regulations, 2010' the Petitioner shall recover/refund the gap/surplus in 6 equal monthly instalments from the beneficiary starting from September 2016.**

Table 54: Impact of True Up as Approved by Commission

Particulars		Petitioner Submission			Approved True Up by JSERC		
		Unit 1		Unit 2	Unit 1		Unit 2
		FY 13	FY 14	FY 14	FY 13	FY 14	FY 14
Net Energy Supplied to JUVNL/JBVNL	MU	95.84	473.33	422.81	95.84	473.33	422.81
Rate of Energy Charge	Rs/kWh	2.23	2.31	2.25	2.114	2.234	2.178
AFC Entitlement on True Up	Rs Cr	12.7	64.29	56.91	10.97	58.31	51.08
Incentive	Rs Cr	0.65	4.08	4.08	0.00	0.00	0.00
Energy Charge Entitlement upon True up	Rs Cr	21.34	109.3	95.29	20.26	105.74	92.09
Total Entitlement	Rs Cr	34.69	177.67	156.28	31.23	164.05	143.17
Revenue Billed							
AFC	Rs Cr	11.91	63.28	53.91	11.91	63.28	53.91
EC	Rs Cr	20.45	98.03	87.56	20.70	108.36	95.60
Incentive	Rs Cr	0.65	4.08	4.08	0.65	4.08	4.08
Total Revenue Billed to JUVNL/JBVNL	Rs Cr	33.01	165.39	145.55	33.26	175.73	153.59
Gap/(Surplus)		1.68	12.28	10.73	(2.02)	(11.68)	(10.42)
Rate of Interest	%	14.75%	14.75%	14.75%	14.45%	14.59%	14.59 %
From COD to 31st March of the respective FY	Days	70	365	317	69	365	316
Allowable Interest for the year	Rs Cr	0.05	0.91	0.69	(0.06)	(1.70)	(0.66)
Interest for the remaining period till September 30, 2015*	Rs Cr	0.62	2.72	2.37	(0.57)	(3.31)	(2.95)
Total Interest (Simple Interest)	Rs Cr	0.67	3.63	3.06	(0.63)	(5.01)	(3.61)

Particulars		Petitioner Submission			Approved True Up by JSERC		
		Unit 1		Unit 2	Unit 1		Unit 2
		FY 13	FY 14	FY 14	FY 13	FY 14	FY 14
Total Amount to be additionally recovered / (paid back to JUVNL)	Rs Cr	2.35	15.91	13.79	(2.65)	(16.69)	(14.03)

*Till March 31st, 2016 for Commission approved numbers

A7: ANNUAL PERFORMACE REVIEW OF FY 2014-15 AND ARR & TARIFF DETERMINATION FOR FY 2015-16

Operational Parameters

Availability

Petitioner's submission

7.1 The Petitioner in the petition dated April 30th, 2015 submitted that the availability for both Unit 1 and Unit 2 was maintained at 85%.

Commission's Analysis

7.2 Regulation 8.6 of the Generation Tariff Regulations, 2010 (quoted below) prescribes the norm for approving the availability of a new generating station.

"8.6 The norms of operation for generating stations other than existing stations shall be as under:

(a) Normative Annual Plant Availability Factor (NAPAF): All thermal generating stations, NAPAF shall be 85%."

7.3 Accordingly, the Commission approves availability for Unit 1 and Unit 2 at Normative Annual Plant Availability Factor i.e. at 85%.

Generation

Petitioner's submission

7.4 The Petitioner in the petition dated April 30th, 2015 submitted that the Commission had approved the operational parameters for Unit 1 and Unit 2 vide its provisional order dated May 26, 2014. The Petitioner submitted that the same operational parameters as approved by the Commission in its provisional order has been considered by the Petitioner for the purpose of Annual Performance Review of FY 2014-15 and determination of ARR and Tariff for FY 2015-16.

7.5 The projected generation submitted by the Petitioner in its petition dated April 30th, 2015 is shown in the following table

Table 55 Gross generation submitted by the Petitioner for Unit 1

Particulars	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Unit 1	MW	270	270	270	270

Particulars	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Gross Generation	MU	2010.42	2015.93	2010.42	2015.93

Commission's Analysis

7.6 The Commission has considered the actual COD of Unit 1 and Unit 2, and the actual PLF achieved by the Petitioner for Unit 1 at 51.88% and for Unit 2 at 41.66% in FY 2014-15.

7.7 The Commission has further considered the PLF for FY 2015-16 at normative PFL (85%)

7.8 The table below shows the projected generation approved by the Commission for both the units:

Table 56 Gross Generation of both units approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
Generation(MU)	2014-15			2015-16		
Unit 1	2,010.42	2,010.42	1,227.07	2,015.93	2,015.93	2,010.42
Unit 2	2,010.42	2,010.42	985.34	2,015.93	2,015.93	2,010.42

Auxiliary Consumption, Station heat rate and Secondary Fuel Oil Consumption

Petitioner's submission

7.9 The Petitioner in the petition dated April 30th, 2015, submitted that the auxiliary consumption both for Unit 1 and Unit 2 at 9 % for FY 2014-15 and FY 2015-16.

7.10 The Petitioner in the petition dated April 30th, 2015 submitted that the Station Heat rate both for Unit 1 and Unit 2 at 2387 kCal/kWh and Secondary Fuel Oil Consumption for both for Unit 1 and Unit 2 at 1 ml/kWh.

Commission's Analysis

7.11 Regulation 8.6 of the Generation Tariff Regulations, 2010 prescribes the norm for approving the operational parameters including auxiliary consumption, station heat rate and secondary fuel oil consumption of a generating station.

"Auxiliary Energy Consumption

8.6(c) (i) ***Coal Based generating Stations***

200 MW Series	*With Natural Draft cooling Tower or without cooling towers*	*8.50%*
500 MW Series- Steam Driven Boiler Feed Pumps	*With Natural Draft cooling Tower or without cooling towers*	*6%*
500 MW Series- Electrically driven Boiler Feed Pumps	*With Natural Draft cooling Tower or without cooling towers*	*8.50%*

Provided further that for thermal generating stations with induced draft cooling towers, the norms shall be further increased by 0.5%:

(*b) Gross Station Heat Rate:*

(i) Coal-based and lignite-fired Thermal Generating Stations = 1.065 X Design

Heat Rate (kCal/kWh)

Where, the Design Heat Rate of a unit means the unit heat rate guaranteed by the supplier at conditions of 100% MCR, zero percent make up, design coal and design cooling water temperature/back pressure.

Provided that the design heat rate shall not exceed the following maximum design unit heat rates depending upon the pressure and temperature ratings of the units:

Pressure Rating(kg/cm2	*150*	*170*	*170*	*247*	*247*
SHT/RHT (0C)	*535/535*	*537/537*	*537/565*	*537/565*	*565/593*
Type of BFP	*Electrical Driven*	*Turbine driven*	*Turbine Driven*	*Turbine Driven*	*Turbine Driven*
Max Turbine Cycle Heat rate (kCal/kWh)	*1955*	*1950*	*1935*	*1900*	*1850*
Min. Boiler Efficiency					
Sub-Bituminous Indian Coal	*0.85*	*0.85*	*0.85*	*0.85*	*0.85*
Bituminous Imported Coal	*0.89*	*0.89*	*0.89*	*0.89*	*0.89*
Max Design Unit Heat rate (kCal/kWh)					
Sub-Bituminous Indian Coal	*2300*	*2294*	*2276*	*2235*	*2176*
Bituminous Imported Coal	*2197*	*2191*	*2174*	*2135*	*2079*

Provided further that in case pressure and temperature parameters of a unit are different from above ratings, the maximum design unit heat rate of the nearest class shall be taken;

Provided also that where unit heat rate has not been guaranteed but turbine cycle heat rate and boiler efficiency are guaranteed separately by the same supplier or different suppliers, the unit design heat rate shall be arrived at by using guaranteed turbine cycle heat rate and boiler efficiency;

Provided also that if one or more units were declared under commercial operation prior to 1.4.2011, the heat rate norms for those units as well as units declared under commercial operation on or after 1.4.2012 shall be lower of the heat rate norms arrived at by above methodology and the norms as per clause 8.4 of these Regulations;

Note: In respect of units where the boiler feed pumps are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified above with turbine driven BFP.

...

(d) Secondary Fuel Oil Consumption for Coal based generating stations: 1.0 ml/kWh."

7.12 The Commission has considered the station heat rate as per its methodology in its last MYT tariff order for the Petitioner. The relevant extracts of the order is reproduced below

"As per regulation 8(i)(b) cited in paragraph above, the Commission has determined the design heat rate considering the plant specifications mentioned in the performance guarantee provided by the manufacturer (M/s Bharat Heavy Electricals Ltd.) in "Annexure-B Performance Guarantee Schedule" of the services contract between the Petitioner and M/s Bharat Heavy Electricals Ltd. The manufacturer has guaranteed the Turbine Cycle Heat Rate (at 100% TMCR with zero percent make up) at 1943 kCal/kWh and boiler efficiency at 86.7% for both Unit 1 and Unit 2. The unit design heat rate has been arrived at 2241 kCal/kWh by using guaranteed turbine cycle heat rate and boiler efficiency. By multiplying the unit design heat rate with the factor specified in the said regulations i.e. 1.065, the Commission arrived at the heat rate of 2387 kCal/kWh and accordingly approves the same."

7.13 Hence the SHR of the both the units are approved at 2387 kCal/kWh for FY 2014-15 and FY 2015-16.

7.14 The Commission approves the Secondary Fuel Oil Consumption at 1 ml/kWh as specified in the regulation cited in paragraph 7.1168 above.

Coal Mix, Coal Cost, Transit loss and GCV

Petitioner's submission

7.15 The Petitioner vide the petition dated April 30th, 2015 has submitted that the cost of coal has been projected as per the relevant clauses (8.19) of JSERC Generation Tariff Regulations, 2010.

7.16 The Petitioner submitted that the fuel requirement of the project was planned to be fulfilled from the captive Ganeshpur coal block which was allotted to the Petitioner and Tata Steel on a 50:50 joint allocation basis. Further the Petitioner submitted that the Hon'ble Supreme Court in its judgement dated September 24th, 2014 has cancelled the captive mine allocation to the Petitioner.

7.17 The Petitioner has received tapering coal linkage for 540MW (2x270MW) from Coal India Ltd and FSAs have been signed with central coal field ltd (CCL). As per the tapering linkage policy of Ministry of Coal, coal is to be supplied on tapering basis, i.e, 75%, 50%, 25%, 0% in 1st , 2nd, 3rd, 4th year from year of normative date of production of coal respectively. The coal supplied herein was supplied at 40% premium to the price of coal of CCL which was subsequently revised to 20% premium. Further, pursuant to the cancellation of coal blocks by Hon'ble Supreme Court, Ministry allowed 50% coal to be supplied at 20% premium, which has been further extended till June 2015 only. The Petitioner hence submitted that it is forced to meet its coal requirement through combination of tapering linkage, spot market, washery rejects, imported etc.

7.18 The Petitioner further submitted that coal price and GCV estimated for FY 2014-15 and FY 2015-16 has been considered as actual weighted average price and GCV of coal for the period from April 2014 to February 2015

7.19 The Petitioner submitted that the fuel supply agreement (tapering coal linkage from CCL) price includes the base price of coal, additional mark-up for tapering linkage, breaking & stowing charges, excise duty, royalties, loading//unloading charges, transportation charges etc

7.20 Similarly the Petitioner submitted that the price of spot market coal includes tge base price of coal, breaking & stowing charges, excise duty, royalties, loading/unloading charges, transportation charges etc.

7.21 Further the Petitioner submitted that the price of washer rejects and imported coal includes the base price, excise duty, loading/unloading charges, transportation charges etc

7.22 The projected coal mix by the Petitioner during the Control Period is given in the table below:

Table 57 Coal Mix during the Control Period submitted by the Petitioner

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Domestic Coal-Linkage	51.23%	50.00%	49.91%	50.00%
Captive Coal Allocation	0.00%	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	34.17%	30.00%	32.37%	30.00%
Washery Rejects	7.16%	10.00%	5.16%	10.00%
Imported Coal	7.44%	10.00%	12.55%	10.00%

7.23 With regards to the landed cost of coal, the Petitioner in its petition dated April 30th, 2015 submitted the projected landed cost of coal from various sources as shown in the table below.

Table 58 Landed Cost of coal (Rs/MT) of Unit 1 submitted by the Petitioner

Particulars	Unit 1		Unit 2	
	2014-15	2015-16	2014-15	2015-16
Domestic Coal-Linkage	2,417.66	2,438.26	2,458.87	2,438.26
Captive Coal Allocation	0.00	0.00	0.00	0.00
Domestic Coal-Spot Market	3,470.86	3,525.59	3,580.33	3,525.59
Washery Rejects	1,766.25	1,719.92	1,673.58	1,719.92
Imported Coal	4,184.57	4,212.42	4,240.27	4,212.42

7.24 With regards to the GCV of coal, the Petitioner in its petition dated April 30th, 2015 submitted the projected GCV of coal from various sources as shown in the table below.

Table 59: GCV of coal (kcal/kg) from various sources submitted by Petitioner

Particulars	Unit 1		Unit 2	
	2014-15	2015-16	2014-15	2015-16
Domestic Coal-Linkage	3,753.53	3,747.63	3,741.73	3,747.63
Captive Coal Allocation	0.00	0.00	0.00	0.00
Domestic Coal-Spot Market	3,101.86	3,125.02	3,148.18	3,125.02
Washery Rejects	1,760.09	1,753.22	1,746.35	1,753.22
Imported Coal	3,609.71	3,615.36	3,621.00	3,615.36

Commission's Analysis

7.25 The Petitioner was allotted a captive coal block (Ganeshpur) along with Tata Steel for supply of coal to the power plant. However, the captive mine allocation to the Petitioner was cancelled after the judgement made by Hon'ble Supreme Court on writ petition (CRL) No 120 of 2012. As per the latest information submitted by the Petitioner, the Petitioner has obtained a tapering coal linkage from Coal India limited and fuel supply agreements have been signed with Central Coal fields Ltd. It has been further proposed that the Petitioner is forced to meet its coal requirement through combination of tapering linkage, spot market, washer rejects and imported coal.

7.26 Commission understands that the captive coal allocated to the Petitioner has been cancelled vide the Supreme Court judgement stated as above. Hence, the Petitioner is largely depending on the domestic linkage by means of tapering linkage with CCL.

7.27 Meanwhile, the Commission observes that the Petitioner primarily used domestic coal from the CCL linkage and spot market to meet its coal requirements during FY 2012-13 and FY 2013-14. However, the Petitioner has proposed to procure coal from spot market for FY 2014-15 and FY 2015-16 and remaining from coal washery rejects and imported coal.

7.28 The Commission provisionally approves the coal mix for FY 2014-15 and FY 2015-16 equal to the actual coal mix as submitted by the Petitioner subject to finalisation at the time of true up exercise.

Table 60 Coal Mix for FY 2014-15 and FY 2015-16 (Unit 1) approved by the Commission

Coal Mix	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	65.00%	51.23%	51.23%	65.00%	50.00%	50.00%
Captive Coal Allocation	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	35.00%	34.17%	34.17%	35.00%	30.00%	30.00%
Washery Rejects	0.00%	7.16%	7.16%	0.00%	10.00%	10.00%
Imported Coal	0.00%	7.44%	7.44%	0.00%	10.00%	10.00%

Table 61 Coal Mix for FY 2014-15 and FY 2015-16 (Unit 2) approved by the Commission

Coal Mix	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	65.00%	49.91%	49.91%	65.00%	50.00%	50.00%
Captive Coal Allocation	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Domestic Coal-Spot Market	35.00%	32.37%	32.37%	35.00%	30.00%	30.00%
Washery Rejects	0.00%	5.16%	5.16%	0.00%	10.00%	10.00%

Coal Mix	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
		2014-15			2015-16	
Imported Coal	0.00%	12.55%	12.55%	0.00%	10.00%	10.00%

7.29 The Commission further notes that in view of the shortage of domestic coal the Petitioner may have to utilize coal from other sources including imported coal to achieve the targeted generation. The Central Electricity Regulatory Commission (CERC) has also recognized the requirement of blending of coal and has including provisions for the same in CERC (Terms and Conditions of Tariff) Regulations, 2014. The relevant clauses of the said regulation are quoted below:

"30 (10) In case of part or full use of alternative source of fuel supply by coal based thermal generating stations other than as agreed by the generating company and beneficiaries in their power purchase agreement for supply of contracted power on account of shortage of fuel or optimization of economical operation through blending, the use of alternative source of fuel supply shall be permitted to generating station:

Provided that in such case, prior permission from beneficiaries shall not be a precondition, unless otherwise agreed specifically in the power purchase agreement:

Provided further that the weighted average price of use of alternative source of fuel shall not exceed 30% of base price of fuel computed as per clause (11) of this regulation:

Provided also that where the energy charge rate based on weighted average price of use of fuel including alternative source of fuel exceeds 30% of base energy charge rate as approved by the Commission for that year or energy charge rate based on weighted average price of use of fuel including alternative sources of fuel exceeds 20% of energy charge rate based on based on weighted average fuel price for the previous month, whichever is lower shall be considered and in that event, prior consultation with beneficiary shall be made not later than three days in advance."

7.30 Accordingly, the Commission directs the Petitioner that in case where the energy charge rate based on weighted average price of use of fuel including alternative source of fuel (other than coal through CCL linkage) exceeds 30% of base energy charge rate as approved by the Commission in this Order or energy charge rate based on weighted average price of use of fuel including alternative sources of fuel exceeds 20% of energy charge rate based on weighted average fuel price for the previous month (whichever is lower), prior consultation with JUVNL should be made not later than three days in advance.

7.31 With regards to landed cost of coal, as per Generation Tariff Regulations, 2010, the landed price of coal includes the following:

"8.19 The landed cost of coal shall include:

(a) Base cost of coal;

(b) Royalty;

(c) Taxes and duties;

(d) Transport cost by rail / ocean / road / pipeline or any other means; and

(e) Clean energy cess as per Ministry of Coal, Govt. of India Notification.

....

For the purpose of computing energy charges, landed cost of coal shall be arrived at after considering normative transit and handling loss of 0.8% on the quantity of coal dispatched by the coal supplier in case of non-pit-head generating stations and 0.2% on the quantity of coal dispatched by the coal supplier in case of pit-head generation stations."

7.32 Further, as per Clause 7.37 of Generation Tariff Regulations, 2010, *"the cost of fuel in cases covered ... shall be based on the landed cost incurred (taking into account normative transit and handling losses) by the Generating Company and gross calorific value of the fuel as per actual for the three months preceding the first month for which tariff is to be determined and no fuel price escalation shall be provided during the tariff period."*

7.33 The Commission approves normative transit loss of 0.8% for coal procured from domestic sources (other than coal obtained from captive coal block) in accordance with Generation Tariff Regulations, 2010. The Commission also notes that the Central Commission, in the CERC (Terms and Conditions of Tariff) Regulations, 2014, has set a norm of 0.2% for transit loss on imported coal. The Commission approves the same for any imported coal that may be used by the plant subject to the conditions mentioned in paragraph 7.30 of this Order.

Table 62 Coal Cost (Rs/MT) of Unit 1 approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	2914	2418	2418	2914	2438	2438
Captive Coal Allocation	-	-	-	-	-	-
Domestic Coal-Spot Market	2910	3471	3471	2910	3526	3526
Washery Rejects	-	1766	1766	-	1720	1720
Imported Coal	-	4185	4185	-	4212	4212

Table 63 Coal Cost (Rs/MT) of Unit 2 approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	2914	2459	2459	2914	2438	2438
Captive Coal Allocation	-	-	-	-	-	-
Domestic Coal-Spot Market	2910	3580	3580	2910	3526	3526
Washery Rejects	-	1674	1674	-	1720	1720
Imported Coal	-	4240	4240	-	4212	4212

Table 64 GCV (Kcal/L) of coal for Unit 1 approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	3,469	3,754	3,754	3,469	3,748	3,748
Captive Coal Allocation	-	-	-	-	-	-
Domestic Coal-Spot Market	4,056	3,102	3,102	4,056	3,125	3,125
Washery Rejects	-	1,760	1,760	-	1,753	1,753
Imported Coal	-	3,610	3,610	-	3,615	3,615

Table 65 GCV (Kcal/L) of coal for Unit 2 approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15			2015-16		
Domestic Coal-Linkage	3,469	3,742	3,742	3,469	3,748	3,748
Captive Coal Allocation	-	-	-	-	-	-
Domestic Coal-Spot Market	4,056	3,148	3,148	4,056	3,125	3,125
Washery Rejects	-	1,746	1,746	-	1,753	1,753
Imported Coal	-	3,621	3,621	-	3,615	3,615

7.34 The Commission shall also true up the fuel cost of the Petitioner for FY 2014-15 and FY 2015-16 taking into account the actual coal cost incurred by the Petitioner after due prudence check.

Base Energy Charge Rate (ECR) and Cost of Primary Fuel

Petitioner's submission

7.35 The Petitioner has in the Petition dated April 30th , 2015 projected the energy charge for FY 2014-15 and FY 2015-16 of both units as below:

Table 66 Energy Charge Rate submitted by the Petitioner for Unit 1 and Unit 2

Particulars	Uom	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Operational Parameters					
Normative Aux Consumption	%	9%	9%	9%	9%
Heat Rate	kCal/ kWh	2387	2387	2387	2387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00
Calorific Value of Oil	kCal/Kg	9346.83	9346.83	9346.83	9346.83
Secondary Oil Consumption	kL/Year	2010.42	2015.93	2010.42	2015.93
Coal					
Weighted Average Calorific Value of Coal	kCal/kg	3,377.40	3,348.20	3,431.46	3,348.20
Weighted Average cost of Coal	Rs/Tonne	2,862.39	2,870.07	3,005.01	2,870.07
Energy Charge Rate	Rs/kWh	2.23	2.26	2.31	2.26
Injection Losses (based on notified PoC losses)	%	1.15%	1.15%	1.15%	1.15%
Energy Charge rate (considering injection losses)	Rs/kWh	2.26	2.28	2.33	2.28

Commission's Analysis

7.36 As per the Generation Tariff Regulation, 2010, the energy (variable) charge shall cover primary fuel costs and shall be payable by every Beneficiary for the total energy scheduled to be supplied to such Beneficiary during the calendar month on ex-power plant basis, at the specified energy charge rate of the month.

7.37 The formula for calculation of energy charge and energy charge rate (ECR) payable to a Generating Company is specified in Regulation 8.17 and 8.18 of the Generation Tariff Regulation, 2010 as quoted below:

"8.17 Total Energy charge payable to the Generating Company for a month shall be: = (Energy charge rate in Rs. /kWh) x {Scheduled energy (ex-bus) for the month in kWh.}

8.18 Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal places in accordance with the following formula:

(a) For coal based stations

ECR = (GHR – SFC x CVSF) x LPPF x 100/ {CVPF x (100 – AUX)}

Where, AUX - Normative auxiliary energy consumption in percentage

CVPF - Gross calorific value of primary fuel as fired, in KCal per kg, per litre or per standard cubic metre, as applicable.

CVSF - Calorific value of secondary fuel, in KCal per ml

ECR - Energy charge rate, in Rupees per kWh sent out.

GHR - Gross station heat rate, in KCal per kWh.

LPPF - Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month.

SFC - Specific fuel oil consumption, in ml per kWh" .

7.38 The Commission notes that the Petitioner, while calculating ECR, considered the cost of coal without including the transit loss of coal, and later grossed up ECR by 0.80%. This calculation is not in accordance with the Generation Tariff Regulations, 2010. As per the formula specified in the said regulations, the landed cost of coal, inclusive of any transit loss, shall be used for calculation of ECR. Further, no grossing up of ECR by transit loss is required.

7.39 Accordingly, the Commission has calculated the base ECR for the Control Period as per the formula stated above and after considering the operational parameters as approved in this order. The table below contain the base ECR approved by the Commission for the period FY 2012-13 to FY 2015-16

Table 67 Approved Energy Charge Rate for Unit 1

Parameters		Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
		FY 2014-15			FY 2015-16		
Gross Generation	MU	2,010.42	2,010.42	1,227.07	2,015.93	2,015.93	2,010.42
Heat Rate	KCal/kWh	2,387	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	KCal/l	9,553	9346.83	9346.83	9,553	9346.83	9,346.83
Weighted average cost of coal	Rs/MT	2,913	2,862.39	2,862.39	2,913	2,870.07	2,870.07

Parameters		Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
		FY 2014-15			FY 2015-16		
Weighted average GCV of coal	kCal/L	3,674	3,377.40	3,377.40	3,674	3,348.20	3,348.20
Energy Charge Rate	**Rs/kWh**	**2.071**	**2.26**	**2.192**	**2.071**	**2.28**	**2.217**

Table 68 Approved Energy Charge Rate for Unit 2

Parameters	UoM	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
		FY 2014-15			FY 2015-16		
Gross Generation	MU	2,010.42	2,010.42	985.34	2,015.93	2,015.93	2,010.42
Heat Rate	KCal/kWh	2,387	2,387	2,387	2,387	2,387	2,387
Specific Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00	1.00	1.00
Calorific Value of Oil	KCal/l	9,553	9346.83	9346.83	9,553	9346.83	9346.83
Weighted average cost of coal	Rs/MT	2,913	3,005.01	3,005.01	2,913	2,870.07	2,870.07
Weighted average GCV of coal	kCal/L	3,674	3,431.46	3,431.46	3,674	3,348.20	3,348.20
Energy Charge Rate	**Rs/kWh**	**2.071**	**2.33**	**2.265**	**2.071**	**2.28**	**2.217**

7.40 The Energy Charge Rate (ECR) approved by the Commission as above shall be the base energy charge rate for the year. Any variation in fuel prices on account of change in the Gross Calorific Value (GCV) of coal shall be adjusted on a monthly basis on the basis of weighted average GCV of coal in stock, received and burnt, and weighted average landed cost incurred by the Petitioner for procurement of coal, utilizing the fuel price adjustment mechanism given in the Generation Tariff Regulations, 2010.

Determinants of Fixed Charges

Depreciation

Petitioner's submission

7.41 In its petition dated April 30th, 2015, the Petitioner submitted the depreciation for Unit 1 and Unit 2 for FY 2014-15 and FY 2015-16. The depreciation submitted by the Petitioner is given in the table below:

Table 69 Depreciation (Rs Cr) submitted by the Petitioner for both units

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Depreciation	80.06	80.06	81.09	81.09

Commission's Analysis

7.42 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Depreciation are given below:

"7.28 Depreciation shall be calculated for each year of the tariff period, on the amount of Capital Cost of the assets admitted by the Commission;

Provided that depreciation shall not be allowed on assets funded by any capital subsidy / grant

7.29 The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset.

7.31 Depreciation shall be calculated annually based on 'Straight Line Method' and at rates specified in Appendix-I to these Regulations for the assets of the generating station."

7.33 Depreciation shall be chargeable from the first Year of commercial operation. In case of commercial operation of the asset for part of the Year, depreciation shall be charged on pro rata basis.

7.43 The Commission has approved the depreciation for Unit 1 and Unit 2 for FY 2014-15 and FY 2015-16 in lines with the provisions of the regulations as stated above and considering the approved capital cost.

7.44 The following table shows the depreciation for Unit 1 and Unit 2 as calculated by the Commission as against that submitted by the Petitioner:

Table 70 Depreciation approved by the Commission for Unit 1

Asset Type	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15 (Rs Cr)			2015-16 (Rs Cr)		
Land owned under full title	-	-	-	-	-	-
Land held under lease	0.37	0.36	0.37	0.37	0.36	0.37
Plant and machinery	71.20	70.25	71.81	73.07	70.25	71.81
Building & civil works	10.15	9.46	7.01	10.70	9.46	7.01
Other Assets			0.40			0.40
Sub Total	**81.73**	**80.06**	**79.59**	**84.13**	**80.06**	**79.59**

Table 71 Depreciation approved by the Commission for Unit 2

Asset Type	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15 (Rs Cr)			2015-16 (Rs Cr)		
Land owned under full title	-	-	-	-	-	-
Land held under lease	0.42	0.36	0.37	0.42	0.36	0.37
Plant and machinery	66.81	71.34	72.92	68.66	71.34	72.92
Building & civil works	9.73	9.40	6.97	10.27	9.40	6.97
Other Assets			0.40			0.40
Sub Total	**76.96**	**81.09**	**80.66**	**79.34**	**81.09**	**80.66**

Interest on Debt

Petitioner's submission

7.45 The Petitioner submitted that the interest rates have been considered based on prevailing interest rates.

7.46 The interest rates as submitted by the Petitioner for the computation of the interest on debt are based on the actual interest rates payable i.e. 13.43% for Unit 1 and 13.33% for Unit 2. The following tables shows the interest on debt submitted by the Petitioner :

Table 72 Interest on Debt of both units as submitted by the Petitioner

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Unit 1	148.82	138.06	152.85	142.04

Commission's Analysis

7.47 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Interest on Debt as quoted as under:

"7.19 The loans arrived at in the manner indicated in clause 7.13, 7.14 of these Regulations shall be considered as gross normative loan for calculation of interest on loan.

7.20 The repayment for any year during the Tariff Period shall be deemed to be equal to the depreciation allowed for that Year.

7.22 Notwithstanding any moratorium period availed by the Generating Company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

7.23 The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the Project:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station does not have actual loan, then the weighted average rate of interest of the Generating Company as a whole shall be considered

7.24 The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

7.48 The Commission has calculated the debt for each year based on the approved capital cost and considering the approved depreciation as repayment in line with the methodology specified in Generation Tariff Regulations, 2010.

7.49 The debt-equity ratio has been retained as the one approved for FY 2013-14 at 74.06%:25.94%.

7.50 The Commission has provisionally approved the interest rates as submitted by the Petitioner towards APR and ARR determination for FY 2014-15 and FY 2015-16 respectively. The interest on debt approved by the Commission is shown in the tables below for both Units:

Table 73 Interest on Debt (Rs Cr) approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			**FY 2015-16**(Rs Cr)		
Opening Balance	1116.80	1,148.12	1,104.45	1112.31	1,068.06	1,024.86

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			**FY 2015-16**(Rs Cr)		
Additions	77.25	0.00	0.00	0.00	0.00	0.00
Repayment	81.73	80.06	79.59	84.13	80.06	79.59
Closing Balance	1112.31	1,068.06	1,024.86	1028.18	987.99	945.28
Interest on Debt %	13.47%	13.43%	13.43%	13.47%	13.43%	13.43%
Amount in Rs Cr	**150.13**	**148.82**	**142.98**	**144.16**	**138.06**	**132.29**

Table 74 Interest on Debt approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
Opening Balance	1108.12	1,187.20	1,143.81	1031.16	1,106.11	1,063.16
Additions	-	0.00	0.00	76.05	0.00	0.00
Repayment	76.96	81.09	80.66	79.34	81.09	80.66
Closing Balance	1031.16	1,106.11	1,063.16	1027.87	1,025.02	982.50
%	13.31%	13.33%	13.33%	13.31%	13.33%	13.33%
Amount in Rs. Cr	**142.37**	**152.85**	**147.09**	**137.03**	**142.04**	**136.34**

Return on Equity

Petitioner's submission

7.51 The Petitioner submitted that it has calculated return on equity considering a post-tax return of 15.50% as per Generation Tariff Regulations, 2010. The Petitioner has submitted that it has considered a MAT rate of 20.01%.

7.52 The Return on equity for both units submitted by the Petitioner is shown in the following table:

Table 75 Return on Equity (Rs Cr) of Unit 1 and Unit 2 submitted by the Petitioner

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Return on Equity	82.20	82.20	83.13	83.13

Commission's Analysis

7.53 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of Return on Equity are as under:

"7.15 Return on equity shall be computed in rupee terms, on the equity base determined in accordance with clause 7.13, 7.14 of these Regulations. Petition for Approval of Capital Cost and Business Plan and MYT Petition for MYT Control Period for FY 2012-13 to FY 2015-16 63

7.16 Return on equity shall be computed on pre-tax basis at the base rate of 15.50%, to be grossed up as per clause 7.17 of these Regulations.

……………

Provided that in case of Projects commissioned on or after 1st April, 2011, an additional return of 0.5% shall be allowed if such Projects are completed within the timeline specified in Appendix-II to these Regulations:

Provided further that the additional return of 0.5% shall not be admissible if the Project is not completed within the timeline specified above for reasons whatsoever:

7.17 The rate of return on equity shall be computed by grossing up the base rate with the normal tax rate applicable to the Generating Company as per details shown as under:

(i)……….

(ii) MYT period: Base rate to be grossed by the applicable tax rate for the Year 2011-12

Provided that return on equity with respect to the actual tax rate applicable to the Generating Company, in line with the provisions of the relevant Finance Acts of the respective year during the Control period shall be trued up separately for each year of the Control period along with the tariff petition filed for the next Control period.

7.18 Rate of return on equity shall be rounded off to three decimal points and be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)

Where 't' is the applicable tax rate in accordance with clause 7.17 of these Regulations."

7.54 The Commission has worked out the gross normative equity of both Unit 1 and Unit 2 as per Regulation 7.13 and 7.14 of the Generation Tariff Regulation, 2010. The Commission has considered the return on equity at 15.50%.

7.55 The MAT rate considered by Commission is 20.96% which is subjected to true up. The return on equity approved by the Commission is shown in the table below:

Table 76 Return on Equity approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15 (Rs Cr)			FY 2015-16 (Rs Cr)		
Equity						
Opening Balance	451.14	419.14	426.89	479.91	419.14	426.89
Net Additions	28.77	0.00	0.00		0.00	0.00
Closing Balance	479.91	419.14	426.89	479.91	419.14	426.89
Average Equity	465.52	419.14	426.89	479.91	419.14	426.89
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t%)	20.96%	20.96%	20.96%	20.96%	20.96%	20.96%
Grossed Up rate of return on equity	19.60%		19.61%	19.60%		19.61%
Return on equity	**91.24**	**82.20**	**83.72**	**94.06**	**82.20**	**83.72**

Table 77 Return on Equity approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15 (Rs Cr)			FY 2015-16 (Rs Cr)		
Equity						
Opening Balance	449.63	423.90	432.08	449.63	423.90	432.08
Net Additions	-	0.00	0.00	29.11	0.00	0.00
Closing Balance	449.63	423.90	432.08	478.73	423.90	432.08
Average Equity	449.63	423.90	432.08	507.84	423.90	432.08
Rate of return on equity(pre-tax)	15.50%	15.50%	15.50%	15.50%	15.50%	15.50%
Applicable tax rate (t%)	20.96%	20.96%	20.96%	20.96%	20.96%	20.96%
Grossed Up rate of return on equity	19.60%		19.61%	19.60%		19.61%
Return on equity	**88.13**	**83.13**	**84.73**	**90.98**	**83.13**	**84.73**

O&M Expenses

Petitioner's submission

7.56 The Petitioner in the petition dated April 30th , 2015 submitted that it has computed the O&M expenses for FY 2014-15 and FY 2015-16 based on the norms specified for 200/210/250 MW sets in the JSERC Generation Tariff Regulations, 2010.

7.57 is shown in the following table:

Table 78 O&M Expenses (Rs Cr) submitted by the Petitioner

O&M Expenses	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
	64.91	64.91	68.63	68.63

Commission's Analysis

7.58 The Generation Tariff Regulations, 2010 for approval of O&M expenses specify as under:

"New Generating Stations:

7.44 The O&M expenses (in Rs lakhs/ MW) permissible towards determination of tariff for Coal and Lignite fired (including those based on CFBC technology) shall be as follows:

Year	*200/ 210/ 250 MW sets*	*300/330/350 MW sets*	*500 MW sets*	*500 MW and above sets*
2011-12	*20.34*	*17.88*	*14.53*	*13.08*
2012-13	*21.51*	*18.91*	*15.36*	*13.82*
2013-14	*22.74*	*19.99*	*16.24*	*14.62*
2014-15	*24.04*	*21.13*	*17.17*	*15.46*
2015-16	*25.42*	*22.34*	*18.15*	*16.34*

7.59 The Generation Tariff Regulations, 2010 do not specify any norms specifically for 270 MW sets. Accordingly, the Commission has approved the O&M expenses based on the norms specified for 200/210/250 MW sets. The O&M expenses for the first year after commissioning have been approved on pro-rata basis.

7.60 The O&M expenses approved by the Commission for Unit 1 and Unit 2 are shown in the table below.

Table 79 O&M expenses approved by the Commission

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	2014-15(Rs Cr)			2015-16(Rs Cr)		
Unit 1	64.91	64.91	64.91	68.63	68.63	68.63
Unit 2	64.91	64.91	64.91	68.63	68.63	68.63
Total	**129.82**	**129.82**	**129.82**	**137.27**	**137.27**	**137.27**

Interest on Working Capital

Petitioner's submission

7.61 The Petitioner while computing the working capital and Interest thereon as per the Generation Tariff Regulations, 2010 vide regulations 7.34, 7.38 & 7.39

7.62 The Petitioner in the petition dated April 30th, 2015 submitted that for calculation of Interest on Working Capital, the rate of interest has been considered at 14.75% for Unit 1 and 14.45% for Unit 2.

7.63 The Interest on working capital submitted by the Petitioner is shown in the table below:

Table 80 Interest on Working Capital (Rs Cr) submitted by the Petitioner for Unit 1 and Unit 2

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Total Working Capital	231.60	233.45	237.07	234.43
Interest on Working Capital	**34.16**	**34.53**	**34.26**	**33.97**

Commission's Analysis

7.64 The Commission has computed the interest on working capital for both Units 1 and Unit 2 by considering values of related components. The working capital requirement for the Petitioner has been determined by considering the following components as per Regulation 7.34 of the Generation Tariff Regulation, 2010:

(a) Cost of Coal for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(b) Cost of secondary fuel oil for two months for generation corresponding to the Normative Annual Plant Availability Factor;

(c) Maintenance spares @ 20% of operation and maintenance expenses;

(d) Operation and Maintenance expenses for 1 month; and

(e) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the Normative Annual Plant Availability Factor.

7.65 The Commission outlines the provisions laid out in the Generation Tariff Regulations, 2010 for approval of Interest on Working Capital as under:

"7.38 Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2011 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation, whichever is later during Transition period.

During Control Period rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on April 1, 2012 or April 1 of the year in which the generating station or a unit thereof, is declared under commercial operation.

7.39 The interest on working capital shall be payable on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency or has exceeded the working capital loan based on the normative figures."

7.66 Accordingly the Commission calculated the Interest on Working Capital on the rates prevailing on the April 1, 2014 and April 1, 2015 i.e. at 14.75% and 14.05% respectively for FY 2014-15 and FY 2015-16. The detailed calculation made by the Commission is shown in the tables below:

Table 81 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 1

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15			FY 2015-16		
Coal Cost for 2 months	63.15	68.06	40.79	63.32	69.03	67.60
Cost of secondary fuel oil for 2 months	2.13	2.17	1.30	2.13	2.15	2.13
Receivables for 2 months	135.33	140.21	108.10	136.05	140.06	135.70
O&M Expenses for 1 month	5.41	6.22	5.41	5.72	6.53	5.72
Maintenance Spares	12.98	14.93	12.98	13.73	15.68	13.73
Total Working Capital	**218.99**	**231.60**	**168.59**	**220.95**	**233.45**	**224.87**

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15			FY 2015-16		
Rate of Interest	14.75%	14.75%	14.75%	14.75%	14.75%	14.05%
Interest on Working Capital	**32.30**	**34.16**	**24.87**	**32.59**	**34.53**	**31.59**

Table 82 Interest on Working Capital (Rs Cr) approved by the Commission for Unit 2

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15			FY 2015-16		
Coal Cost for 2 months	63.15	70.33	33.85	63.32	69.03	67.60
Cost of secondary fuel oil for 2 months	2.13	2.13	1.04	2.13	2.15	2.13
Receivables for 2 months	132.54	143.46	101.60	133.38	140.98	136.75
O&M Expenses for 1 month	5.41	6.22	5.41	5.72	6.55	5.72
Maintenance Spares	12.98	14.93	12.98	13.73	15.71	13.73
Total Working Capital	**216.21**	**237.07**	**154.88**	**218.28**	**234.43**	**225.92**
Rate of Interest	14.45%	14.45%	14.75%	14.45%	14.45%	14.05%
Interest on Working Capital	**31.24**	**34.26**	**22.84**	**31.54**	**33.97**	**31.74**

Cost of Secondary Fuel Oil

Petitioner's submission

7.67 The Petitioner in the petition dated April 30th, 2015 submitted that the secondary fuel would be procured through local suppliers. The cost of LDO is considered at Rs 64,874.11/kL and Rs 63,380.80/kL for Unit 1 and Unit 2 respectively for FY 2014-15 and FY 2015-16, based on the prevailing market rates for the entire Control Period.

7.68 The table below shows the cost of secondary fuel oil as submitted by the Petitioner for both Unit 1 and Unit 2:

Table 83 Cost of secondary Fuel Oil submitted by the Petitioner for Unit 0031

Particulars	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Unit Capacity	MW	270	270	270	270
Gross Generation at Normative Plant Availability	MU	2,010.42	2,015.93	2,010.42	2,015.93
Normative Secondary Fuel Oil Consumption	ml/kWh	1.00	1.00	1.00	1.00
Secondary Fuel Oil Consumption at Normative Plant Availability	kL	670.14	2,010.42	2,010.42	2,015.93
Secondary Fuel Oil Landed Cost	Rs./kL	64,647.69	64,103.97	63,560.24	64,103.97
Secondary Fuel Oil Cost at Normative Plant availability	Rs. Cr.	**13.00**	**12.92**	**12.78**	**12.92**

Commission's Analysis

7.69 The provisions laid out in the Generation Tariff Regulations, 2010 for approval of cost of secondary fuel oil are as under:

"7.49 Expenses on secondary fuel oil in Rupees shall be computed corresponding to normative secondary fuel oil consumption (SFC) specified in clause 8.4, 8.6 of these Regulations, in accordance with the following formula:

= SFC x LPSFi x NAPAF x 24 x NDY x IC x 10

Where,

SFC – Normative Specific Fuel Oil consumption in ml/kWh

LPSFi – Weighted Average Landed Price of Secondary Fuel in Rs./ml considered initially

NAPAF – Normative Annual Plant Availability Factor in percentage

NDY – Number of days in a year

IC - Installed Capacity in MW"

7.50 Initially, the landed cost incurred by the Generating Company on secondary fuel oil shall be taken based on actuals of the weighted average price of the three preceding months and in the absence of landed costs for the three preceding months, latest procurement price for the generating station, before the start of the year."

7.70 The Commission has considered the last approved figures of weighted average landed cost of secondary fuel as in MYT order for the purpose of projection of cost of secondary fuel oil for Unit 1 and Unit 2 in FY 2014-15 and FY 2015-16.

Table 84 Cost of secondary fuel oil approved by the commission for Unit 1

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15			FY 2015-16		
Gross Generation at NAPF (MU)	2010.42	2010.42	1227.07	2015.93	2015.93	2010.42
Specific Consumption of LDO at NAPF (ml/kWh)	1.00	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPF (kL)	2010.42	2010.42	1227.07	2015.93	2015.93	2010.42
LDO Landed Cost (Rs/kL)	63503	64647.69	63503	63503	64103.97	63503
LDO Cost (Rs Cr)	**12.77**	**13.00**	**7.79**	**12.80**	**12.92**	**12.77**

Table 85 Cost of secondary fuel oil approved by the commission for Unit 2

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
Gross Generation at NAPF (MU)	2010.42	2010.42	985.34	2015.93	2015.93	2010
Specific Consumption of LDO at NAPF (ml/kWh)	1.00	1.00	1.00	1.00	1.00	1.00
LDO Consumption at NAPF (kL)	2010.42	2010.42	985.34	2015.93	2015.93	2010
LDO Landed Cost (Rs/kL)	63503	63560.24	63503	63503	64103.97	63503
LDO Cost (Rs Cr)	**12.77**	**12.78**	**6.26**	**12.80**	**12.92**	**12.77**

Additional Water Charges

Petitioner's submission

7.71 The Petitioner stated that CERC (Terms and Conditions of Tariff) Regulations, 2014 stipulates that water charges for thermal generating stations shall be allowed separately. The relevant extracts of the regulation as submitted by the Petitioner is reproduced as below

"29. Operation and Maintenance Expenses:

(3) Normative Operation and Maintenance Expenses of Thermal Generating Stations…

(4) The Water Charges and capital spares for thermal generating stations shall be allowed separately:

Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc, subject to prudence check. The details regarding the same shall be furnished along with the petition…"

7.72 The Petitioner in its petition dated April 30th , 2015 has stated that it incurred additional water charges to the extent of Rs 9.75 Cr each for Unit 1 and Unit 2 in FY 2014-15 and FY 2015-16 respectively.

7.73 The Petitioner submitted that an agreement was signed between Adhunik and Govet of Jharkhand for supply of water vide agreement dated 29th Aug'08. The required water was to be withdrawn or pumped by the company from the river Subarnarekha.

7.74 The Petitioner further submitted that the Water Department of Gov. of Jharkhand vide its Notification No: 2/PMC/jalapurti175/2007 dated 01.04.2011 devised various categories for water offtake and the Petitioner was asked to pay @ Rs 26.40 per thousand gallon. The same was opposed by the Petitioner and a stay order was issued by Hon'ble High Court of Jharkhand. The Petitioner submitted that it is paying the water charges at the pre0revised rate of Rs 4.50 per thousand gallons and accordingly they have claimed water charges.

Table 86: Additional Water Charges (Rs Cr) Claimed by the Petitioner for FY 2012-13 and FY 2013-14

Particulars	Unit 1		Unit 2	
	FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Additional Water Charges	9.75	9.75	9.75	9.75

Commission's Analysis

7.75 The Commission has reviewed the submissions of the Petitioner as far as additional water charges as concerned.

7.76 The Commission finds that the normative cost per MW as specified in the Generation Tariff Regulations, 2010 has been arrived after duly considering all such cost parameters and any further variation on the O&M cost towards any component may not be entertained.

Annual Fixed Charges

7.77 Regulation 8.2 of the Generation Tariff Regulations, 2010 states that the annual fixed charges of a thermal generating station shall consist of the following

(a) Return on Equity;

(b) Interest and Financing Charges on Loan Capital;

(c) Depreciation;

(d) Operation and Maintenance Expenses;

(e) Interest Charges on Working Capital; and

(f) Cost of Secondary Fuel Oil.

7.78 The tables below show the annual fixed charges submitted by the Petitioner and approved by the Commission for each unit for the entire capacity of 270 MW.

Table 87 Annual Fixed Charges of Unit 1 for 270 MW

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
O&M Expenses	64.91	74.66	64.91	68.63	78.38	68.63
Depreciation	81.73	80.06	79.59	84.13	80.06	79.59
Interest on Loan	150.13	148.82	142.98	144.16	138.06	132.29
Return on Equity (pre - tax)	91.24	82.20	83.72	94.06	82.20	83.72
Cost of Secondary Fuel	12.77	13.00	7.79	12.80	12.92	12.77
Interest on Working Capital	32.30	34.16	24.87	32.59	34.53	31.59
Annual Fixed Charges	**433.08**	**432.89**	**403.85**	**436.38**	**426.16**	**408.59**

Table 88 Annual Fixed Charges of Unit 2 for 270 MW

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
O&M Expenses	64.91	74.66	64.91	68.63	78.57	68.63
Depreciation	76.96	81.09	80.66	79.34	81.09	80.66
Interest on Loan	142.37	152.85	147.09	137.03	142.04	136.34
Return on Equity (pre tax)	88.13	83.13	84.73	90.98	83.13	84.73
Cost of Secondary Fuel	12.77	12.78	6.26	12.80	12.92	12.77

Particulars	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC	Approved in MYT Order	Submission by APNRL	Approved Now By JSERC
	FY 2014-15(Rs Cr)			FY 2015-16(Rs Cr)		
Interest on Working Capital	31.24	34.26	22.84	31.54	33.97	31.74
Annual Fixed Charges	**416.37**	**438.76**	**406.49**	**420.33**	**431.72**	**414.87**

Approved Tariff for Unit 1 and Unit 2

Tariff for 12% of total net capacity

7.79 The tariff for 12% of the total net capacity shall be the variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) approved by the Commission in this order and as noted below:

Table 89 Approved tariff for 12% of total net capacity

Description	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.192	2.217	2.265	2.217

Tariff for 13% of total net capacity

7.80 The tariff for 13% of the total net capacity shall be the total tariff i.e. variable cost (subject to fuel price adjustment in accordance with Generation Tariff Regulations 2010) and fixed charges as approved by the Commission in this order as noted below:

Table 90 Approved tariff for 13% of total net capacity – variable cost

Description	Unit	Unit 1		Unit 2	
		FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Variable cost/ Base Energy Charge Rate	Rs/kWh	2.192	2.217	2.265	2.217

Table 91 Approved tariff for 13% of total net capacity – fixed charges

Description	Derivation	Unit	Unit 1		Unit 2	
			FY 2014-15	FY 2015-16	FY 2014-15	FY 2015-16
Gross Capacity	A	MW	270	270	270	270
Auxiliary Consumption	B	%	9%	9%	9%	9%
Net Capacity	C= A x (1-B)	MW	245.7	245.7	245.7	245.7
12% of net capacity for supply to JUVNL at Energy Charge	D= C x 12%	MW	29.48	29.48	29.48	29.48
Remaining Capacity from which Fixed Charges are to be recovered	E=C-D	MW	216.22	216.22	216.22	216.22
Total Annual Fixed Charge	F	Rs Crore	**403.85**	**408.59**	**406.49**	**414.87**
Annual Fixed Charges/MW	G=F/E	Rs Crore/MW	1.87	1.89	1.88	1.92
13% of Net Capacity for supply to JUVNL at full tariff	H= C x 13%	MW	31.94	31.94	31.94	31.94
AFC for 13% of Net Capacity	I= G x H	Rs Crore	**59.66**	**60.36**	**60.05**	**61.29**

A8: ADDITIONAL CAPITALIZATION CLAIMED BY PETITIONER

Petitioner's Submission

8.1 With regards to additional capitalization, Hon'ble Commission in its provisional order dated May 26th, 2014 gave the following direction.

"The Commission has provisionally approved an additional capitalisation of Rs 211.18 Cr for Unit 1 and Unit 2 during the Control Period. In this regard, the Petitioner is directed to submit the detailed project report and cost benefit analysis of each of the schemes prior to taking up the scheme for execution."

8.2 In response to this directive the Petitioner has submitted certain details of the various schemes that it proposes to undertake as part of additional capital expenditure for the project:

8.3 <u>Reservoir Construction Scheme:</u>

The Petitioner submitted the following:

"*The aggregate water requirement for the power station is 3,510 m3 per hour and APNRL has permission to draw 4,064 m3 per hour water from Subarnarekha River. As on the date, the raw water supply to the plant is made through 8 Km cross-country pipeline. The water is required for cooling of electrical and mechanical auxiliaries, steam condenser cooling, fire fighting, ventilation etc.*

APNRL intake pump house is strategically located in a manner that it is the first industrial facility to withdraw water downstream of Subarnarekha River once the same has been released from Chandil dam. The reservoir facility present in main plant area currently caters to storage of water for 21 days and could not be made bigger on account of scarcity of land at the time of Financial Closure. Following points necessitate the justification to augment current water arrangement facilities for the plant:

- *Excavation of sand from the river by local population has resulted in decline in bed level of the river which could have impact on pumping operation in near future.*
- *Subarnarekha River feeds many adjacent industries and for irrigation purposes that water availability at times falls short in lean season.*
- *Availability of water is likely to be interrupted temporarily for repairs or other such other maintenance works on the basis of jointly signed protocol among M/s. APNRL and State Govt. of Jharkhand. Such interruption shall not ordinarily exceed fifteen days*.

The interruption in release of water shall adversely affect the power generation.

APNRL thus intends to construct additional water reservoir and raw water pumping system to ensure continued and efficient operation of the plant. The additional water reservoir will also act as a back-up mechanism for functioning of plant in case of any planned / unplanned maintenance of existing pipeline.

Construction of storage intervention needed for uninterrupted drawl of water is covered under the protocol signed between APNRL and the Govt of Jharkhand.

The technical specification as estimated by the Owner's Engineer is as follows:

- *Rectangular shaped water reservoir having depth of 8 m would be constructed with elevated embankment where excavated soil will be utilized. HDPE geomembrane liner of suitable thickness shall be provided at bottom as well as the embankment surfaces to arrest the seepage of water into the ground water. A pump house will be constructed for pumping the water to the raw water reservoir at plant location.*

- *APNRL would be required to acquire 50 acres of land for construction of this reservoir. Land has already been identified in the village Giddibeda owing to its proximity to the already laid pipeline of APNRL. Advantage of having proximity to the pipeline shall avoid Right of Way issues. Identified land is completely private land for single crop agricultural purpose. The company is in discussion with land owners and does not foresee any major issues with land acquisition.*

The Petitioner submitted the total construction cost of additional water reservoir as follows

Table 92 Construction Cost – Additional Water Reservoir (Rs Cr)

Particulars	*Water Reservoir*
Land	*9.50*
Mechanical & Structural Works	*3.00*
Civil Work	*35.00*
Electrical Works	*2.00*
Total	***49.50***

8.4 Gated Weir Construction Scheme:

The Petitioner submitted that it needs to construct a gated weir facility downstream of intake well for impounding the water during the period of receding rains and ensuring adequate depth of water for trouble free pumping operation.

Petitioner further submitted the technical specification as provided by the Owner's Engineer and the schematic diagram for the gated weir. Further the Petitioner submitted the cost of the scheme at Rs 39.32Cr.

Table 93 Construction Cost – Additional Water Reservoir (Rs Cr)

Particulars	Gated Weir
Land	-
Mechanical & Structural Works	0.18
Civil Work	34.14
Electrical Works	5.00
Total	**39.32**

8.5 Critical Spares Scheme:

The submission of the Petitioner in this regard is as follows.

"Currently each unit of 270 MW of the plant is operating with 1 no. of 16.5/ 400 KV, 340/330 MVA Generator Transformer, 1 no. of 16.5/6.6 KV, 40 MVA Station Transformer and 2 nos. of 16.5/ 6.6 KV Unit transformer without any spare Transformers. In case of failure of any of the afore-mentioned transformer, it will substantially affect the generation and supply of power. The repair and replacement of such critical parts have taken 10-12 months in the past.

Following examples indicate the instances in various thermal power projects of India wherein mishap has occurred due to Transformer failure and corresponding loss to stakeholders:

- *Maithon Power Limited - R-Phase of Generator Transformer (GT) for 525 MW (Unit 1) failed on 06-July-2013 resulting in loss of generation from unit for a period of 6 months.*
- *Meja Thermal Power Station - Y-Phase of GT for Unit-8 failed on 30-April-2013 and BPhase bushing of GT for Unit-7 failed on 09-October-2011.*
- *Bhushan Power and Steel Limited – Failure of 220 MVA Transformer*
- *Adani Power Ltd. – GT of Unit-3 of 5x660 MW Tiroda plant failed. However, due to availability of spare GT, the operations were resumed in very short duration of time.*

Taking into consideration situations as highlighted above, APNRL has identified all Power Transformers as critical spares.

On November 29, 2013, APNRL GT-I had caught fire wherein the bushing area suffered damages. APNRL mobilized various agencies and maintenance activities are under progress. Unit restored operations on 14-February-2014.

On March 3, 2014, Unit II tripped. Testing is being carried out by ABB for analyzing the fault. The unit has been synchronized & has commenced operation from 2nd week of May 2014. However, with the long lead time associated with such repairs and replacements, APNRL intends to procure 1 no. of each 16.5/ 400 KV, 340 MVA Generator Transformer, 16.5/6.6 KV, 40 MVA Station Transformer and 16.5/ 6.6 KV Unit transformer as additional capital spare to meet such exigencies. Certain spares for other major packages such as Coal Handling Plant, Ash Handling Plant etc. have also been identified.

APRNL expects the completion of supply of spares to happen in 18 months from the Purchase Order and release of payment, whichever is later."

The Petitioner submitted the cost of the scheme as follows

Table 94 Construction Cost – Additional Water Reservoir (Rs Cr)

Sr No	Particulars	Unit	Qty	Value
1.	16.5/ 400 KV, 340 MVA Generator Transformer	No	1	16.00
2.	16.5/6.6KV,40MVAStation Transformer	No	1	3.00
3.	16.5/6.6KV, 16MVA Unit Transformer	No	1	2.00
4.	Total Ex-Works for CHP	Lot	1	3.29
5.	Total Ex-Works for AHP	Lot	1	1.29
	Total Ex-Works Price			25.58
A	Excise Duty @ 12.36%			3.16
B	Sales Tax@ 2%			0.58
C	Freight & Transit Insurance			1.28
	TOTAL			**30.59**

8.6 Brick Making Plant Scheme:

The submissions of the Petitioner in this regard is as follows.

"As per the Environment Clearance received from MoEF for 2x270 MW TPP, APNRL has to utilize 100% fly ash generated from the plant from fourth year of operation.

As estimated by owner' engineer, APNRL will be setting up 6 nos. of brick making units producing solid fly ash brick of 250 x 120 x 75 dimension at a capacity of 12,000 bricks per day on 85% unit availability of operation and 12 hours per day of operational hours. Aggregate production capacity from 6 units would be ~ 2.6 Crore bricks per annum. Each brick produced from the facility would weigh 4.20 kg and is expected to sell at a price of Rs. 4.00 per brick.

Primary raw material required for brick making plant is fly ash (60%) which is generated from the power plant. Other raw materials include sand, lime, gypsum and cement which would be locally procured by APNRL. Following table highlights the raw material requirement and corresponding cost for this facility (6 units of brick making plant):"

Table 95 Raw Material Requirement and Cost Estimate (Qty in Tonne)

Particulars	Ratio	Daily Req. (1 Plant)	Yearly Req. (1 Plant)	Yearly Req. (6 Plants)	Raw Material Cost (Rs./ Tonne)	Annual Cost (Rs. Crore for 6 Plants)
Fly ash	60%	25.20	9,189	55,188	50	0.28
Sand	30%	12.60	4,599	27,594	350	0.97
Lime & Gypsum	8%	3.36	1,226.40	7,358.40	1,350	0.99

Particulars	Ratio	Daily Req. (1 Plant)	Yearly Req. (1 Plant)	Yearly Req. (6 Plants)	Raw Material Cost (Rs./ Tonne)	Annual Cost (Rs. Crore for 6 Plants)
Cement (OPC 53 Grade)	2%	0.84	306.60	1,839.60	7000	1.29
Total Raw Material						**3.52**
Manpower Cost					19,914	4.36
Total						**7.88**

The Petitioner submitted that it expects to make operating profit of Rs 2.63 Crore per annum from this facility. The Petitioner also submitted the estimate of hard cost as shown below.

Table 96 Hard Cost – Brick making Plants (Rs Crore)

Particulars	Value
Mechanical & Structural Works	3.25
Civil Work	0.50
Electrical Works	0.25
Total	**4.00**

8.7 <u>Bottom Ash Handling system including dewatering bin to feed HCSD system</u>

The submission of the Petitioner in this regard is as follows.

"In the current system existing at project site, the fly ash generated is extracted in dry form and stored in fly ash silos while bottom ash is disposed in lean slurry form to ash disposal area (temporary ash-dyke). Temporary ash dyke facility admeasuring 17 acres was used owing to challenges in land acquisition. Company has employed pumps to extract the water from the surface of settled ash slurry and dispose it to the nearby land.

APNRL is in process of setting up permanent ash dyke facility as envisaged at the time of Financial Closure. Land acquisition of 125 acres in villages of Padampur and Jagnathpur has been completed for permanent ash dyke construction and work is expected to start at the earliest.

As per the Environment Clearance obtained from MoEF, APNRL has to establish High Concentration Slurry Disposal (HCSD) system to dispose fly ash and bottom ash into the ash pond. As per report from owner's engineer, implementing a HCSD system would lead to saving in terms of total land uses for Ash Dyke vís-a-vís existing system of lean slurry disposal. Considering station head rate of 2300 kCal / kWh, Coal GCV of 3450 kCal / kg and Ash content in coal ~46%, the land requirement for lean slurry disposal system for 540 MW operational plant is 153.15 acres. Land required for corresponding HCSD *system is 114.86 acres. Certain other advantages of HCSD system over lean slurry disposal is as under:*

- *Layered ash spreads enables vertical filing thereby requirement less land.*
- *Pumping is done at higher concentration resulting in low water consumption and correspondingly operating power usage reduces.*
- *Due to concentrated slurry and less water, ground water pollution shall be minimized.*
- *Slurry flow rate is drastically reduced, hence lower pipeline sizes. Further, with lower velocity the pipe-line life increases.*
- *Reduced leaches at the ash disposal area.*

Further, HCSD system was originally designed to take care of only Fly Ash while bottom ash was disposed directly into a separate ash pond. APNRL intends to use the system for both fly ash and bottom ash disposal and thus it is required to install dewatering bins, crusher and conveying system to transfer wet bottom ash to the mixing tank. On installation of HCSD system with dewatering bins, there would be no requirement of separate ash dyke areas for the facility.

The complete system will be installed within 18 months from the date of order placement."

Petitioner has submitted the highlights of the hard cost as per report from DCPL for HCSD system with dewatering bins. The hard cost as submitted by Petitioner is as follows

Table 97 Hard Cost – HCSD + Dewatering Bins (Rs Crore)

Particulars	Value
Civil Work	9.54
Electrical Works	17.00
Total	**26.54**

8.8 Railway Siding

The submission of Petitioner in this regard is as follows

"*APNRL is in process of setting up private railway siding at the site and has obtained necessary clearances for construction of railway siding at Captive mine end and at Birajpur (plant end). Further, AAPL, one of the Adhunik group companies having plant very near to the APNRL site, is having their private railway siding which can be used for coal unloading. The Company expects to incur a cost of Rs. 13.82 Crore & Rs. 10.00 Crore for Railway Siding Works (Tori) & Railway Siding Works (Plant) respectively."*

8.9 Additional Ash Dyke

The submission of the Petitioner in this regard is as follows.

"Owing to challenges in land acquisition, APNRL is currently using temporary ash dyke facility admeasuring 17 acres for ash disposal. This facility is expected to remain adequate till 2015, by when APNRL shall complete the permanent ash dyke construction. Land aggregating to 125 acres required for building permanent ash dyke, has already been acquired for the same and work on permanent ash dyke is expected to commence at the earliest."

Commission's Analysis

8.10 The Commission has reviewed the submissions of Petitioner regarding the proposed schemes for additional capitalisation. The Commission has also reviewed the Detailed Project Report (DPR) and cost benefit analysis submitted by the Petitioner.

8.11 The Commission finds the Detailed Project Reports (DPR) and the Cost Benefit Analysis submitted by the Petitioner to be incomplete and inadequate for the purpose of undertaking a review of the additional capital expenditure proposed. The Cost Benefit Analysis submitted by the Petitioner states benefits only in qualitative terms and is not accompanied by any analysis of the quantitative benefit to the Petitioner and its beneficiaries on account of the proposed schemes.

8.12 The Petitioner is required to employ established methods of conducting cost benefit analysis (such as NPV, IRR and Payback Period) and quantitatively evaluate the need for a proposed investment as compared to other alternatives. Accordingly the Commission directs the Petitioner to undertake the cost benefit analysis of each of the proposed schemes and submit the same along with its next Tariff Petition. In addition to the cost benefit analysis the Petitioner is also directed to submit the impact of each scheme on the tariff (Rs/kWh) of its generating station (considering normative availability).

8.13 The Commission observed that the Petitioner has not claimed the additional capitalization as per Regulation 7.5 and Regulation 7.6 of the Generation Tariff Regulation, 2010. The Petitioner is required to provide the appropriate Regulation under which the Additional Capitalization of each scheme is being claimed. Accordingly the Commission directs the Petitioner that any additional capitalization that it claims in its subsequent Tariff Petition shall be claimed under the appropriate Regulation of the prevailing Generation Tariff Regulations.

8.14 As the first MYT control period is already over and certain changes have taken place such as the Petitioner no longer having access to its coal block, the Petitioner is directed to re-evaluate the need and costing of the schemes proposed and submit a capital investment plan in line with Regulation 6.6 of the Generation Tariff Regulations 2015.

A9: DIRECTIVES

Capital Cost

9.1 Directive as per MYT Order

"The Commission has provisionally approved the capital cost for Unit 1 and Unit 2 at Rs 3286.62 Cr in this order. The Commission however directs the Petitioner to file a petition for approval of final capital cost of the plant along with the audited accounts for the power plant for FY 2013-14 and statutory auditor's certificate for actual cost incurred upto COD. The Petitioner is also required to submit details of the final capital cost of the plant in the format specified in Annexure 2 for prudence check by the Commission".

Petitioner's Submission

The Petitioner submitted that the capital cost has been considered as per the audited annual accounts of FY 2012-13 and FY 2013-14. The Petitioner has submitted the capital cost has been submitted as per the format specified by Commission was attached as Annexure along with the petition.

Commission's Observation

The Commission has discussed this matter in its approval of final capital cost of Unit- I and Unit II as on CoD in paragraph 5.10 to paragraph 5.22 of this Tariff Order. As the Capital Cost as on CoD of Unit-I and Unit-II has been approved in this Tariff Order, this directive has been dropped.

Additional capitalization

9.2 Directive as per MYT Order

"The Commission has provisionally approved an additional capitalisation of Rs 211.18 Cr for Unit 1 and Unit 2 during the Control Period. In this regard, the Petitioner is directed to submit the detailed project report and cost benefit analysis of each of the schemes prior to taking up the scheme for execution."

Petitioner's Submission

The Petitioner has submitted the detailed project report and the cost benefit analysis of each of the schemes along with the petition.

Commission's Observation

The Petitioner has not appropriately complied with this Directive. The Commission has discussed this issue in detail in Paragraph 8.10 to Paragraph 8.14 of this Tariff Order. The additional directives in the aforesaid paragraphs need to be complied with by the Petitioner and compliance shall be submitted along with its next Tariff Petition.

Coal Block development and usage of imported coal

9.3 Directive as per MYT Order

"The Commission directs the Petitioner to expedite the production from the allocated coal block. Further, pending the commencement of production from the coal block, the Petitioner should exercise due prudence at the time of procuring coal from alternate sources so as to minimize the weighted average coal cost.

The Commission also directs the Petitioner to approach the appropriate authority and seek extension of the coal linkage from CCL-CIL till such time the captive coal block of the Petitioner is developed. The Petitioner should submit compliance report regarding the same to the Commission.

The Commission directs the Petitioner that in case where the energy charge rate based on weighted average price of use of fuel including alternative source of fuel (other than coal through CCL linkage) exceeds 30% of base energy charge rate as approved by the Commission in this Order or energy charge rate based on weighted average price of use of fuel including alternative sources of fuel exceeds 20% of energy charge rate based on weighted average fuel price for the previous month (whichever is lower), prior consultation with JUVNL should be made not later than three days in advance."

Petitioner's Submission

9.4 The Petitioner submitted that the fuel requirement of the project was planned to be fulfilled from the captive Ganeshpur coal block which was allotted to the Petitioner and Tata Steel on a 50:50 joint allocation basis. The Petitioner further submitted that the Hon'ble Supreme Court in its judgement dated September 24th, 2014 has cancelled the captive mine allocation to the Petitioner. The Petitioner has received tapering coal linkage for 540MW (2x270MW) from Coal India Ltd and FSAs have been signed with central coal field ltd. (CCL). The coal supplied herein was supplied at 40% premium to the price of coal of CCL which was subsequently revised to 20% premium. Further, pursuant to the cancellation of coal blocks by Hon'ble Supreme Court, Ministry allowed 50% coal to be supplied at 20% premium, which has been further extended till June 2015 only.

9.5 The Petitioner further submitted that it has complied with the directive of the Hon'ble Commission that the base energy charge has not varied by more than 30% in any month and the weighted average price of use of fuel have never exceeded 20% of the energy charge rate based on weighted average fuel price for the previous month.

Commission's Observation

The Commission notes the submission of the Petitioner and is concerned with the lack of efficient and sustainable long term source of primary fuel for the power plant. The Commission directs the Petitioner to develop an action plan to secure reliable and efficient long term source of primary fuel for its plant.

The Commission again directs the Petitioner that in case where the energy charge rate based on weighted average price of use of fuel including alternative source of fuel (other than coal through CCL linkage) exceeds 30% of base energy charge rate as approved by the Commission in this Order or energy charge rate based on weighted average price of use of fuel including alternative sources of fuel exceeds 20% of energy charge rate based on weighted average fuel price for the previous month (whichever is lower), prior consultation with JUVNL should be made not later than three days in advance

Dedicated transmission system

9.6 Directive as per MYT Order

With regards to construction of the Dedicated Transmission System (DTS), the Commission believes that the rationale for construction of the DTS from the power station to JSEB's Ramchandrapur 220 KV sub-station should be a net reduction in the cost of power purchase to the consumers. The Commission directs JUVNL to carry out a cost benefit analysis of routing the power from the power station through the Dedicated Transmission System vis-à-vis routing the power through the CTU as is being done currently and submit a report regarding the same to the Commission within two months of issuance of this Order.

With regards to the non-payment of injection charges by JUVNL, the Commission notes that as per the prevalent practice in the industry, transmission charges for procurement of power under the long term contract are to be borne by the procurer. The Commission directs that the injection charges must be paid by JUVNL.

The Commission further directs the Petitioner and JUVNL to constitute a joint committee to resolve all the issues regarding the transmission of power from the power station to JUVNL. The committee should look into the need for the proposed Dedicated Transmission System, the technical configuration of the proposed line and the sharing of costs of the transmission line. The Petitioner and JUVNL should, after mutual discussions and agreement, arrive at a way forward vis-à-vis the issue of the Dedicated Transmission System, and should submit a status report regarding the same to the Commission within two months of issuance of this Order.

Petitioner's Submission

The Petitioner submitted that as per its information JUVNL is yet to submit the Cost-Benefit Analysis report for the dedicated transmission system. It further submitted that as per the directions of the Commission a Joint Committee was constituted and several rounds of discussion have taken place between JUVNL and the Petitioner on the issue of DTS with last meeting held on 26th July 2016 but due to delay in data facilitation and other issues the final decision is yet to be taken.

The Petitioner requested the Commission to direct the JUVNL/JBVNL to pay transmission charges (injection/ withdrawal) & losses (injection/ withdrawal) till suitable directions regarding DTS are issued by the Commission.

Commission's Observation

Commission had in its Tariff Order dated May 2014 for the petitioner has detailed the principle for constructing the dedicated transmission system for evacuation of power from the project. The rationale for construction of DTS should be a net reduction in the cost of power purchase.

The Commission directs the petitioner and JUVNL to expedite the resolution to this issue. The decision regarding construction of dedicated transmission system may be taken as per the provisions of the power purchase agreement signed by petitioner with JUVNL

The Commission observes with concern that even after two years of commissioning of the power station, the Petitioner and JUVNL have been unable to resolve the issues related to the transmission of power from the power station to JUVNL/JBVNL.

The matter of payment of injection charges is already under consideration of the Commission through Petitions submitted by the APNRL.

Landed Cost of Coal

9.7 Directive as per the MYT Order

"*The Commission directs the Petitioner to get the month-wise landed cost of coal separately showing Base cost of coal; Royalty; Taxes and duties; Transport cost by rail / ocean / road / pipeline or any other means; and Clean energy cess as per Ministry of Coal, Govt. of India Notification with respect to Unit 1 and Unit 2 certified by the Statutory Auditor of the Company and submit the same along with the petition for truing up of ARR for FY 2012-13 and FY 2013-14.*"

Petitioner's Submission

9.8 Petitioner stated that it has submitted the month-wise landed cost of coal separately showing the base cost of coal for Unit 1 and Unit 2 certified by the Statutory Auditor.

Commission's Observation

Commission has observed Petitioner's compliance and this regard and directs the Petitioner to comply with the directive in the next tariff petition also.

Submission of Availability Certificates against the contracted capacity

9.9 The Commission directs the Petitioner to produce the availability certificates for Unit 1 and Unit 2 against the contracted capacity to JBVNL for FY 2012-13, FY 2013-14, FY 2014-15 and FY 2015-16 along with its next tariff/true-up petition.

Filing of True Up Petition

9.10 The Commission directs the Petitioner to file the true up for the FY 2014-15 and APR petition for FY 2015-16 within two months from the date of issuance of this order.

Data adequacy in next Tariff petition and timelines

9.11 The Commission directs the Petitioner to come up with the next tariff petition removing the various data deficiencies highlighted throughout the tariff order along with the unit-wise audited accounts for the FY 2014-15 and FY 2015-16.

This Order is signed and issued by the Jharkhand State Electricity Regulatory Commission on this the 01st of September, 2016.

Date: 01st of September, 2016
Place: Ranchi

Sd/-	**Sd/-**
(Mr R.N Singh)	**(N.N Tiwari, J)**
MEMBER (T)	**CHAIRPERSON**

A10: ANNEXURES

Annexure 1: List of participating members of public in the public hearing

Sl. No.	Name S/Shri	Address / Organization if any
1	Munna Thakur	Ramgarh
2	Kanhaiya Manda	Ramgarh
3	Shivaji Patel	Ramgarh
4	C. Singh	Ramgarh
5	Diwakar Lohar	Ramgarh
6	Santosh Kumar	Ramgarh
7	Sanjay Mandal	Ramgarh
8	Ravi Shankar	Ranchi
9	Niraj Kumar	Hazaribagh
10	A. Tripathi	Ranchi
11	R. K. Singh	Ranchi
12	Narendra Munda	Ranchi
13	Paavan Bhargave	Ranchi
14	Aaron	Ranchi
15	Vineet Sarawagi	APNRL
16	Arun K. Palit	APNRL
17	Suresh Gehari	APNRL
18	Smarajit Sahoo	APNRL
19	Dinesh Mehta	APNRL
20	Sanjiv Mahto	APNRL
21	Mani Shankar	APNRL
22	Sachin Agarwal	APNRL
23	Rajesh Sharma	APNRL
24	P. K. Biswas	APNRL
25	Sanjiv Shaudhary	APNRL
26	Himanshu Kumar	APNRL
27	Anita Prasad	JBVNL
28	Ranishar Kumar	JBVNL
29	A.K. Palit	APNRL
30	Aachin Agarwal	APNRL
31	Manoj Sharma	Ranchi
32	B.N.P. Singh	Ranchi
33	S.K. Chaoudhary	Ranchi

Sl. No.	Name S/Shri	Address / Organization if any
34	K.K. Verma, CE (C&R)	JBVNL
35	S.S. Kujur	Ranchi