CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 257/2010

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member

Date of Hearing: 11.11.2014
Date of Order 26.05.2015

In the matter of

Approval of tariff of Pragati-III Power Plant (1371 MW) of Pragati Power Corporation Limited for the period from date of commercial operation of Block-I & II (First and Second Block) upto 31.3.2014

And

In the matter of

Pragati Power Corporation Limited
Himadri, Corporate Office,
Rajghat Power House Complex,
New Delhi **….Petitioner**

Vs

1. BSES Yamuna Power Ltd.
Shakti Kiran Building,
Karkardooma,
Delhi-110092

2. New Delhi Municipal Council
Palika Kendra, Sansad Marg,
New Delhi – 110001

3. North Delhi Power Ltd
Grid Substation, Hudson road,
Kingsway Camp,
Delhi-110009

4. BSES Rajdhani Power Ltd.,
BSES Bhawan, Nehru Place,
New Delhi-110019

5. Punjab State Power Corporation Limited
The Mall, Patiala – 147001

6. Haryana Power Purchase Centre
Shakti Bhawan, Sector-IV,
Panchkula, Haryana-134109 **…Respondents**

Parties present: Shri Surendra Kumar, PPCL
Shri Rajesh Chattarwal, PPCL
Shri Amit Nagpal, PPCL
Shri R.K. Yadav, PPCL
Shri Suresh Yadav, PPCL
Shri R.B. Sharma, Advocate, BRPL

ORDER

This petition has been filed by the petitioner, Pragati Power Corporation Limited on 15.9.2010 for determination of tariff of Pragati-III Combined Cycle Power Project (1371 MW) (the generating station) from the date of commercial operation of Block-I and Block-II (First and Second Block) till 31.3.2014, based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ("2009 Tariff Regulations").

2. The capacity configuration of the different blocks of the generating station along with their scheduled date of commercial operation (as per petition) is as under:

	Unit	**Capacity**	**Scheduled date of commercial operation**
Block-I	GT -I	216 MW	27.12.2011
	GT -II	216 MW	16.7.2012
	GT-I with HRSG-I (ST-I)		1.4.2012
	GT I & II with HRSG-I & II (ST-I)	253.60 MW	14.12.2012
	Total	**685.60 MW**	
Block-II	GT -III	216 MW	28.10.2013
	GT -IV	216 MW	27.2.2014
	ST -II	253.6 MW	27.3.2014
	Total	**685.60 MW**	
	Grand Total	**1371.20 MW**	

3. During the preliminary hearing of the petition on 21.9.2010, the petitioner was directed to submit additional information, for which the petitioner sought extension of time. Thereafter, by affidavit dated 7.6.2011, the petitioner submitted additional information and also revised the estimated project cost. The petitioner further informed that the anticipated date of commercial operation of Block-I and Block-II of the generating station is 1.7.2011 and 1.1.2012 respectively.

4. Thereafter on 9.12.2011, the petitioner filed Interlocutory Application (I.A.No.24/2011) with a prayer for approval of fixed cost of ₹217.14 crore for Open Cycle Operation of one Gas Turbine (GT) and ₹320.18 crore for Combined Cycle Operation of one GT and its Associated Waste Heat Recovery unit, on annualized basis. In the said application, the petitioner also prayed for grant of provisional tariff of 95% of the fixed cost, till the issuance of final order by the Commission. Subsequently, the petitioner by affidavit dated 9.1.2012 submitted that GT-I (Open cycle mode) has been declared under commercial operation on 27.12.2011. The petitioner, by letter dated 29.3.2012 also informed that GT-I with its Associated Waste Heat Recovery unit of the generating station has been declared under commercial operation on 1.4.2012. Since GT-I (in open cycle mode) and GT-I (with associated Waste Heat Recovery & ST-I in combined cycle mode) of the generating station has been declared under commercial operation with effect from 27.12.2011 and 1.4.2012 respectively, the Commission, in exercise of the power under Clause 4 of Regulation 5 of the 2009 Tariff Regulations, by order dated 25.5.2012 granted provisional tariff in respect of GT-I (in Open cycle mode) from 27.12.2011 till 31.3.2012 and GT-I (with associated Waste Heat Recovery & ST-I in combined cycle mode) from 1.4.2012 till 31.3.2014, pending determination of the final tariff. In the said order, the capital cost was

restricted to 95% of the net capital cost of ₹4370.30 crore for the purpose of provisional tariff and allowed as under:

	From	To	**Capital cost** *(₹in crore)*
GT-I in open cycle mode	27.12.2011	31.3.2012	524.81
GT-I and ST-I in combined cycle mode	1.4.2012	313.2014	1037.94

5. Based on this, the provisional annual fixed charges of the generating station for GT-I (in open cycle mode) from 27.12.2011 till 31.3.2012 and GT-I (with associated Waste Heat Recovery & ST-I in combined cycle mode) from 1.4.2012 to 31.3.2014 allowed by order dated 25.5.2012, subject to the final determination of tariff of the generating station was as under:

(₹in lakh)

	From	To	**Annual fixed charges**
GT-I in open cycle mode	27.12.2011	31.3.2012	17402.89
GT-I and ST-I in combined cycle mode	1.4.2012	31.3.2013	30356.30
	1.4.2013	31.3.2014	30356.30

6. Accordingly, the prayer of the petitioner in the Interlocutory Application (I.A.No.24/2011) for grant of provisional tariff was disposed of as above and the petitioner was directed to revise the figures in the petition, in terms of the provisions of the 2009 Tariff Regulations, taking into consideration the actual dates of commercial operation of the generating station.

7. Subsequently, the petitioner vide letter dated 10.12.2012 has intimated that GT-II which was declared under commercial operation on 16.7.2012 in Open Cycle mode has since been declared under commercial operation in Combined Cycle mode with effect from 14.12.2012. Further, the petitioner vide letter dated 23.10.2013 has submitted that GT-III of Block-II has been declared under commercial operation in open cycle mode, with effect from 28.10.2013.

8. In response to the directions of the Commission by letter dated 5.11.2013 to submit additional information, the petitioner vide affidavit dated 2.5.2014 has amended the petition in respect of Block-I. Also, by affidavit dated 13.10.2014, the petitioner has furnished additional information and revised the tariff filing forms in respect of Block-I and Block-II / generating station.

9. Pursuant to the hearing of the petition on 11.11.2014 the Commission vide record of proceedings had directed the petitioner to submit additional information and accordingly reserved orders in the matter. However, the petitioner has not filed the complete information as sought for by the Commission, though certain information has been filed vide affidavit dated 5.12.2014. Accordingly, based on the on available documents / information, we proceed to determine the tariff of the generating station from COD of GT-I (27.12.2011) till 31.3.2014 in terms of the provisions of the 2009 Tariff Regulations. The petitioner is however directed to furnish complete information as sought for by the Commission at the time of truing-up of tariff of the generating station and the same will be considered in accordance with Regulation 6 (1) of the 2009 Tariff Regulations.

10. The annual fixed charges claimed by the petitioner are as under:

(₹in lakh)

	GT-I	**GT-I+0.5 STG**	**GT-I +0.5 STG+GT-II**	**Block I**	**Block I**	**Block I+GT-III**	**Block 1+GT-III+GT-IV**	**Block 1 & II**
	27.12.2011 to 31.3.2012	**1.4.2012 to 15.7.2012**	**16.7.2012 to 13.12.2012**	**14.12.2012 to 31.3.2013**	**1.4.2013 to 27.10.2013**	**28.10.2013 to 26.2.2014**	**27.2.2014 to 26.3.2014**	**27.3.2014 to 31.3.2014**
Depreciation	6607.313	8212.918	10993.784	12512.088	12255.525	15319.776	29164.579	29164.579
Interest on Loan	8295.900	12689.000	17784.500	19243.000	20107.000	24551.300	27965.300	34833.700
Return on Equity	6117.700	9122.300	12764.000	13836.300	14597.400	17838.900	20811.700	25622.200
Interest on Working Capital	2524.600	3668.398	5198.500	6510.500	6740.600	9214.500	11701.600	14215.700
O & M Expenses	3686.640	10471.570	9773.412	11991.144	13631.700	16670.584	20664.424	25353.488
Total	**27232.153**	**44164.186**	**56514.196**	**64093.032**	**67332.225**	**83595.060**	**110307.603**	**129189.667**

11. The petitioner has served copies of the additional information on the respondents. The respondents, TPDDL and BRPL have filed replies in the matter.

Commissioning schedule

12. The Board of Directors of the petitioner's company vide resolution dated 28.11.2006 had accorded Investment Approval for 1000 MW which was subsequently revised vide Resolution dated 27.6.2007 by enhancing the capacity to 1500 MW (nominal). Based on the Board resolution, the Government of NCT vide letter dated 10.7.2007 had approved the said project with a nominal capacity of 1500 MW at an estimated project cost of ₹5198.81 crore. As per the said Board resolution, the units were proposed to be commissioned prior to the conduct of the Commonwealth Games in New Delhi during the year 2010.

13. The petitioner was directed vide letter dated 26.9.2014 to furnish certain additional information including scheduled commissioning dates of Blocks / Modules of the combined cycle project as per investment approval along with a copy of Agenda material of the Board resolution. In the various investment approvals of the Board of Directors no specific scheduled COD of the Block-I & II has been indicated except that the project is to be developed in view of Common Wealth Games in 2010. As per the EPC contract, Block-I & Block-II were to be commissioned within 28 months and 32 months from the date of award of main plant package (the date of LOA is 30.4.2008). Accordingly, the petitioner has considered the scheduled COD of Block-I as 31.7.2010 and Block-II as 30.11.2010. The actual COD of the Block-I and Block-II is 14.12.2012 and 27.3.2014 respectively. Therefore, Block-I was declared under commercial operation after 55½ months and Block-II was declared under commercial operation after 71 months from the date of LOA of main

plant package (as per Form-5D). The petitioner vide affidavit dated 13.10.2014 has submitted the scheduled CODs and actual CODs as under:

Machine	Scheduled date of commissioning	Actual COD	Time overrun
Gas Turbine-I	31.3.2010	27.12.2011	21 months
Steam Turbine with HRSG-I	31.7.2010	1.4.2012	
Gas Turbine-II	31.5.2010	16.7.2012	26 months
Steam Turbine with HRSG-I & II	31.7.2010	14.12.2012 (Block-I)	28½ months
Gas Turbine-III	31.7.2010	28.10.2013	39 months
Gas Turbine-IV	30.9.2010	27.2.2014	41 months
Steam Turbine-II	30.11.2010	27.3.2014 (Block-II)	40 months

Admissibility of Additional Return on Equity

14. Block-I of the generating station was declared under commercial operation after 66 months (on 14.12.2012) and Block-II was declared under commercial operation on after 81 months (on 27.3.2014) from the date of Investment Approval. The time line specified in Appendix-II to the 2009 Tariff Regulations for availing additional ROE of 0.5% is 30 months for the first block for Greenfield projects and for subsequent blocks at an interval of 4 months from the date of investment approval i.e. 27.6.2007. Considering the time overrun in the completion of project, the additional ROE of 0.5% is not admissible to the generating station of the petitioner.

Time overrun

15. It could be observed from the table under para 13 above that there is substantial time overrun in commissioning of the different GTs in Open Cycle mode and Combined cycle mode including the project as a whole. The petitioner was directed vide ROP dated 11.11.2014 to furnish the reasons for the delay in the commissioning of the Unit/Blocks and in response, the petitioner has furnished the reasons for time overrun, broadly, as under:

Block-I (GT-I, GT-II, HRSG-I, HRSG-II and STG-I)

(a) Delay of 6 months due to problem in transportation of GT-I & GT-II from Mundra Port to site. The GT-I & GT-II were imported from GE, USA and were dispatched in flange to flange assembled conditions of minimum weight of 300 tons and permission for carrying such heavy equipments through State Road of Gujarat was delayed.

(b) Delay in piling work, foundation of GT & GTG for 7 months due to non-availability of hydraulic rigs, delay in submission of civil foundation drawings and inadequate deployment of man power by the sub-contractor.

(c) Delay of 7 months in commissioning of compressed air system, DM water system.

(d) Delay of 1 month in commissioning from oil flushing to synchronization and trial run.

(e) Delay of 4 ½ months due to erection problems in fuel gas pre-heating system, generator excitation system, hydrogen gas analyzer system.

(f) Delay of 3 months due to STG-I turbine deck, cooling tower, clarifier, CW pump house forebay etc.

Thus there is a delay of 21 months, 25 ½ months 28 ½ months in the commissioning of GT-I, GT-II and Block-I respectively.

Block-II (GT-III, GT-IV, HRSG-III, HRSG-IV and STG-II)

(a) Delay of 8 months in foundation of GT/GTG -III due to delay in assigning of job work to civil design consultants and actual execution of work by vendor of BHEL at site.

(b) Delay of 24 months in commissioning of GT-III due to non-readiness of civil structure, poor mobilization of the erection agency to undertake erection work of GT-3 and also due to strike of labour of the erection agency and non-readiness of Diverter Damper in respect of GT-III;

(c) Delay of 6 months in assembly of GT-IV at BHEL Haridwar, road clearance, non readiness of GT-IV foundation, poor mobilization of workforce and material by the

erection agency for not commissioning of Diverter Damper & and bypass stack etc. of GT-IV;

(d) Delay of 1 month in initial casting of STG-II foundation;

(e) Delay of 1 month in commissioning from oil flushing to synchronization and trial run.

There is delay of 39 months, 41 months and 40 months in commissioning of GT-III, GT-IV and Block-II respectively.

Submission of the Respondent, TPDDL

16. The respondent, TPDDL has submitted that the scheduled date of commercial operation of Block-I and Block-II from the date of the placement of order for main plant (i.e. 30.4.2008) is 30.10.2010 and 3.2.2011 respectively. However, as per the clarification submitted by the petitioner on 10.1.2012 in I.A No. 24/2011, the proposed COD of Block-I and Block-II were in the month of April' 2012 and May' 2012 respectively. Therefore, Block-I and Block-II have slipped beyond the prescribed months and therefore, there is a time over run of around 1.5 years. The respondent has also submitted that the reasons submitted by the petitioner in support of the delay of the project are inconclusive and that the time over-run of the project was for the reasons attributable to the M/s BHEL, the EPC contractor. The petitioner was aware of BHEL's sluggish approach and should have taken from steps at the beginning of the project execution to avoid slippage of the project from the scheduled completion date. The delay indicates that the petitioner has not taken appropriate project monitoring and management measures to achieve the COD of the generating station within the scheduled completion time. The respondent has requested for rejection of the claims of the petitioner for additional IDC due to extension of commissioning schedule of the project.

Submissions of the Respondent, BRPL

17. The respondent, BRPL has submitted that despite the turnkey EPC contract awarded to M/s BHEL for engineering, manufacturing, procurement, transportation, erection and commissioning of 1371 MW combined cycle gas based power station, there is a huge delay in completion of the project. The problems narrated by the petitioner like (a) Delay in piling work owing to the Non availability of the hydraulic rigs and use of mechanical rigs in its place (b) Delay in Civil works owing to inadequate mobilization of resources (c) Frequent changes in design notes (d) Non completion of electrical panel works of gas turbines, water treatment plant and piping systems etc. due to acute shortages of the skilled manpower (e) Delay in transportation of GT-II and GT-III (f) Non availability of critical items for HRSG-I & II and non availability of erection equipments at site are all casual problems which are faced day in and day out during the erection of a project of this nature for which EPC contractor is equally responsible and is liable to make good through the LD clause for the delay in the execution of the contract. The respondent has accordingly submitted that the petitioner may not be allowed the IDC and IEDC for the time overrun period. The respondent has further stated that the prudence check of time overrun and cost overrun may be considered in terms of the judgment dated 27.4.2011 of the Appellate Tribunal for Electricity (the Tribunal) in Appeal No. 72/2010 (MSPGCL Vs MERC & others).

18. We have examined the matter. The Tribunal in its judgment dated 27.4.2011 in Appeal No. 72 of 2010 (MSPGCL Vs MERC & others) has laid down the following principle for prudence check of time over run and cost overrun of a project as under:

> *"7.4. The delay in execution of a generating project could occur due to following reasons:*
>
> *i. Due to factors entirely attributable to the generating company, e.g., imprudence in selecting the contractors/suppliers and in executing contractual agreements including terms and conditions of the contracts, delay in award of contracts, delay in providing inputs like making land available to the contractors, delay in payments to contractors/suppliers as per*

the terms of contract, mismanagement of finances, slackness in project management like improper co-ordination between the various contractors, etc.

Ii Due to factors beyond the control of the generating company e.g. delay caused due to force majeure like natural calamity or any other reasons which clearly establish, beyond any doubt, that there has been no imprudence on the part of the generating company in executing the project.

iii. Situation not covered by (i) & (ii) above.

In our opinion in the first case the entire cost due to time over run has to be borne by the generating company. However, the Liquidated damages (LDs) and insurance proceeds on account of delay, if any, received by the generating company could be retained by the generating company. In the second case the generating company could be given benefit of the additional cost incurred due to time over-run. However, the consumers should get full benefit of the LDs recovered from the contractors/supplied of the generating company and the insurance proceeds, if any, to reduce the capital cost. In the third case the additional cost due to time overrun including the LDs and insurance proceeds could be shared between the generating company and the consumer. It would also be prudent to consider the delay with respect to some benchmarks rather than depending on the provisions of the contract between the generating company and its contractors/suppliers. If the time schedule is taken as per the terms of the contract, this may result in imprudent time schedule not in accordance with good industry practices.

7.5 in our opinion, the above principle will be in consonance with the provisions of Section 61(d) of the Act, safeguarding the consumers ' interest and at the same time, ensuring recovery of cost of electricity in a reasonable manner."

19. In line with the observations of the Tribunal as above and considering the submissions of the parties, the issue of time overrun in the completion of the project (GTs / STs / Blocks) has been examined as under:

BLOCK- I [GT-I]

20. From the reasons narrated by the petitioner in para 15 above, there is a total delay of 21 months in the commissioning of GT-I. The petitioner has submitted that the delay of 6 months was due to problem in the transportation of GTs (GT I & II) from Mundra Port to site. The petitioner has also submitted that these GTs were imported from USA and were dispatched in flange to flange assembled conditions and permission for carrying such heavy equipments by road through the State of Gujarat was delayed. It appears from the submission of the petitioner that there has been lack of due diligence on the part of the

EPC contractor while submitting the bid. The EPC contractor was expected to carry out the route survey for the timely supply of equipments / materials before submitting his bid for the project and agreeing to the time line specified. As per prudent utility practices under the bid specification, the bidder is required to familiarize himself with regard to the site conditions, the accessibility to site and the method of transportation of items etc. The EPC contractor having failed to do the above, it becomes onerous on the part of the petitioner to enforce these conditions strictly to ensure the supply of these items specially considering the fact that the project was to be commissioned before the Common Wealth Games to be held in New Delhi in October, 2010. In our view, the petitioner cannot escape its responsibility on account of the delay in transportation of the GTs by road by the EPC contractor. In this background, we hold that the delay of 6 months in the transportation of assembled GTs is attributable to the petitioner.

21. There has been a delay of 7 months in piling work, fault in casting of foundation of GT/GTG due to non-availability of hydraulic rigs, delay in submission of civil drawings, inadequate supply of man-power by the sub-contractor and delay in deployment of skilled/unskilled workers by the sub-contractor of M/s BHEL. There is also a delay of 7 months in commissioning of compressed air system, DM plant etc and delay of one month in commissioning of GT-I from oil flushing to synchronization and trial run. The delay of 7 months in piling work etc., in our view is attributable to the unprofessional approach and the lack of planning and execution of the contractual responsibilities on the part of M/s BHEL. Further, the delay of 7 months in the commissioning of compressed air system and DM plant etc., is attributable to the slackness in project management resulting in the lack of co-ordination between the various sub-contractors and the improper planning and execution of the works by the EPC contractor & its sub-contractors and not on account of

any reasons which were beyond the control of the petitioner and the EPC contractor/sub-contractors. The delay of one month in the commissioning of GT-I from oil flushing to synchronization and trial run is consequential upon the delays as aforesaid and the petitioner cannot escape the responsibility contending that the factors leading to the delay were beyond its control. Accordingly, we hold that the delay of 15 months (7+7+1) as stated above is attributable to the petitioner.

22. Though we do not find any imprudence in the selection of M/s BHEL as the EPC contractor, the conduct of the parties during execution of the contract had resulted in the delay in the execution of the project within the timeline specified under the contract. The project having been envisaged to commence operation during the Commonwealth games in October, 2010, it was incumbent on the part of all the parties to complete the project within the stipulated time. From the various correspondences exchanged between the petitioner and M/s BHEL, it is evident that there has been a general reluctance and apathy on the part of M/s BHEL in the execution of the contract as per the specified timeline. M/s BHEL had failed to mobilize the resources as per the requirement of the work schedule and there has been slackness on the part of BHEL in project management and to adhere to the specified timeline for the project. The petitioner also failed to persuade M/s BHEL to strictly adhere to the time schedule for completion of the works. These factors considered in totality, lead us to the conclusion that the delay is attributable to the petitioner and is therefore covered by the principle [(situation (i)] laid down in the judgment of the Tribunal dated 27.4.2011 in Appeal No. 72/2010. Accordingly, the entire cost due to total time overrun of 21 months as above in the commissioning of GT-I is required to be borne by the petitioner. However, the Liquidated Damages and Insurance proceeds on account of the delay if any, received could be retained by the petitioner.

BLOCK-I [GT-II]

23. From the reasons for the delay submitted by the petitioner its is observed that there is a time overrun of 25½ months in the commissioning of GT-II, which includes the delay of 21 months for GT-I for reasons such as the delay in transportation of GTs from Mundra Port to the site, delay on part of EPC contractor and lack of co-ordination etc. We had in above paragraph held that the total delay of 21 months in the commissioning of GT-I is required to be borne by the petitioner for the reasons stated therein. In addition to this, the delay of 4 ½ months in the commissioning of GT-II is on account of the erection problem in fuel gas pre-heating system, generator excitation and hydrogen gas analyser. This erection problem, in our view cannot be considered to be beyond the control of the contractor and there is no reason to burden the beneficiaries on this count. In line with our observations above in respect of GT-I, the delay on part of EPC contractor in respect of the COD of GT-II is also attributable to the petitioner and is therefore covered by the principle [(situation (i)] laid down in the judgment of the Tribunal dated 27.4.2011 in Appeal No. 72/2010. Accordingly, the entire costs due to total time overrun of 25 ½ months in the commissioning of GT-II is required to be borne by the petitioner. However, the Liquidated Damages and Insurance proceeds on account of the delay if any, received could be retained by the petitioner.

Steam Turbine along with Heat Recovery Steam Generator (HRSG)-I &II (Block-I)

24. From the reasons submitted by the petitioner for delay it is observed that the overall time overrun of 28½ months in the commissioning of Steam Turbine Generator includes the delay of 25½ months in the commissioning of GT-I & II for the reasons mentioned in paragraph 23 above. In addition to this, there is a delay of 3 months due to (i) delay in

assigning the job work to civil design consultants, submission of civil drawings & execution of work by BHEL vendor (ii) Steam turbine erection and delay in readiness of balance of plant like cooling tower, clarifier, CW pump house fore-bay etc. and failure of thrust pads of steam turbine at a load of 65 MW and (iii) delay due to labour strike in M/s Vasavi, a sub-contractor of BHEL. From the various correspondences exchanged between the petitioner and M/s BHEL, it is evident that there has been general reluctance and apathy on the part of M/s BHEL in the execution of the contract as per the specified timeline. M/s BHEL had failed to mobilize the resources as per the requirement of the work schedule and there has been slackness on the part of BHEL in project management and to adhere to the specified timeline for the project. The petitioner also failed to persuade M/s BHEL to strictly adhere to the time schedule for completion of the works. These factors in totality, lead us to the conclusion that the delay is attributable to the petitioner and is therefore covered by the principle [(situation (i)] laid down in the judgment of the Tribunal dated 27.4.2011 in Appeal No. 72/2010. Accordingly, the entire time overrun of 28½ months in the commissioning of Block-I is required to be borne by the petitioner. However, the Liquidated Damages and Insurance proceeds on account of the delay if any, received could be retained by the petitioner.

Block-II

25. The petitioner, as stated in para 15 above, has furnished the reasons for the delay of 40 months in the commissioning of Block-II (GT-III+GT-IV+STG-II) of the generating station. The various reasons for the delay as furnished by the petitioner are similar to the reasons furnished by the petitioner in respect of the delay in commissioning of Block-I. This includes the delay in assigning of job work to civil design consultants and actual execution of work by vendor of BHEL at site, delay in commissioning of GT-III due to non

readiness of civil structure, poor mobilization of erection agency to undertake erection work of GT-III, road clearance, non-readiness of GT-IV foundation, poor mobilization of work force and material by erection agency, delay in initial casting of STG-II, non availability of Diverter Damper and delay in commissioning activities like alkali boil out and steam blowing etc. In our view, the reasons submitted by the petitioner as above is attributable to the slackness in project management resulting in the lack of co-ordination between the various sub-contractors and the improper planning and execution of the works by the EPC contractor & its sub-contractors and not on account of any reasons which were beyond the control of the petitioner and the EPC contractor/sub-contractors. In our view there has been failure on the part of the EPC contractor to mobilize resources as per requirement of work schedules. Accordingly, we are of the considered view that the failure on the part of M/s BHEL in executing the work as per contractual agreements and the slackness on the part of the petitioner in project management has contributed to the delay for which the respondents cannot be burdened. Accordingly, we hold that the petitioner is responsible for the delay of 40 months in case of Block-II of the generating station and is therefore covered by the principle [(situation (i)] laid down in the judgment of the Tribunal dated 27.4.2011 in Appeal No. 72/2010. However, the Liquidated Damages and Insurance proceeds on account of the delay if any, received could be retained by the petitioner.

Capital Cost

26. Regulation 7(1) of the 2009 Tariff Regulations, provides as follows:

> *"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 finds deployed, by treating the excess equity as normative loan, or (i) being equal to the actual amount of loan in the event of the actual equal*

less than 30% of the funds deployed, up to the date of commercial operation of the project, as admitted by the Commission, after prudence check;

Capitalized initial spares subject of the ceiling rates specified in regulation 8; and

Additional capital expenditure determined under regulation 9:

Provided that the assets forming part of the project, but in use shall be taken out of the capital cost.

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 and the transmission system, prudence check of capital cost may be carried out based on the benchmark norms to be specified by the Commission from time to time.

Approved Capital Cost

27. The Board of the petitioner company in its 590th meeting held on 22.12.2005 has accorded approval for 350 MW Combined Cycle Gas Based Power Plant at Ash pond area of IP extension in Pragati Power Project Phase-II and also vide Resolution dated 28.11.2006 approved Pragati-III Gas Based Power Project at Bawana to meet the rising power demand in Delhi, particularly with reference to the proposed Common Wealth Games scheduled in the year 2010. However, the Ministry of Environment & Forests (MOEF), GOI did not consider the 350 MW Pragati-II Power Project on environmental concerns and as a result, the capacity of Pragati Power-II Project was merged with that of Pragati-III Gas Based Power Project.

28. Based on the above developments and the subsequent expansion in the capacity of Pragati-III project, the Economic Finance Committee (EFC) in its 3rd meeting held on 22.6.2007 had approved the installation of 1600 MW (max) with nominal capacity of 1500 MW Gas Based Combined Cycle Pragati-III Power Project at an estimated cost of ₹5195.81 crore Accordingly, the Board of Directors in its meeting held on 27.6.2007 had resolved as under:

(i) The resolution for approval for setting up of 350 MW gas based power plant at Nagla manchi stands withdrawn.

(ii) Resolved further that subject to approval of GNCTD, the Board of Directors accorded approval to take up & invest in Pragati gas based power plant with enhanced capacity of 1500 MW (Nominal), and the other resolutions of the Board passed in the meeting of Board of Directors on 28.11.2006 shall remain valid.

29. The petitioner vide affidavit dated 10.1.2012 has submitted that the Feasibility Report was prepared by NTPC for nominal capacity of 1500 MW. However, after detailed engineering and operation conditions at site of base load at 31.7^{0C} ambient (DBT), 60% RH, 50Hz, 32^{oC} CW temperature, Nox 25 ppmvd @15% O_2 and o% thermal make up (GT with 3500 hrs. de-gradation), the capacity of the generating station has been derived as 1371.20 MW at an estimated capital cost of ₹4536.20 crore (as per Form-5A submitted vide affidavit dated 14.10.2014).

30. The respondent BRPL has submitted that as Block-II of this generating station has attained commercial operation during the period 2009-14, the capital expenditure incurred as on COD in respect of Block-II is also required to be submitted and to this extent the petition is incomplete. It has also submitted that the justification furnished by the petitioner for the reduction of the capacity to 1371 MW on the ground of detail engineering at site conditions and operating conditions and the consequent reduction in the capacity has brought about reduction in the capital cost and has not been sufficiently explained by the petitioner.

31. We have considered the submissions of the parties. It is observed that the approved nominal capacity of 1500 MW (1600 MW max) at an estimated capital cost of ₹ 5195.81crore was reduced to 1371.20 MW at an estimated capital cost of ₹4536.20 crore after detailed engineering and operating conditions at site viz. base load at 31.7^{0} ambient (DBT), 60% Relative Humidity, 32^{oC} CW temperature etc. Further, the actual installed

capacity was restricted to 1371.20 MW, which is still higher than the combined capacity of 1350 MW of Pragati-II (350 MW) and Pragati-III (1000 MW) projects initially envisaged by the Board of petitioner company. The reduction in capacity of the Pragati-III project has also resulted in the reduction of the approved capital cost. Accordingly, we find no reason in the apprehensions raised by the respondent as regards restriction of the installed capacity to 1371.20 MW from the nominal capacity of 1500 MW and the capital cost approved.

Actual Capital Cost

32. The actual capital cost claimed by the petitioner on accrual basis vide affidavit dated 5.12.2014, as on COD of Block-I and Block-II/generating station based on audited accounts is as under:

(₹in lakh)

Units	COD	Year of capitalization	Total cost (EPC)	Additional capitalization of bought out items	Total Project cost
GT-I	27.12.2011	2011-12	102209.51	3030.33	105239.84
		2012-13	(-) 157.70	373.41	215.70
		2013-14	1671.83	174.42	1846.25
STG-I (HRSG-I)	1.4.2012	2012-13	51470.91	0.00	51470.91
		2013-14	7611.32	0.00	7611.32
GT-II	16.7.2012	2012-13	62646.93	0.00	62646.93
		2013-14	1137.10	0.00	1137.10
GT-I (HRSG-II)	14.12.2012	2012-13	18447.02	0.00	18447.02
		2013-14	(-) 492.03	0.00	(-) 492.03
Module-I		**Grand Total**	244544.90	3578.16	248123.06
GT-III	28.10.2013	2013-14	55097.33	--	55097.33
GT-IV	27.2.2014	2013-14	50531.56	--	50531.56
STG-II	27.3.2014	2013-14	81767.15	--	81767.15
Module-II		**Grand Total**	187396.04	--	187396.04
Module-I & II		**Grand Total**	**431940.94**	**3578.16**	**435519.10**

33. Accordingly, the actual capital cost has been re-structured as under:

(₹in lakh)

	2011-12	2012-13			2013-14			
	27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
Capital cost as on COD excluding IDC (A)	97011.89	147740.75	205421.98	221383.59	221599.29	269709.54	313972.52	383526.64
IDC (B)	5197.62	8970	13935.7	16421.11	16421.11	23408.19	29676.77	41889.80
Opening capital cost as on COD / 1st April including IDC (A+B)	102209.51	156710.75	219357.68	237804.7	238020.4	293117.73	343649.29	425416.44
Additional Capitalisation (C)	3030.33	-	-	215.70	-	-	-	10102.65
Closing capital cost **(A+B+C)**	105239.84	156710.75	219357.68	238020.4	238020.4	293117.73	343649.29	435519.09

34. The opening capital cost of ₹156710.75 lakh as on 1.4.2012 is inclusive of capital expenditure of ₹51470.91 lakh incurred on account of COD of STG-I with HRSG-I on 1.4.2012 in the closing capital cost of ₹105239.84 lakh as on 31.3.2012 i.e. (105239.84+51470.91=156710.75).

35. Similarly, the opening capital cost of ₹219357.68 lakh as on 16.7.2012 is inclusive of capital expenditure of ₹62646.93 lakh incurred on account of COD of GT-II as on 16.7.2012 in the closing capital cost of ₹156710.75 lakh as on 15.7.2012 i.e. (156710.75+62646.93=219357.68), the opening capital cost of ₹237804.70 lakh as on 14.12.2012 is inclusive of capital expenditure of ₹18447.02 lakh incurred on account of COD of STG-I with HRSG-II as on 14.12.2012 in the closing capital cost of ₹219357.68 lakh as on 13.12.2012 i.e. (219357.68+18447.02=237804.70). Also, the opening capital cost of ₹238020.40 lakh as on 1.4.2013 is inclusive of the net additional capital expenditure of ₹215.70 lakh on account of MBOA assets during 2012-13. The opening capital cost of ₹293117.73 lakh as on 28.10.2013 is inclusive of the capital expenditure of ₹55097.33 lakh in the closing capital cost of ₹238020.40 lakh as on 27.10.2013 i.e.

(238020.40+55097.33=293117.73) incurred on account of COD of GT-1II on 28.10.2013. The opening capital cost of ₹343649.29 lakh as on 27.2.2014 is inclusive of the capital expenditure of ₹50531.56 lakh incurred on account of COD of GT-1V on 27.2.2014 in the closing capital cost of ₹293117.73 lakh as on 26.2.2014 i.e. (293117.73 +50531.56=343649.29). The opening capital cost of ₹425416.44 lakh as on 27.3.2014 is inclusive of capital expenditure of ₹81767.15 lakh incurred on account of COD of STG-II/Block-II on 27.3.2014 in the closing capital cost of ₹343649.29 lakh as on 26.3.2014 i.e. (343649.29 +81767.15 =425416.44) respectively. Further, the petitioner has capitalized an amount of ₹10102.65 lakh before COD of STG-II / generating station during 2013-14**.** Accordingly, the capital cost as on COD of the project works out to ₹435519.09 lakh as on 31.3.2014.

Interest During Construction

36. The petitioner has submitted that the tariff filing forms filed earlier have been revised considering IDC on actuals, on payment basis, as on the dates of COD of the individual blocks. The petitioner has also submitted that it had earlier signed a loan agreement with PFC for 70% of the project cost and the loan drawl schedule was to commence from the fourth quarter of financial year 2009-10. It has also submitted that due to the delay in supplies and services, the overall project has been delayed and accordingly the loan drawl schedule was revised on several occasions. The petitioner has further stated that during the intervening period the petitioner had utilized its own Reserves & Surplus for the release of initial advance to the EPC contractor, payment of running bills for supply and services for a considerable period and that the payment has been totally on equity expenditure. Accordingly, it has submitted that no IDC is payable for the said period. The petitioner has therefore requested the Commission to allow IDC as per actuals, without

deduction of the LD retained by the petitioner, since the issue of LD has not been settled between petitioner and M/s. BHEL. Therefore, while finalizing the book of accounts, the LD amount has been shown as retained amount in book of accounts though deducted from the EPC contractor and the same has not been adjusted while working out final amount for IDC and Capital cost.

37. The petitioner has raised debt from Power Finance Corporation (PFC) and PFC vide letter dated 9.4.2009 has sanctioned debt amounting to ₹3637.00 crore. The petitioner has also availed loan amounting to ₹500.00 crore from the Govt. of NCT of Delhi. The details regarding the debt raised by the petitioner is as follows:

		Amount ***(₹in lakh)***
I	**PFC Loan**	
	Loan disbursement started from 5.2.2010	
	Loan drawn up to 31.3.2014	191558.00
	Loan amount drawn till COD of station (27.3.2014)	191558.00
	Repayment instalment (starting from 15.4.2013– Quarterly)	3420.68
II	**GoNCTD Loan**	
	Loan disbursement started from 30.11.2011	
	Loan drawn up to 31.3.2014	50000.00
	Loan amount drawn till COD of station (27.3.2014)	50000.00
	Repayment instalment (starting from 29.11.2012 –Yearly)	1333.33
III	**Total Interest During Construction claimed**	**43478.00**

38. As stated, the total time overrun involved in the commissioning of the project has not been allowed and accordingly the cost overrun due to time overrun has not been allowed. Therefore, IDC has not been allowed for the time over run period of 21 months, 26 months, 28½ months, 39 months, 41 months, 40 months in the commissioning of GT-I, GT-II, Block-I, GT-III, GT-IV and Block-II respectively. Despite directions of the Commission, the petitioner has not furnished the detailed calculations for unit-wise allocation of the total IDC. Therefore, the interest amount of ₹4941 lakh worked up to 30.11.2010 (scheduled COD of the generating station) has been apportioned between

capital and revenue, based on the same proportion as considered by the petitioner vide affidavit dated 5.12.2014. The petitioner is however directed to furnish the detailed calculations for unit-wise allocation of the total IDC at the time of revision of tariff based on truing-up exercise in terms of Regulation 6(1) of the 2009 Tariff Regulations.

39. On the basis of the above, out of total interest of ₹4941 lakh, an amount of ₹2709.40 lakh has been treated as IDC and the same has been allocated to the various units based on the total IDC *vis-a vis* the unit-wise IDC claimed by the petitioner. Accordingly, the unit-wise IDC has been worked out and allowed as under:

(₹ in lakh)

	GT-I	STG-I & HRSG-I	GT-II	ST/HRSG-I & II	GT-III	GT-IV	STG-II/ Project	**Total**
IDC	403.90	258.26	327.81	124.19	464.14	405.45	725.65	**2709.40**

Foreign Exchange Rate Variation (FERV) due to Cost overrun

40. The petitioner vide affidavit dated 5.12.2014 has submitted that "*the spares supplied from abroad has no price variation. Since the payment of imported items was to be made in respective currencies, therefore, due to time overrun there has been increase in exchange rate of USD and EURO with respect to INR. Thus, there has been cost overrun of ₹110967731.71 due to exchange rate variation*". As no cost overrun due to time overrun has been allowed to the petitioner, this amount of ₹110967731.71, the FERV has been disallowed unit-wise in the capital cost for the purpose of tariff as under:

(₹ in lakh)

27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
283.47	431.61	598.85	644.14	616.38	782.80	908.31	1109.68

Initial Spares

41. The cost of initial spares capitalised as on the actual date of COD of the generating station i.e from 27.12.2011 to 31.3.2014 is ₹87.59 crore. The petitioner vide affidavit dated 13.10.2014 has submitted that the balance amount of capital spares are yet to be received and capitalized. The amount of spares capitalised constitutes to 2.01% [(87.59/4355.19) x100] of the project cost and is within the ceiling limit of 4% of the project cost in terms of Regulation 8 of the 2009 Tariff Regulations. Accordingly, the capitalisation of initial spares is allowed.

Sale of Infirm power from synchronization of GT-I up to COD of Block-I & Block-II

42. The petitioner vide affidavit dated 13.10.2014 has submitted that the net amount of (-)₹2.14 crore towards revenue earned up to the COD of Module-I and an net amount of (-)₹10.13 crore towards revenue earned up to COD of Block-II has been adjusted in capital cost as shown in Auditor certificates of capital cost furnished. The petitioner, vide ROP dated 11.11.2014 was directed to furnish the details of increase in IDC, IEDC and price escalation in the different packages of contracts from the date of scheduled COD to actual COD. In response, the petitioner vide affidavit dated 5.12.2014 has submitted that the cost overrun due to time overrun from the scheduled COD to the actual COD due to escalation in prices in different contract packages is 'nil' as the Price Variation Clause (PVC) in the EPC contract signed between the petitioner and the EPC contractor has the ceiling limit for PVC and any price escalation on account of time overrun beyond the scheduled dates as given in L2 network is not payable. It has therefore submitted that the price escalation due to time overrun beyond the scheduled COD is not payable.

43. The submission of the petitioner that there is no cost overrun in the contractual price due to time overrun has been considered. It is noticed that on account of the delay in the declaration of commercial operation of the Blocks, the overhead expenses in establishment under IEDC such as salary, transportation, office expenditure etc., have increased. Accordingly, *pro rata* disallowance of overhead expenses for the period of 28½ months as on COD of Block-I and 40 months as on COD of Block-II/generating station has been made. Also, the increase in establishment cost till the COD of Block-II which has been indicated as ₹55.52 crore has been apportioned on *pro rata* basis for the respective units and Blocks as under:

	Total period taken from zero date to actual COD	Time overrun disallowed	Overhead Expenses
	(months)	**(months)**	***(₹in lakh)***
GT-I	49	21	459.18
GT-I+I/II STG	49	21	728.74
GT-I+I/II STG+GT-II	53.50	25.50	1442.47
Block-I	56.50	28.50	1978.00
GT-III	66	39	1097.85
GT-IV	70	41	2308.30
Block-II	72	40	3574.00

44. After adjustment of the *pro rata* reduction of establishment cost as on COD of Block-II/ generating station, the capital cost of Block-I and the Block-II / generating station works out as under:

(₹in lakh)

	2011-12	**2012-13**			**2013-14**			
	27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
Capital cost as on COD excluding IDC (A)	97011.89	147740.75	205421.98	221383.59	-	269709.54	313972.52	383526.64
Less IEDC disallowed (I)	459.18	728.74	1442.47	1978.00	-	3075.85	4286.30	5552.00

Capital cost excluding IDC (A-I)	96552.71	147012.01	203979.51	219405.59	-	266633.69	309686.22	377974.64
IDC (B)	5197.62	8970.00	13935.70	16421.11	-	23408.19	29676.77	41889.80
Opening capital cost as on COD / 1st April including IDC (A-I+B)	101750.33	155982.01	217915.21	235826.70	236042.40	290041.88	339362.99	419864.44
Additional Capitalisation (C)	3030.33	-	-	215.70	-	-	-	10102.65
Closing capital cost (A-I+B+C)	**104780.66**	**155982.01**	**217915.21**	**236042.40**	**236042.40**	**290041.88**	**339362.99**	**429967.09**

Reasonableness of Capital Cost

45. The Commission has not specified the bench mark for capital cost in case of Gas Based power projects unlike coal based projects. Accordingly, the reasonableness / competitive cost of the petitioner's project has been derived by comparing the capital cost of this generating station with some of the contemporary Advance Class Gas Turbines machines installed in UNOSUGEN Gas Based power plant (382.50 MW) of Torrent Power Ltd and Palatana Gas Based Combined Cycle project (726.60 MW) of ONGC Tripura Power Corporation Ltd. The comparative statement of estimated project cost as per investment approval combined cycle power projects are detailed as under:

Name of the Project	**Project Cost**		**Capacity**	**Cost (₹ in crore/ MW) As per investment approval**	**Cost (₹ in crore / MW) As on COD of Block / generating Station**
	Estimated project cost as per investment approval	**Capital cost as on COD**			
UNOSUGEN	1858.28	1603.62	382.50	4.85	4.19
OTPC (Block-I)	3804	1634 (Block-I)	726.60 (2 x 363.3)	5.23	4.50 (Block-I)
Pragati-III	4536.20	4355.19	1371.20	3.31	3.18

46. From the table above, it is observed that the project cost as per investment approval and as well as on the COD of the Block / generating station is comparable or is lesser than

the project cost in case of UNOSUGEN and Palatana Gas Based Combined Cycle power project. While the higher capital cost of ₹5.23 crore /MW in case of Palatana project would be attributable to the fact that the project is located in North Eastern Region, the capital cost of the instant project is lesser than that of UNOSUGEN Gas Based power plant.

47. Based on the above and considering the factors in totality, we are of the view that capital cost for ₹4355.19 crore as claimed by the petitioner as on the COD of the generating station is considered reasonable when compared to the contemporary gas based projects of advance class machines viz. UNOSUGEN project and ONGC Tripura Palatana power projects.

Additional capital expenditure

48. Regulation 9 of the 2009 Tariff Regulations as amended on 21.6.2011 and 31.12.2012 provides as under:

*"9. **Additional Capitalization** (1) The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:*

(i) Un-discharged liabilities;

(ii) Works deferred for execution;

(iii) Procurement of initial capital spares within the original scope of work, subject to the provisions of regulation 8;

(iii) Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and

(v) Change in law:

Provided that the details of works included in the original scope of work along with estimates of expenditure, un-discharged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff.

(2) The capital expenditure incurred or projected to be incurred on the following counts after the cut-off date may, in its discretion, be admitted by the Commission, subject to prudence check:

(i) Liabilities to meet award of arbitration or for compliance of the order or decree of a court;

(ii) Change in law;

(iii) Deferred works relating to ash pond or ash handling system in the original scope of work;

(iv) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of the generating company) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and

(v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement of switchyard equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system:

Provided that in respect sub-clauses (iv) and (v) above, any expenditure on acquiring the minor items or the assets like tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f.1.4.2009.

(vi)In case of gas/liquid fuel based open/ combined cycle thermal generating stations, any expenditure which has become necessary on renovation of gas turbines after 15 year of operation from its COD and the expenditure necessary due to obsolescence or non-availability of spares for successful and efficient operation of the stations.

Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

(vii) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receipt system arising due to non-materialisation of full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station.

(viii) Any un-discharged liability towards final payment/withheld payment due to contractual exigencies for works executed within the cut-off date, after prudence check of the details of such deferred liability, total estimated cost of package, reason for such withholding of payment and release of such payments etc.

(ix) Expenditure on account of creation of infrastructure for supply of reliable power to rural households within a radius of five kilometres of the power station if, the generating company does not intend to meet such expenditure as part of its Corporate Social Responsibility."

49. The petitioner vide affidavit dated 1.5.2014 has submitted that earlier the petitioner had planned for a multi-storied head office and residential complex for the housing staff, for which an amount of ₹40.00 crore (approx) was sought to be capitalized. However till

date the expenditure of ₹26.28 crore has been made towards the purchase of dwelling houses from DSIDC (Delhi State Industrial Development Corporation). In addition to above, the petitioner has submitted that it intended to provide some additional facilities for smooth operation of the plant. However, due to the delay in main plant activities, the same could not be finalized at this stage. The petitioner has prayed for allowing the capitalization of the expenditure which may be related to Module-I for 2013-14 and Module-II of the generating station or within the cut-off date of the project to be capitalized as and when incurred and for submission of the same to the Commission. The petitioner has further submitted that the un-discharged liabilities for Module-I relate to activities towards balance of plant area and payment for the same is to be made to EPC contractor as and when the same is completed. Therefore, the petitioner has proposed to claim all un-discharged liabilities of the generating station along with final capital cost of Module-II. The petitioner has also sought liberty to consider any un-discharged liabilities for works to be executed by COD of first and second block or any expenditure to be incurred for the works which is continuing or to be taken up after COD of the project to be incurred (in addition to what has been estimated and detailed in the estimate sheet) before that date in order to be considered as additional capital expenditure for the purpose of the tariff.

50. The petitioner has furnished the details of additional capital expenditure vide affidavit dated 5.12.2014 which are proposed to be capitalized till the cut-off date as detailed under:

(₹ in lakh)

Sl. No		Estimated value	Year of completion
1	Local Area network, servers, SAP license, office equipment, IT hardware & software etc.	233.75	2015-16 & 2016-17
2	Procurement of battery operated vehicle for shifting of testing kits etc.	5.60	2015-16
3	Transformer oil storage tank, pick up vehicle, 40 MT cranes portable centrifuge for BFP, lathe, drilling & plasma cutting machines	300.00	2015-16

4	Construction of 3 no's shed etc.	85.00	2016-17
5	Procurement of office furniture, admin building, canteen & CISF	100.00	2015-16
6	Provision of 100 mm cement concrete in switchyard area	500.00	2015-16
7	Residential multi-storey building	2500.00	2015-16 & 2016-17
8	PPCL Head Office building	2500.00	2015-16 & 2016-17
9	Steel structure frame for storage of 1560 no's filters	70.00	2016-17
10	Continuous ambient air monitoring system and bulk storage tank for sodium chloride	445.00	2015-16
11	Procurement of rakes, compacter & fork lift	47.00	2015-16
12	Procurement of fire tender, DCP fire tender & high pressure pump	118.85	2015-16
	Total	**6905.20**	

51. It is observed from the table above that the additional capital expenditure claimed by the petitioner in respect of the said works are to be incurred during the years 2015-16 and 2016-17respetively i.e. during the tariff period 2014-19. Accordingly the additional capital expenditure of ₹6905.20 lakh claimed in respect of works which are to be completed during the tariff period 2014-19 has not been considered in this order and the same will be dealt with in accordance with the provisions of the 2014 Tariff Regulations.

Un-discharged Liabilities

52. The admitted capital cost as on 1.4.2009 is on accrual basis. The petitioner was directed to submit the party-wise and asset-wise details of un-discharged liability during each year of the tariff period for liability mapping. However, the petitioner, instead of furnishing the year-wise details, has only submitted the details of un-discharged liabilities amounting to ₹84.40 crore as on 31.3.2014. Accordingly, the same has been considered for the purpose of tariff based on estimated figures in the auditor's certificate. Similarly, the petitioner has also not furnished the details of discharge of liabilities for each year. However, the total estimated amount of discharge of liabilities as shown in the auditor certificate has been considered as additional capitalization during the respective period of

discharge. However, the petitioner is directed to submit the party-wise and asset-wise un-discharged liability as on COD and at the end of each year and the details of discharge of liabilities, duly certified by the auditor, at the time of truing-up of tariff in terms of Regulation 6(1) of the 2009 Tariff Regulations..

53. Though the petitioner has not claimed discharge of liabilities in the forms, it has submitted the Auditor's certificates indicating the liabilities discharged during the years as stated above. As such, the year-wise discharge of capital liabilities duly certified by Auditor has been considered for determination of capital cost as detailed hereunder:

(₹in lakh)

27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I) to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
-	-	-	1830.40	-	-	-	869.46

54. The capital cost, including IDC, and the additional capital expenditure allowed for the purpose of tariff is as under:

(₹in lakh)

	2011-12		**2012-13**		**2013-14**			
	27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I) to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
Opening Capital cost as on COD / 1st April excluding IDC	96552.71	147012.01	203979.51	219405.59	218761.45	266633.69	309386.22	377974.64
Less : Exchange variation disallowed	283.47	431.61	598.85	644.14	-	782.80	908.31	1109.68
Add: Cumulative IDC	403.90	662.16	989.97	1,114.16	1114.16	1578.30	1983.75	2709.40
Less: Un-discharged Liabilities (Cumulative)	7327.01	8427.54	9866.26	9926.81	9926.81	10514.42	11032.57	11139.42
Opening Capital cost Including IDC but excluding un-	89346.14	138815.02	194504.37	209948.79	209948.79	256914.77	299429.08	368434.94

discharged liability								
Additional Capitalisation allowed	3030.33	-	-	215.70	-	-	-	-
Add: Discharge of liability	-	-	-	1830.40	-	-	-	869.46
Closing capital cost	**92376.47**	**138815.02**	**194504.37**	**211994.89**	**211994.89**	**256914.77**	**299429.08**	**379407.05**

Debt Equity Ratio

55. Regulation 12 of the 2009 Tariff Regulations provides that:

"(1) For a project declared under commercial operation on or after 1.4.2009, 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 actually deployed is less than 30% of the 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- The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, provided such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 shall be considered.

(3) Any expenditure incurred or projected to be incurred on or after 1.4.2009 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation."

56. In accordance with the above regulation, the normative debt-equity ratio of 70:30 has been considered on the capital cost and the additional expenditure as allowed during the period. Thus, the debt-equity as on COD of each unit and as on COD of the generating station has been worked out as under:

(₹in lakh)

	27.12.2011 (COD of GT-I to 31.3.2012	1.4.2012 (COD of STG-I & HRSG-I) to 15.7.2012	16.7.2012 (COD of GT-II) to 13.12.2012	14.12.2012 (Block-I) to 31.3.2013)	1.4.2013 to 27.10.2013	28.10.2013 (COD of GT-III) to 26.2.2014	27.2.2014 (COD of GT-IV) to 26.3.2014	27.3.2014 COD of STG-II) / Project to 31.3.2014
Capital Cost	**89346.14**	**138815.02**	**194504.37**	**209948.79**	**211994.89**	**256914.77**	**299429.08**	**368434.94**
Debt	62542.30	97170.52	136153.06	146964.16	148396.43	179840.34	209600.36	257904.46
Equity	26803.84	41644.51	58351.31	62984.64	63598.47	77074.43	89828.72	110530.48

Return on Equity

57. Regulation 15 of the 2009 Tariff Regulations, as amended on 21.6.2011, provides that:

"(1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation.

Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in Appendix-II.

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.

(3) The rate of return on equity shall be computed by grossing up the base rate with the Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be.

(4) 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 (3) of this regulation.

(5) The generating company or the transmission licensee, as the case may be, shall recover the shortfall or refund the excess Annual Fixed charges on account of Return on Equity due to change in applicable Minimum Alternate/Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission:

Provided further that Annual Fixed Charge with respect to tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations."

58. In terms of the above regulations, the rate of Return on Equity has been computed as under:

(₹in lakh)

	2011-12	2012-13			2013-14			
	27.12.2011 To 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
Gross Notional Equity	26803.84	41644.51	58351.31	62984.64	63598.47	77074.43	89828.72	110530.48
Addition due to Additional Capitalisation	909.10	-	-	613.83	-	-	-	3291.63
Closing Equity	27712.94	41644.51	58351.31	63598.47	63598.47	77074.43	89828.72	113822.12
Average Equity	27258.39	41644.51	58351.31	63291.55	63598.47	77074.43	89828.72	112176.30
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%	15.500%	15.500%	15.500%
Tax rate (MAT)	20.008%	20.008%	20.008%	20.008%	20.961%	20.961%	20.961%	20.961%
Rate of Return on Equity (Pre Tax)	19.377%	19.377%	19.377%	19.377%	19.611%	19.611%	19.611%	19.611%
Return on Equity (Pre Tax)	**1385.40**	**2343.45**	**4677.57**	**3628.79**	**7175.68**	**5052.05**	**1351.36**	**301.35**

Interest on Loan

59. Regulation 16 of the 2009 Tariff Regulations provides that:

"(1) The loans arrived at in the manner indicated in regulation 12 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2009 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2009 from the gross normative loan.

(3) The repayment for the year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year.

(4) Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be 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.

(5) 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 or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

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

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute.

Provided that the beneficiary or the transmission customers shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.

60. Interest on loan has been worked out as under:

i) The weighted average rate of interest has been worked out on the basis of the actual loan portfolio in the beginning of the respective year applicable to the project.

ii) The repayment for the year of the tariff period 2009-14 has been considered equal to the depreciation allowed for that year.

iii) The interest on loan has been calculated on the normative average loan of the year by applying the weighted average rate of interest computed and enclosed as Annexure-I to this order.

61. Interest on loan has been calculated as under:

(₹ in lakh)

	2011-12	**2012-13**			**2013-14**			
	27.12.2011 To 31.3.2012	**1.4.2012 to 15.7.2012**	**16.7.2012 to 13.12.2012**	**14.12.2012 to 31.3.2013**	**1.4.2013 to 28.10.2013**	**29.10.2013 to 26.2.2014**	**27.2.2014 to 26.3.2014**	**27.3.2014 to 31.3.2014**
Gross Notional Loan	62542.30	97170.52	136153.06	146964.16	148396.43	179840.34	209600.36	257904.46
Cumulative Repayment of loan upto previous year	-	1470.46	3461.95	7308.23	10460.67	16485.97	20822.55	22361.53
Net Opening Loan	62542.30	95700.05	132691.11	139655.93	137935.76	163354.37	188777.81	235542.92
Addition due to	2121.23	-	-	1432.27	-	-	-	7680.48

Additional Capitalisation								
Repayment of Loan during the period	1470.46	1991.48	3846.28	3152.44	6025.30	4336.58	1538.98	343.19
Net Closing Loan	63193.06	93708.57	128844.83	137935.76	131910.45	159017.79	187238.82	242880.21
Average Loan	62867.68	94704.31	130767.97	138795.84	134923.11	161186.08	188008.32	239211.57
Weighted Average Rate of Interest on Loan	11.796%	11.811%	11.811%	11.822%	11.580%	11.567%	11.526%	11.480%
Interest on Loan	**1945.23**	**3248.38**	**6389.54**	**4855.27**	**8989.30**	**6231.71**	**1662.28**	**376.20**

Depreciation

62. Regulation 17 of the 2009 Tariff Regulations provides that:

"(1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.

(2) 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.

Provided that in case of hydro generating stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site.

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciable value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff.

(3) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(4) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system.

Provided that, the remaining depreciable value as on 31st March of the year closing after a period of 12 years from date of commercial operation shall be spread over the balance useful life of the assets.

(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting 3[the cumulative depreciation including Advance against Depreciation] as admitted by the Commission upto 31.3.2009 from the gross depreciable value of the assets.

(6) 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."

63. The petitioner has not provided the detailed working of the weighted average rate of depreciation. Accordingly, for the purpose of tariff, the depreciation rates as given by the petitioner have been considered. The petitioner is directed to submit the detailed unit-wise

and asset-wise working of depreciation at the time of truing-up of tariff in terms of Regulation 6(1) of the 2009 Tariff Regulations. Accordingly, depreciation has been worked out as under:

(₹in lakh)

	2011-12	2012-13			2013-14			
	27.12.2011 To 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
Opening Gross Block	89346.14	138815.02	194504.37	209948.79	211994.89	256914.77	299429.08	368434.94
Addition during 2009-14 due to actual/ projected additional capitalisation	3030.33	-	-	2046.10	-	-	-	10972.11
Closing Gross Block	92376.47	138815.02	194504.37	211994.89	211994.89	256914.77	299429.08	379407.05
Average Gross Block	90861.30	138815.02	194504.37	210971.84	211994.89	256914.77	299429.08	373921.00
Rate of Depreciation	6.170%	4.940%	4.780%	5.050%	4.940%	5.050%	6.700%	6.700%
Depreciable Value	81775.17	124933.52	175053.93	189874.66	190795.40	231223.29	269486.17	336528.90
Depreciation (for the period)	**1470.46**	**1991.48**	**3846.28**	**3152.44**	**6025.30**	**4336.58**	**1538.98**	**343.19**
Cumulative Depreciation (at the end of the year)	1470.46	3461.95	7308.23	10460.67	16485.97	20822.55	22361.53	22704.72

Operation & Maintenance (O&M) Expenses

64. The petitioner, in addition to the O&M expenses as per norms, has claimed additional expenses due to Long Term Service Agreement (LTSA) and additional water charges incurred. The LTSA with M/s GE has been entered for two cycles of complete overhauling for part supply and maintenance of GTs for achieving better reliability and efficiency of machines. These machines are advance class 9 FA+ E machines which use latest technology for GTs. The indigenous support for O&M of these GTs are not available in India. In the case of SUGEN Project of Torrent Power Ltd and Ratnagiri Gas and Power Project of RGPPL, which use Advance F class Turbines, Long Term Service Agreement (LTSA) has been entered into with the OEM. Accordingly, the petitioner has requested the Commission to allow the additional cost on account of LTSA over and above the normative O&M expenses.

65. In addition to the above, the petitioner vide affidavit dated 13.10.2014 has submitted that water requirement of Bawana project is being met from Rithala Sewage treatment plant of Delhi Jal Board (DJB). The petitioner has submitted that Sewage treated water is available as raw water for its further processing to meet out cooling water, DM water, fire water and service water requirement. This according to the petitioner has resulted in avoidance of the dependency on the fresh water from sources such as Yamuna river and is environment friendly. However, the petitioner has submitted that the cost of using such type of water for the plant is very high as compared to similar power plants like Ratnagiri and SUGEN Power Plants of similar design and type. Accordingly, the petitioner has prayed for allowing additional O&M expenses payable to DJB for Sewage treated water charges. The petitioner has included the expenditure incurred towards payment to DJB in the total O & M charges and is in addition to the O&M expense norms allowed under the 2009 Tariff Regulations. The petitioner has further prayed that the annual charges payable to DJB as additional O&M cost over and above the normative rates may be approved.

66. Based on the above, the petitioner has claimed an amount of ₹4812.00 lakh (₹4041.00 lakh from 1.4.2012 to 15.7.2012 and ₹771.00 lakh from 1.4.2013 to 27.10. 2013) towards payment made to the OEM for LTSA and ₹733.00 lakh (₹114.00 lakh from 27.12.2011 to 31.3.2012, ₹435.00 lakh from 1.4.2012 to 15.7.2012 and ₹184.00 lakh from 1.4.2013 to 27.10.2013) for payment made to DJB towards Water charges. The total amount works out to ₹5545.00 lakh towards payment made to OEM (LTSA) & DJB (Water charges). The petitioner has claimed higher O&M expenses (in terms of ₹/MW) as against the O&M norms specified in the 2009 Tariff Regulations on the ground that their GTs are advanced class machines for which a Long Term Service Agreement (LTSA) has been

entered into with the OEM. The petitioner has also entered into an agreement with DJB to meet water requirement of the plant from Rithala Sewage Treatment Plant and the actual bill paid to the DJB has been included in the claim for O&M expenses as summarized hereunder:

		GT-I	**GT-I + 1/II ST**	**GT-I + 1/II ST + GT-II**	**Block-I**	**Block-I**	**Block-I + GT-III**	**Block-I + GT-III + GT-IV**	**Block-II**
	Unit	216	342.8	558.8	685.6	685.6	901.6	1117.6	1371.2
		2011-12	2012-13	2012-13	2012-13	2013-14	2013-14	2013-14	2013-14
O&M charges		**From COD of GT-I (27.12.2011 to 31.3.2012)**	**From COD of ST-I (1.4.2012) to 15.7.2012 (GT-1+1/2 ST)**	**From COD of GT-II (16.7.2012) to 13.12.2012**	**From COD of ST-I with WHRB-2/ Block-I (14.12.2012) to 31.3.2013**	**From 1.4.2013 to 27.10.2013**	From COD of GT-III (28.10.2013 to 26.2.2014)	From COD of GT- IV (27.2.2014 to 26.3.2014)	**From COD of Block-II/ station (27.3.2014) to 31.3.2014**
Normative O&M (for E-class machines as per CERC norms)	**(₹ in lakh/ MW)**	**16.54**	**17.49**	**17.49**	**17.49**	**18.49**	**18.49**	**18.49**	**18.49**
O&M (annualised)	₹ in lakh	3572.64	5995.57	9773.41	11991.14	12676.74	16670.58	20664.42	25353.49
LTSA	₹ in lakh	0.00	4041.00	0.00	0.00	771.00	0.00	0.00	0.00
O&M of DJB	₹ in lakh	114.00	435.00	0.00	0.00	184.00	0.00	0.00	0.00
Total O&M	₹ in lakh	3686.64	10471.57	9773.41	11991.14	13631.74	16670.58	20664.42	25353.49
O&M claimed	₹ in lakh/ MW	**17.07**	**30.55**	**17.49**	**17.49**	**19.88**	**18.49**	**18.49**	**18.49**
O&M (Annualised)-claimed	₹ in lakh	3686.64	10471.57	9773.41	11991.14	13631.74	16670.58	20664.42	25353.49

67. The respondent, BRPL vide affidavit dated 30.10.2014 has submitted that the O&M expenses for the generating station may be allowed strictly in accordance with the O&M expense norms provided under Regulation19 of the 2009 Tariff Regulations. It has also submitted that the Commission may not allow the estimated additional O&M expenses by exercising its Power to relax under Regulation 44 of the 2009 Tariff Regulations, as the tariff is a complete package and its reasonability has to be examined in totality.

68. The respondent, TPDDL while pointing out that Regulation 19(c) of the 2009 Tariff Regulations specifies the norms for the O&M expenses for GTs/Combined Cycle generating stations, has submitted that the request of the petitioner for allowing higher O&M expenses on account of water charges payable to DJB and property tax payable to Municipal Council of Delhi is not justified as the O&M expenses for the period 2009-14 have been arrived at on normative basis by factoring in the water charges. It has also submitted that the petitioner enjoys the liberty to manage its expenses on O&M as admissible on normative basis and therefore, the additional O&M charges in the form of water charges and property tax cannot be permitted to be recovered from the beneficiaries.

69. We have examined the submissions of the parties. The normative O&M expenses specified by the Commission under Regulation 19(c) of the 2009 Tariff Regulations provides for O&M expenses for small gas turbines and other than small gas turbines and not for “advanced class gas turbines” for combined cycle gas turbine generating stations, which are subjected to much higher thermal stress and blade temperatures when compared to “E class machines”. The GTs in the generating station are “advanced class 9 FA machines” of GE make. As the technology is proprietary, the supply of spare parts and services of specialist, who possesses the requisite technical knowhow, is critical for maintaining the generating station. It is common practice throughout the world for users of advanced class (F-Class) gas turbines to avail long term supply and service from the OEMs of gas turbines which would cover monitoring and inspection of the machines, management of spares and components which require replacement, repairs and refurbishment. The Commission in its orders determining tariff in respect of SUGEN and

UNOSUGEN of Torrent Power Ltd and Ratnagiri Gas and Power Project of RGPPL for the period 2009-14 had relaxed O&M norms to allow expenses on LTSA/LTMA only considering the installation of advanced class gas turbines in these generating stations and the commensurate benefits accrued to the beneficiaries of the said generating station. In this background and considering the fact that the long term service agreement by the petitioner with the OEM is likely to make the generating station viable for a smooth operation in the longer run, we feel that the petitioner's claim for relaxation of O&M norms for advanced class gas turbines in the generating station needs to be considered subject to prudence check. Accordingly, we are inclined to consider the prayer of the petitioner by invoking the provisions of Regulations 44 of the 2009 Tariff Regulations, only in respect of LTSA/LTMA. However, the additional claim of ₹4812.00 lakh for payment towards LTSA has been spread over during the tariff period corresponding to the number of days of operation to reduce the tariff shock during the year 2012-13. However, the water charges demanded additionally by the petitioner are not being allowed as the same forms part of the normative O&M expenses during the tariff period 2009-14. Accordingly, we relax the O&M norms in respect of the generating station and allow the O&M expenses for this generating station as under:

(₹ in lakh)

	2011-12	**2012-13**			**2013-14**			
	27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 27.10.2013	28.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
Capacity-MW (a)	216.00	342.80	558.80	685.60	685.60	901.60	1117.60	1371.20
No. of days in operation (b)	96	106	151	108	210	122	28	5
Normative O&M expenses - (₹ lakh/MW/ Year) - (c)	16.54	17.49	17.49	17.49	18.49	18.49	18.49	18.49
O&M expenses	3572.64	5995.57	9773.41	11991.14	12676.74	16670.58	20664.42	25353.49

Annualised (₹ lakh) – (a x c) = d								
Add: O&M on account of LTSA payment – (₹ lakh)	559.26	617.52	879.68	629.17	1223.39	710.73	163.12	29.13
Additional O&M (annualised) (₹ lakh) – (e)	2126.37	2126.37	2126.37	2126.37	2126.37	2126.37	2126.37	2126.37
Total O&M (Annualised) (₹ lakh) (d + e)	5699.01	8121.94	11899.78	14117.51	14803.11	18796.95	22790.79	27479.86
Total O&M Expenses (pro-rata)	1494.82	2358.70	4922.92	4177.24	8516.86	6282.82	1748.33	376.44
O&M Norms (revised) including cost of LTSA (₹ lakh/ MW/ year)	26.38	23.69	21.30	20.59	21.59	20.85	20.39	20.04

70. Due to spread over of the additional O&M of Rs 4812 lakh on account of LTSA, the O&M norms (₹ in lakh/MW) in the year 2011-12 is slightly higher than that of ₹20.05 lakh/MW which is because of apportionment and part capacities in operation during the period. However, the O&M norms allowed above are less than the O&M expenses allowed in case of Sugen, UNOSUGEN projects and Ratnagiri Gas Combined Cycle Power Project. It is further noticed from the LTSA that the GT supplier has given guarantees of Equivalent Availability Factor (EAF) of GTs as 95% after excluding the operating hours loss due to forced outage, off-line water wastage, and shut down loss due to economic reasons for a contractual period of 16 years. It is therefore presumed that the generating station availability will also be equal to the availability of GTs. We are of the considered view that with the long term support of the OEM under the long term service agreement, the generating station is expected to provide a reliable and sustained performance. Also, the plant availability above the norms would also envisage higher incentives. Therefore, it

would only be prudent on the part of the petitioner to share the benefits of improved efficiency on account of higher incidence of O&M with the respondent beneficiaries. In this background, it is proposed that the plant availability norm for the purpose of incentive for the generating company shall be fixed at 88% and above instead of 85% specified in the 2009 Tariff Regulations. However, for the purpose of recovery of fixed charges by the petitioner, the normative plant availability shall remain as 85%. We order accordingly.

Interest on Working Capital

71. Regulations 18(1)(b) of the 2009 Regulations provides as under:

"18(1)(b) Open-cycle Gas Turbine/Combined Cycle thermal generating stations:

(i) Fuel cost for one month corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;

(ii) Liquid fuel stock for ½ month corresponding to the normative annual plant availability factor, and in case of use of more than one liquid fuel, cost of main liquid fuel;

(iii) Maintenance spares @ 30% of operation and maintenance expenses specified in regulation 19.

(iv) Receivables equivalent to two months of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel.

(v) Operation and maintenance expenses for one month."

72. Clause (3) of Regulation 18 of the 2009 Tariff Regulations as amended on 21.6.2011 provides as under:

"Rate of interest on working capital shall be on normative basis and shall be considered as follows:

(i) SBI short-term Prime Lending Rate as on 01.04.2009 or on 1st April of the year in which the generating station or unit thereof or the transmission system, as the case may be, is declared under commercial operation, whichever is later, for the unit or station whose date of commercial operation falls on or before 30.06.2010.

(ii) SBI Base Rate plus 350 basis points as on 01.07.2010 or as on 1st April of the year in which the generating station or a unit thereof or the transmission system, as the case may

be, is declared under commercial operation, whichever is later, for the units or station whose date of commercial operation lies between the period 01.07.2010 to 31.03.2014.

Provided that in cases where tariff has already been determined on the date of issue of this notification, the above provisions shall be given effect to at the time of truing up.

Fuel cost

73. The cost of fuel has been worked out for one month consumption on the basis of operational parameters and weighted average price of fuel as allowed as follows:

(₹in lakh)

27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
5176.78	5281.91	5392.48	10674.38	10985.57	5722.61	5819.02	12339.11

Liquid Fuel Oil

74. The petitioner has not used any liquid fuel in the generation of electricity. As such no expenditure has been allowed under this head.

Maintenance Spares

75. As stated, additional O&M expenses over and above the norms specified under Regulation 19 of the 2009 Tariff Regulations has been allowed in this order. Accordingly, maintenance spares @ 30% of the operation and maintenance expenses (annualized) as shown below has been allowed. This is in line with the maintenance spares allowed in case of advance class machines in respect of other generating stations.

(₹in lakh)

27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
1709.70	2436.58	3569.93	4235.25	4440.93	5639.09	6837.24	8243.96

Receivables

76. The receivables have been worked out on the basis of two months of fixed and variable charges, as under:

(₹in lakh)

	27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
Variable Charges - 2 months	10353.56	10563.82	10784.97	21348.76	21971.14	11445.22	11638.05	24678.22
Fixed Charges - 2 months	1146.20	1792.60	3531.97	2904.18	5691.63	3858.12	1096.21	247.27

O&M Expenses (I month)

77. O&M expenses for one month has been worked out as follows on the approved O&M expenses as allowed.

(₹in lakh)

27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
474.92	676.83	991.65	1176.46	1233.59	1566.41	1899.23	2289.99

Rate of interest on working capital

78. In terms of the above regulations, SBI PLR for the respective year of the tariff period has been considered.

79. Necessary computations in support of calculation of interest on working capital are as under:

(₹in lakh)

	27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
O&M expenses	474.92	676.83	991.65	1176.46	1233.59	1566.41	1899.23	2289.99
Receivables (Fixed Charges)	1146.20	1792.60	3531.97	2904.18	5691.63	3858.12	1096.21	247.27
Receivables (Variable Charges)	10353.56	10563.82	10784.97	21348.76	21971.14	11445.22	11638.05	24678.22
Maintenance Spare	1709.70	2436.58	3569.93	4235.25	4440.93	5639.09	6837.24	8243.96
Fuel Stock	5176.78	5281.91	5392.48	10674.38	10985.57	5722.61	5819.02	12339.11
Total Working Capital	18861.16	20751.74	24271.00	40339.03	44322.86	28231.45	27289.76	47798.54
Interest Rate	11.75%	13.50%	13.50%	13.50%	13.50%	13.20%	13.20%	13.20%
Interest on Working Capital	**581.29**	**813.58**	**1355.52**	**1611.35**	**3442.61**	**1245.59**	**276.34**	**86.43**

Operational norms

80. The following norms of operation for gas based power stations are defined under the 2009 Tariff Regulations.

	Combined Cycle	Open Cycle
Normative Annual Plant Availability Factor	85%	85%
Gross Station Heat rate (kcal/kWh) as per Regulation	1.05% of design heat rate i.e. 1.05 * 1757.28 = 1845.14	1.05 of design heat rate i.e 1.05 * 2624.55 = 2755.78
Auxiliary Power Consumption (%)	3	1

81. The petitioner vide affidavit dated 13.10.2014 has revised the tariff forms and has claimed the following norms of operation for GT in Open Cycle (OC) mode and Combined cycle (CC) mode for the purpose of tariff.

	Combined Cycle	Open Cycle
Normative Annual Plant Availability Factor	85%	85%
Design heat rate on GCV in open cycle mode	1757.28	2624.55
Gross Station Heat rate (kcal/kWh) as per Regulation	1845.14	2755.78
Auxiliary Power Consumption (%)	3	1

82. The operational norms considered by the petitioner are in order and is considered for the purpose of tariff.

Fixed Charges

83. Accordingly, the fixed charges approved for the generating station for the period from 27.12.2011 to 31.3.2014 are summarised as under:

(₹in lakh)

	27.12.2011 to 31.3.2012	1.4.2012 to 15.7.2012	16.7.2012 to 13.12.2012	14.12.2012 to 31.3.2013	1.4.2013 to 28.10.2013	29.10.2013 to 26.2.2014	27.2.2014 to 26.3.2014	27.3.2014 to 31.3.2014
Return on Equity	1385.40	2343.45	4677.57	3628.79	7175.68	5052.05	1351.36	301.35
Interest on Loan	1945.23	3248.38	6389.54	4855.27	8989.30	6231.71	1662.28	376.20
Depreciation	1470.46	1991.48	3846.28	3152.44	6025.30	4336.58	1538.98	343.19
Interest on	581.29	813.58	1355.52	1611.35	3442.61	1245.59	276.34	86.43

Working Capital								
O&M Expenses	1494.82	2358.70	4922.92	4177.24	8516.86	6282.82	1748.33	376.44
Total Annual Fixed Charges	**6877.21**	**10755.59**	**21191.83**	**17425.09**	**34149.75**	**23148.75**	**6577.29**	**1483.60**

84. The recovery of annual fixed charges shall be subject to truing up in terms of Regulation 6 (1) of the 2009 Tariff Regulations.

Energy Charge Rate (ECR)

85. Sub-clause (b) of clause (6) of Regulation 21 of the 2009 Tariff Regulations provides as under:

> *"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 formulae:*
>
> *ECR = GHR 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.*
>
> *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.*

86. Energy Charge rate (ECR) in ₹/kWh on ex-power plant basis has been calculated based on the GCV and the Price of Natural Gas and the operational norms as above and allowed as under:

	Unit	As on COD of GT-1 (27.12.2011) to 31.3.2012 **OC mode**	As on COD of ST-1 (1.4.2012) to 15.7.2012 **CC mode**	As on COD of GT-2 (16.7.2012) to 13.12.2012 in **OC mode**	as on COD of Block-I (14.12.2012) to 27.10.2013 **CC mode**	As on COD of GT-3 (28.10.2013) to 26.2.2014 in **OC mode**	As on COD of GT-4 (27.2.2014 to 26.3.2014) in **OC mode**	As on COD of block- II (27.3.2014) to 31.3.2014 in **CC mode**
Capacity	MW	216.00	342.80	216.00	685.60	216.00	216.00	685.60
Normative PLF (85% PLF)	hours / kw/	7466.40	7446.00	7446.00	7446.00	7446.00	7446.00	7446.00

	year							
Gross Station Heat Rate	kCal/ kWh	2755.78	1845.14	2755.78	1845.14	2755.78	2755.78	1845.14
Aux. Energy Consumption	%	1.00	3.00	1.00	3.00	1.00	1.00	3.00
GCV of Gas (average)	Kcal/ SCM	9469.98	9602.67	9472.01	9649.09	9690	9731	9661.25
Price of Gas (average)	₹/ SCM	13.24	12.92	13.83	13.50	15.01	15.33	15.19
Rate of Energy Charge P/kWh (ex-bus)	Paise /kWh	**389.082**	**255.998**	**406.404**	**266.218**	**431.284**	**438.550**	**299.019**

87. Energy Charge on month to month basis shall be billed by the petitioner as per Regulation 21 (6) (b) of the 2009 Tariff Regulations

Application fee and the publication expenses

88. In terms of Regulation 42 of the 2009 Tariff Regulations and based on our decision contained in order dated 11.1.2010 in Petition No.109/2009, the expenses towards filing of tariff application and the expenses incurred on publication of notices are to be reimbursed. Accordingly, the expenses incurred by the petitioner for petition filing fees for the period from 2011-12 to 2013-14 and the expenses incurred for publication of notices in connection with the present petition shall be directly recovered from the beneficiaries, on *pro rata* basis based on documentary proof.

89. The petitioner is already billing the respondents on provisional basis in accordance with the provisional tariff order granted by the Commission vide order dated 25.5.2012. The provisional billing of tariff shall be adjusted in terms of proviso to Regulation 5(3) of the 2009 Tariff Regulations, as amended on 21.6.2011.

90. Petition No.257/2010 is disposed of in terms of above.

Sd/-	*Sd/-*	*Sd/-*
(A.S. Bakshi)	**(A. K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Chairperson**

Annexure-I

Calculation of Weighted Average Rate of Interest on Loan

	27-12-2011	1-4-2012	16-7-2012	14-12-2012	1-4-2013	28-10-2013	27-2-2014	27-3-2014
	31-3-2012	15-7-2012	13-12-2012	31-3-2013	27-10-2013	26-2-2014	26-3-2014	31-3-2014
PFC-Opening	176558.00	191558.00	191558.00	191558.00	191558.00	181295.96	177875.29	177875.29
Govt-Opening	20000.00	20000.00	20000.00	18666.67	38666.67	38000.00	41666.67	46666.67
ROI PFC	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	12.00%
ROI Govt	10.00%	10.00%	10.00%	10.00%	9.50%	9.50%	9.50%	9.50%
Rate of Interest	**11.796%**	**11.811%**	**11.811%**	**11.822%**	**11.580%**	**11.567%**	**11.526%**	**11.480%**