Preface

This Report of the Comptroller and Auditor General of India contains the results of the performance audit of NTPC Limited's capacity addition programme for the period April 2007 to March 2012 and is based on test audit of records of the projects of the Company and its subsidiaries and Joint Ventures.

Executive Summary

NTPC is India's largest thermal power generating company. Its installed capacity as on 31 March 2007 was 27,404 MW. It identified 24 projects aggregating 22,430 MW that it decided to add to its capacity during 2007-12. Of these, two projects (760 MW) still await investment approval. Of the remaining 22 projects (21,670 MW), eight (6,130 MW) were unfinished projects of the capacity addition programme of 2002-07 carried forward to 2007-12.

By August 2010, the Company had commissioned five projects (4,220 MW). It is likely to commission another six (5,000 MW) by March 2012. Thus, there would be a shortfall of 59 per cent vis-a-vis its own target.

Against a total estimated project cost of ₹ 1,09,319 crore on 21 projects, the Company's expenditure up to March 2010 is ₹ 50,853 crore.

Performance Audit of the Company's Capacity Addition Programme has highlighted deficiencies in project management that led to the huge shortfall vis-a-vis its own targets. Audit observed that, with better planning, co-ordination and monitoring, the Company could have achieved capacity addition closer to the targets. Significant audit findings are narrated below.

Pre-implementation planning and financial tie-ups

- *The project management system developed by the Company (called as Integrated Project Management and Control System) requires the Management to develop a pre-order network and master network to ensure that all pre-order activities are completed in time. Audit noticed that the Company did not formulate the pre-order network laying down activity-wise scheduled dates for each pre-order activity. As such, there is no benchmark available for pre-order activities. The Company took 10 to 102 months from identification/conceptualisation to investment approval for its projects.*
- *The Company adopted super critical technology which is more cost effective, thermal efficient and environment friendly, in only 3 out of 18 thermal projects.*
- *Though the working group on power for XI Plan envisaged (February 2007) per MW cost at ₹ 4.00 crore and State and private sector entities approved projects at ₹ 4.34 and ₹ 4.68 crore respectively, the Company approved its comparable projects during the same period at ₹ 5.14 and ₹ 5.56 crore.*
- *The Company does not prepare cost estimates on current market prices of various elements. Despite significant time over run of 9-33 months, three projects were completed within approved cost although there was 61 per cent and 76 per cent increase in prices of steel and cement respectively.*

- *The Company tied up its finances well and no project at any time suffered for want of funds.*

Project implementation

- *There were delays in execution mainly due to poor performance of civil contractors, delay in supplies of material by main plant contractors, inequitable contracts and inordinately slow management responses to contractual problems. The main plant packages were awarded by the Company in 17 out of 19 cases to a single vendor without assuring itself on capacity and capability to deliver. Based on the anticipated date of commercial operation of 17 ongoing projects, the Company would take 60 to 200 months from conceptualisation to commercial production.*

Project monitoring and impact analysis

- *The Company has an elaborate system of project monitoring including monthly meetings of Project Review Teams (PRT). Audit observed that, though PRT meetings were held regularly, this did not have significant impact in containing delays in project execution. The monitoring mechanism of the Company failed in co-ordinating with main plant contractors to ensure timely supply of critical equipment.*

- *Due to delay in realising capacity addition, the Company would lose the opportunity of generating 1,69,440 million units involving ₹ 38,463 crore in revenue (over the period of delay from scheduled to actual/ anticipated date of commercial operation) and ₹ 2,056 crore additional return on equity available on account of timely completion of projects.*

Recommendations

This performance audit contains eight recommendations to help the Company improve its performance. Significant recommendations are:

- *NTPC should shorten the pre-implementation planning process and fix benchmarks for all the pre-order activities.*

- *The Company should consider adopting super critical technology in more and more projects as the technology is more cost effective, thermal efficient and environment friendly.*

- *Data bank of the prices of various inputs required for setting up a power plant should be maintained on real time basis for realistic cost estimation.*

- *The Company should explore the possibility of encouraging alternative sources of supply of main plant equipment to realise more competitive prices and shorter project implementation periods.*

Chapter-1 Introduction

1.1 Company profile

NTPC Limited (Company) was incorporated in November 1975 with the objective to plan and promote development of thermal power in the country. In May 1998, NTPC diversified its objectives to include new business activities like development of hydro power and power through non-conventional/renewable energy sources. As on 31 March 2010, NTPC with an installed power generating capacity of 28,902 mega watt (MW) from 15 coal based thermal power stations and seven gas/liquid fuel based power stations was the largest thermal power generating company of the country. NTPC contributed 28 *per cent* of the total electricity generation of the country as of 31 March 2010. NTPC is a government Company wherein Government of India holds 84.50 *per cent* of the total equity.

1.2 Capacity addition program of NTPC

In line with the objective of National Electricity Policy (February 2005) to increase annual per capita consumption of electricity from the existing level of 631 units to 1,000 units, NTPC planned (April 2007) a Capacity Addition Programme to become a 50,000 MW Company by 2012. Since, NTPC had installed capacity of 27404 MW upto 31st March 2007, the Company planned to increase the capacity by 22,600 MW (83 percent) during next five years (2007-2012). However, due to non-fructification, rescheduling or substitution, the Company revised (2007-08) its target downward to 22,430 MW to be achieved during 2007-2012. In order to achieve this target, NTPC decided (2006-07) to adopt a multi-pronged growth strategy. A list of projects identified for capacity addition during the above period is placed at ***Annexure-I*** based on type of fuel to be used (i.e. Thermal, Hydro or Wind) and nature of project (i.e. Greenfield or Expansion).

The Management stated (November 2010) that the capacity addition target of 22,430 MW was approved neither by the Planning Commission nor by the Ministry of Power. Analysis should be done only against the target for capacity addition of 17,760 MW fixed by Planning Commission for NTPC for 11th Plan.

We do not agree with the Management as the capacity addition target of 22,430 MW was set by the Company itself as per the Corporate Plan. The Company had in fact identified projects to augment capacity for 22,430 MW during 2007-12 and had also initiated action on these projects.

1.3 Progress of Capacity Addition Programme

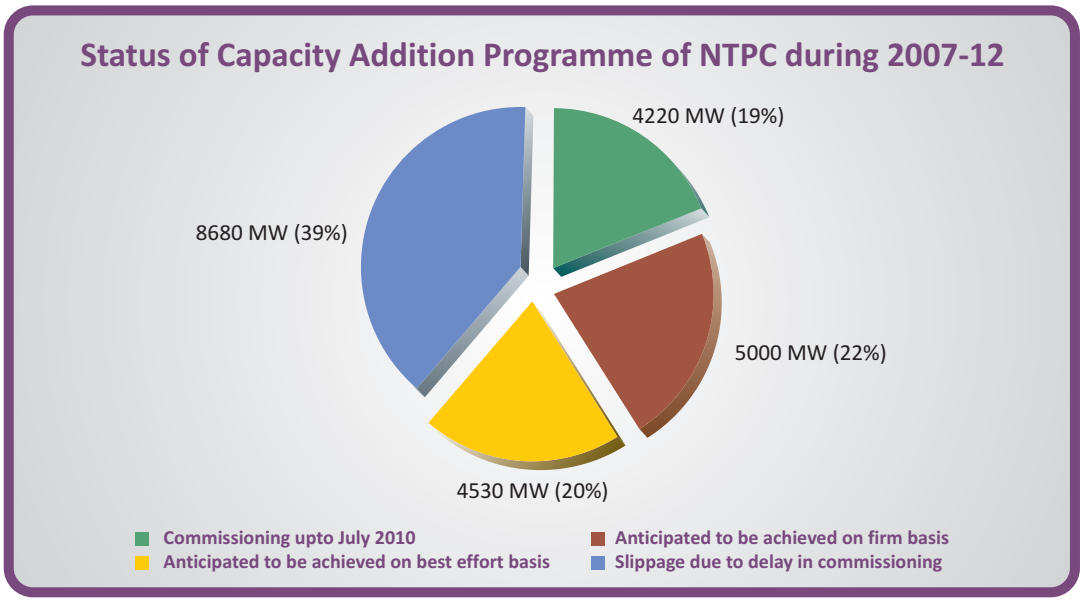
1.3.1 Of the target of 22,430 MW fixed involving 24 projects, the Company commissioned only five thermal projects[1] involving 4,220 MW (19 percent) till

[1] *Kahalgaon-II (1000 MW), Sipat-II (1000 MW), Dadri-II (980 MW), Bhilai Expansion (500 MW) and Ratnagiri (740 MW).*

August 2010 of which Ratnagiri[2] project was a revival project. Further, out of above target, two projects[3] involving 760 MW have not been so far (August 2010) awarded. Out of balance 17,450 MW involving 17 projects[4], the size of Muzaffarpur Expansion[5] project was reduced by 110 MW. The Company anticipates to achieve another 5,000 MW out of 17,340 MW on firm basis by March 2012.

Thus, against the target of 22,430 MW, Company would be able to achieve only 9,220 MW resulting in a shortfall of 13,210 MW (59 *per cent*). Analysis of progress made so far reveals that although the Company anticipates to achieve additional 4,530 MW involving six projects[6] on best effort basis, commissioning of these projects appears to be difficult by March 2012 as present status of progress of work is far from satisfactory. Further, the Company could achieve only 500 MW against 1,500 MW planned on best effort basis during previous capacity addition programme (2002-07).

The total cost of 21 approved projects between 2002 to 2010 involving 21320 MW[7] was ₹ 1,09,319.19 crore of which a cumulative expenditure of ₹ 50,853.19 crore has been incurred upto March 2010. The status of the progress of capacity addition programme for 2007-12 is indicated in the following pie-chart:



[2] *Ratnagiri is a revival project. Under the current capacity addition programme NTPC has added capacity of 740 MW by reviving Block-III of the Ratnagiri project. This Ratnagiri project has not been analysed in this Report.*

[3] *North Karanpura (Thermal) and Guledagudda (Wind Power).*

[4] *Barh-I, Barh-II, Sipat-I, Mauda, Korba-III, Farakka-III, Simhadri-II, Rihand-III, Vindhyachal-IV, Bongaigaon, Koldam, Loharinag Pala, Tapovan Vishnugad, Jhajjar, Vallur, Muzaffarpur and Nabinagar.*

[5] *The Company initially planned this project for 500 MW (2 units of 250 MW) but later on changed to 390 MW (2 units of 195 MW each)*

[6] *Sipat-I (1980 MW), Mouda (500 MW), Bongaigaon (250 MW), Rihand-III (500 MW), Vindhyachal-IV (500 MW) and Koldam Hydro (800 MW).*

[7] *Out of 22,430 MW Investment approval is awaited in respect of North Karanpura thermal (660 MW) and Guledagudda Wind Power (100 MW) projects. The Company has changed project size from 500 MW to 390 MW in respect of Muzaffarpur thermal project. In the absence of breakup for cost of Kahalgaon-II project executed up to 2007 (500 MW) and during 2007-12(1000 MW), the capacity and cost of this project has been taken for 1500 MW.*

2 Chapter-2 Audit Framework

2.1 Scope of Audit

This performance audit covers all the activities from conceptualization to implementation of all the projects selected by NTPC and its Joint Ventures/Subsidiaries for adding a capacity of 22,430 MW between April 2007 and March 2012.

2.2 Audit Objectives

In order to analyse the reasons for slow progress of work and to assess the effective and economic implementation of the capacity addition programme, a performance audit covering activities from conceptualisation to execution of projects by NTPC and its Joint Ventures (JVs)/Subsidiaries to achieve the targets of capacity addition set for 2007-12 was undertaken. Audit objectives were to assess whether:

- The projects were selected and formulated considering all relevant factors;
- Projects and Contracts were managed with due economy and efficiency;
- There was an effective monitoring mechanism at all levels; and
- The delay in completion of projects involved any financial impact.

2.3 Audit Criteria

The performance of NTPC was assessed against the following criteria:

- National Electricity Policy
- Corporate Plan of NTPC
- Minutes of meetings of the Board of Directors (BOD) and sub-committees
- Feasibility Reports (FR)/Detailed Project Reports
- Work and Procurement Policies and Procedures
- Contract Agreements
- Best practices adopted by the industry.

2.4 Audit Methodology

The Audit held a meeting with the NTPC Management on 7 July 2010 wherein the scope, objectives, criteria of audit and audit sample were discussed. Audit examined relevant records based on which preliminary observations were issued to the management and the replies of the management, wherever received, were considered while drawing audit conclusions which have been narrated in subsequent Chapters. After receipt of responses from the Management, an exit conference was held on 18th November 2010 and further clarifications and comments made by the Management during this interaction were also considered while finalizing this report.

2.5 Audit Sample

The projects covered under capacity addition programme of NTPC are to be completed by March 2012 and, therefore, some of the projects were still under award or execution. As such a representative sample of the contracts was drawn from list of contracts awarded for executing the projects using Interactive Data Extraction and Analysis (IDEA) software for examination of Contract awarding activities. Out of 442 contracts valuing ₹ 58,752 crore awarded between April 2003 and March 2009 for capacity addition programme, 150[8] contracts (34 *per cent*) valuing ₹ 50,706 crore (86 *per cent*) were selected for review of award activities. As regards execution, all 24 projects under execution were selected for examination. The details of the sample selected are given in ***Annexure–II***.

2.6 Audit findings

Audit findings are discussed in three chapters as detailed below:

- **Chapter 3** includes issues relating to pre-implementation planning and financial tie-ups
- **Chapter 4** flags audit analysis of factors leading to delay in project implementation
- **Chapter 5** highlights inadequacies in project monitoring and analyses the impact of delays in project implementation

2.7 Acknowledgment

Audit acknowledges the cooperation extended by Management to audit team.

[8] *Records related to four contracts could not be examined by audit as the same were with CBI/CVC.*

Chapter-3

3 Pre-implementation Planning and Financial Tie-ups

3.1 Planning

NTPC in its Corporate Plan (2002-17) fixed a target of capacity addition of 11,210 MW to be achieved during 2007-12. This corporate plan was approved by Board of Directors (BOD) in July 2003. Subsequently, the Company decided to increase its installed capacity to 50,000 MW by 2012 by fixing (2007-08) a target of 22,430 MW.

Audit also observed that as many as eight projects[9] involving 6,130 MW included in the above capacity addition programme were identified even before the beginning of the previous capacity addition programme (2002-07) and work on these projects (except North Karanpura and Nabinagar) was actually in progress during 2002-07. However, non-completion of these projects between 2002 to 2007 resulted in shifting of these projects to 2007-12. Thus capacity target of 22,430 MW was set for 2007-12 while a comparatively smaller target of 9,160 MW was set for 2002-07.

3.2 Identification and Planning of New Projects

NTPC has to follow various procedures for finalizing and setting up a Power Plant viz., selection of site & technology, tying up of inputs and getting various statutory clearances. From conceptualization to setting up of thermal plants and Hydro plants, NTPC requires various kinds of approvals and clearances ***(Annexure-III)*** from different agencies and its Board. The new projects are identified by NTPC, selection committee of Central Electricity Authority (CEA), State Electricity Boards/Power utilities and others.

3.3 Delay in Pre-order activities

3.3.1 The project management system developed by the Company called 'Integrated Project Management & Control System' (IPMCS) introduced in 1978 and last revised in 2006 requires the management to develop a pre-order network and master network to ensure that all pre-order activities are completed in time. Timely completion of pre-order activities ensures ordering of main plant immediately after Investment approval.

It was, however, observed that the Company did not formulate pre-order network laying down activity-wise scheduled dates for each pre-order activity. Hence, activity-wise delays could not be identified in Audit. An exercise in audit, however, revealed that the Company took 10 to 102 months ***(Annexure-IV)*** in 21 projects (average time 48 months) from identification/conceptualization of a project to investment approval for the project.

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[9] *Barh-I, Sipat-I, Kahalgaon-II, North Karanpura, Dadri-II, Sipat-II, Bhilai & Nabinagar (Out of these projects, Nabinagar and Bhilai projects were targeted by the Company in 2002-07 in addition to the targets fixed by the Planning Commission. Further, the capacity of Kahalgaon-II and Sipat –II was revised by the Company from 660 MW each to 1500 MW and 1000 MW respectively)*

In 12 projects, the management took 10 to 48 months in completing the pre-order activities. Against this, the management took 48 to 60 months in three[10] projects, 60 to 80 months in another four[11] projects and 80 to 102 months in two[12] other projects in completing the pre-order activities.

One of the major areas of uncertainties faced by the Power Sector is environmental clearances from Ministry of Environment and Forest (MOEF). It was, however, observed that in as many as four projects[13] the management took 24 to 42 months in arriving at the zero date[14] even after getting environment clearance which delayed the commissioning of the projects.

The Management stated (November 2010) that pre-investment works involve a number of activities requiring various Government approvals and lot of uncertainties like getting land and water commitments. Therefore, the analysis should be done on the basis of time taken after approval of the Feasibility Report. Moreover, there was a benchmark time period for activities like finalization of specifications, Notice inviting tender and Letter of Award.

We do not agree with the Management because timely completion of pre-feasibility activities is an integral part of the project management for expeditious completion of the project. Based on its long standing experience, the Company should have developed a time schedule for each pre-order activity (not only limited to finalization of specifications, notice inviting tenders and letter of award) for better project management.

Details provided in ***Annexure-IV*** reveal that Sipat-I conceptualized in 1995 is still under construction even after 15 years. Barh-I is another project under construction even after 12 years of its conceptualization. In the case of Kahalgaon-II, 11 years were taken in completing the project from its conceptualization. Few more projects like Mauda, Nabinagar, Vellur and Korba-III which were conceptualized in February 2001, January 2002, June 2002 and February 2003 respectively, are also still under construction. Project-wise analysis revealed that six projects could not be commissioned timely due to following reasons:

- Though the Feasibility Report of Sipat-I (4x500 MW) was submitted (April 1997) to CEA for Techno-Economic Clearance (TEC), the management decided to change the project size to 3x660 MW at the suggestion (November 1999) of Ministry of Power without preparing a fresh FR. In fact, CEA accorded (January 2000) TEC to the changed project size on the basis of FR submitted on 30.04.1997 for project size of 4x500 MW. After TEC, the management took almost four years in finalizing the main plant contract. The construction activities of the project are still under Progress.

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[10] *Kahalgaon-II, Rihand-III and Vindhyachal-IV.*
[11] *Nabinagar JV, Vellur, Barh-I and Dadri-II*
[12] *Mauda and Sipat-I*
[13] *Sipat-I, Barh-I, Kahalgaon-II and Nabinagar JV*
[14] *Zero date is the date of award of main plant contract.*

- CEA accorded TEC for Kahalgaon-II (2x660 MW) in November 2001. The management, however, with the justification of achieving faster completion of the project decided (February 2003) to change the unit size to 500 MW and project size to 1500 MW and implement it in two stages i.e. stage I (2x500 MW) and stage II (1x500 MW). Due to change in project size and unit size, the Environment Clearance for stage-II (1x500 MW) was delayed and was received on 20.05.2004. Though the unit size and project size was changed with a view to achieving faster completion, the project was completed only in March 2010 taking 80 months from the date of award of main plant for Stage-I, i.e., 18.07.2003.

- The FR of Barh-I was approved in May 2000 and CEA accorded TEC in September 2001. The management however, could finalise the main plant contract only in March 2005, taking abnormal time of 42 months.

- Though Vindhyachal-IV(2x500 MW) and Rihand-III (2x500 MW) were identified in April 2004 as projects for future capacity addition programme, the management started the project related activities as late as in January 2007, i.e. after 30 months of conceptualization, when it decided to develop these two projects as substitutes for two Gas based projects (Kawas-II and Janhor-Gandhar-III).

- The Nabinagar-JV project was delayed due to delay in finalization of JV agreement with Railways. Though the project was conceived in January 2002, the JV agreement with Railways was signed only on 06.11.2007 and the subsidiary Company was incorporated on 22.11.2007 under the name "Bhartiya Rail Bijlee Company Limited" in joint venture with Ministry of Railways. NTPC and Ministry of Railways' share was 74 *per cent* and 26 *per cent* respectively.

  The Management stated (November 2010) that the process of forming joint venture involved series of meetings to thrash out various issues with the Ministry of Railways and for obtaining CCEA approval which took time.

  The fact remains that more than five years were taken to finalise the Joint Venture arrangement with the Ministry of Railways, which ultimately delayed the project.

- One project (North Karanpura) is delayed by 125 months due to dispute with Ministry of Coal over project site and indecisiveness of management to shift the project site. The management has incurred expenditure of ₹ 149.33 crore (up to March 2010) on this project.

3.3.2 The Company has set benchmark[15] of 33 to 36 months for synchronization of a 500 MW project, however, no such benchmark is available for pre-investment

[15] The Company submitted to the Committee on Public Undertaking (Refer Page No.15 of 34th Report of 2008-09) that the time taken by NTPC units from start of construction to synchronization was 33 to 36 months.

approval activities. Thus without a benchmark Audit could not judge whether the time taken by the management for such activities was realistic. The professional management of the Company should have been more pro-active in handling the pre-order activities in many of the projects as was done in respect of Jhajjar project where pre-order activities were completed in 10 months. Therefore, the fact remains that the Company could have handled other projects as efficiently and judiciously as Jhajjar project.

3.4 Other issues related to Planning

3.4.1 Audit observed that Board of Directors is apprised about the unit size and technology of a project only at feasibility report approval stage which is too late a stage to adopt any progressive changes proposed by the BOD.

The Management stated (August/November 2010) that the Board of Directors was generally aware of the new expansion projects prior to Feasibility Report proposal.

The fact remains that the Board level management was not specifically informed about the selection of unit size/ project size and technology till submission of FR/revised FR to them.

3.4.2 Out of 18 thermal projects, sub-critical technology was adopted in 15 projects and super critical technology was adopted only in three projects with a view to accelerate quicker capacity addition, though the super critical technology is more cost effective[16], thermal efficient[17] and environment friendly. In the case of Bongaigaon, in addition to sub-critical technology smaller unit size of 250 MW (three units) was adopted without any justification. As Operation & Maintenance expenses allowed under CERC tariff regulations (2009-14), were higher for 250 MW size unit (₹ 18.20 lakh per MW per annum) as compared to 500 MW size unit (₹ 13.00 lakh per MW per annum), the beneficiaries would be required to buy power at higher rate.

Regarding selection of sub-critical technology Management stated (August/November 2010) that in case of 660 MW, the space requirement is higher and accommodating 500 MW units are found more appropriate in some stations in view of space constraints as per the Layout of existing stations and also to accelerate capacity addition program. For Bongaigaon project, Management stated that the decision to implement 250 MW units was taken considering all techno commercial aspects including power demand of North Eastern region, grid stability, and limitation of ash dyke area.

Audit does not agree with the Management's viewpoint as selection of sub-critical technology was not based on any cost-benefit analysis or layout of existing stations and the objective of management for quicker capacity addition was also defeated as most of the projects with sub-critical technology were progressing slowly. The reply on Bongaigaon project is also not tenable as

[16] *As per Report of Committee of CEA published in November 2003*

[17] *Super-critical technology adopts better steam parameters (i.e. higher steam pressure and higher main steam/ reheat temperature) as compared to sub-critical technology with a view to derive increased efficiency gains.*

- There is an overall power shortage in the country and additional power would always have a market somewhere in the country.
- The grid stability is ensured by the transmission company by matching the grid capacity according to power generation.
- The ash dyke could also be accommodated in the same area as is being done by the Company in its Vallur project with 2X500 MW capacity in the allotted land of 1002 acre as against 1014 acre available at Bongaigaon.

3.4.3 The Company planned to set up (March 2006 and July 2006) one 500 MW project each at Korba and Farakka. Since Farakka Power Station was already facing problems in meeting coal requirement for its existing units, and sufficient space was available at Korba for setting up two units, the possibility of postponing the capacity addition at Farakka and setting up two units at Korba was not explored. This would have reduced the project cost by ₹ 501.89[18] crore by availing deemed export benefits[19] available to a Mega Power projects under existing Foreign Trade Policy.

The Management stated (November 2010) that putting up two units of 500 MW at Korba was not favoured as it required identification/acquisition of additional land for ash-dyke, large scale infrastructural development works including provision of various cross overs/bridges across the MGR rail tracks leading to higher project cost.

We do not agree with the Management as the decision of the Company for not putting up 2X500 MW plant at Korba was not supported by proper cost benefit analysis of all relevant factors including higher project cost and deemed export benefits.

3.4.4 Due to delayed decision (September 2007) of adding one more unit of 500 MW at Vallur where construction of 2x500 MW project was already going on, the Company had to place separate orders for main plants – two units in August 2007 and one unit in July 2009. Resultantly, the Company is liable to incur an additional cost of ₹ 390.47 crore on account of price increase due to time flux and foregoing bulk purchase benefits. Further, as various clearance and permissions had to be obtained again in respect of 3rd unit, award of various Balance of Plant packages was delayed by 4 to 14 months which would ultimately affect the commissioning of even first two units.

Management stated (August/November 2010) that third unit was planned at a later date with a view to optimize the layout with certain modifications.

The reply is not acceptable. If three units could be constructed within the available infrastructure, the planning for third unit should have been done simultaneously to avoid unwarranted delays and increase in the cost of the project. Further the objective of optimization of layout was not achieved as construction cost (per MW) after addition of one more unit increased from ₹ 6.07 crore to ₹ 6.26 crore.

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[18] *Worked out @ 10 per cent as adopted by Management for justifying estimated cost of projects before the BOD*

[19] *As per Foreign Trade Policy, Deemed Export Benefits were available to thermal power projects with capacity of 1000 MW and above.*

3.5 Investment Approval and project financing

3.5.1 Investment Approvals

3.5.1.1 On completion of all pre-order activities (Refer ***Annexure III***), the proposal to invest in the project is approved by Board of Directors. Independent financial appraisal of the projects is one of such pre-order activities which ought to be conducted by NTPC from financial institutions. Audit, however, observed that the financial appraisals made by the financial institutions were based on technical parameters/financial data provided by NTPC and, therefore, to that extent the data was not got independently validated.

3.5.1.2 Audit observed that per MW construction cost of the thermal projects approved by NTPC between February 2007 and May 2009 ranged between ₹ 5.00 crore and ₹ 5.91 crore as against ₹ 4.00 crore envisaged (February 2007) by the Working Group on Power for Eleventh Plan (2007-12) which even after considering price rise during intervening period worked out to maximum of ₹ 4.45 crore. An analysis of cost details of project approved after February 2007 is placed at ***Annexure-V***.

A comparison of cost of projects of NTPC and the Private/State Sectors revealed that costs of NTPC were higher as discussed below:

- Whereas Adani Power Maharashtra Private Limited's estimated (main plant contract awarded on 28.02.2008) cost was ₹ 4.68 crore per MW for a 1980 MW project (3x660 MW), the per MW cost of Barh-II (2x660 MW) to which investment approval was accorded in February 2008 worked out to ₹ 5.56 crore per MW; the total extra cost for the project works out to ₹ 1,161.60 crore.

- The estimated per MW cost of Khaperkheda TPS (1x500 MW) being developed by Maharashtra State Power Generating Company Limited was ₹ 4.34 crore on 12.05.2006 whereas the approved per MW cost of Korba-III (1x500 MW) and Farakka-III (1x500 MW) projects of NTPC were ₹ 4.90 crore and ₹ 5.14 crore as on 24.03.2006 and 31.07.2006 respectively. The comparative higher cost estimated by NTPC on these two projects works out to ₹ 280 crore and ₹ 400 crore respectively.

While remaining silent on the above two issues; Management stated (November 2010) that the project cost depends on various factors and therefore, varies considerably depending on the scope of work involved in each project.

We do not agree with the Management because cost (per MW) of similar projects taken up by the private/State sector companies around the same time was not much different from the cost (per MW) envisaged by the Working group. The fact, therefore, remains that despite indications about huge differences between NTPC approved project costs and the cost envisaged by the Working Group, NTPC did not go in for independent appraisal of the project cost which could have facilitated better appreciation of the realistic cost parameters.

3.5.2 Project Financing

CERC regulations for the period 2004-09 and 2009-14 provided that for determination of tariff the debt equity ratio of any power generation project as on the date of commercial operation would be 70:30. While adhering to this pattern, NTPC met the equity portion for execution of the projects out of internal accruals and debt component was arranged through foreign/domestic borrowings and issuing bonds. The management took timely action for tying up the required finance for execution of projects and the progress of projects at any point of time did not suffer because of shortage of funds. Despite this Audit observed that the progress of many of the projects was affected due to other reasons as discussed in Chapter IV.

3.6 Conclusion

The Company had not fixed yearwise targets for achieving the target of capacity addition of 22,430 MW. The target of capacity addition programme suffered due to lack of scientific approach to planning; consequently projects are running behind schedule. The Company had also taken 10 to 102 months from conceptualization to investment approval which indicates that management's approach to pre-order activities was not systematic.

Delays in pre-order activities, change in planning and subsequent change in scope of work relating to the projects resulted in extra capital cost of ₹ 2851 crore on construction of various projects.

Chapter-4

4 Project Implementation

4.1 Contract Management

The contract management is a process of systematically and efficiently managing contract creation, execution and analysis for the purpose of maximizing financial and operational performance and minimizing risk.

Audit examined in detail various stages of contract management inter-alia contract planning, preparation of tender documents, invitation of bids, receipt and opening of bids, processing and evaluation of bids, pre-award discussion with the recommended bidder, award of contract, post-award implementation of contract, contract amendments and contract closing in respect of 146[20] contracts. Results of examination are discussed in subsequent paragraphs.

4.1.1 Cost Estimation

4.1.1.1 Cost estimation for each package having various elements is prepared to establish the reasonableness of the cost at which package could be executed. Therefore, it is essential that the estimates are worked out in a realistic and objective manner. The Company is preparing the cost estimate on the basis of average purchase price of the previous contracts awarded and same is escalated to the current level of price. As such Company does not prepare cost estimates on current market prices of various elements as no data bank for the same exists.

Audit observed that in 57 contracts (39 *per cent*), variation (positive as well as negative) between estimated costs and award cost ranged between 10 to 54[21] percent ***(Annexure-VI)*** which indicates that cost estimates were not realistic and no fresh analysis was being carried out by the Management.

The Management stated (November 2010) that the updated cost estimates are an indication of the prices prevailing as on the date of cost estimate. However, bid prices at times are influenced by many uncertainties, due to which the variations between cost estimate and bid price occur.

Management's reply is not acceptable as cost estimates should be prepared on the basis of current market prices of the various elements of materials/equipments required for construction of power plant instead of depending on the last awarded prices as these may not always represent current market prices.

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[20] *Sample selected as discussed in Para 2.8*

[21] *10 to 20 per cent in 32 contracts, 20 to 30 percent in 16 contracts, 30 to 40 per cent in 5 contracts and above 40 per cent in 4 contracts*

4.1.1.2 It was further observed that out of 57 contracts (mentioned in para 4.1.1.1 above) the Company accepted substantially higher rate from estimated cost ranging between 10.25 *per cent* to 33.55 *per cent* in 22 contracts due to paucity of time and tight schedules which indicate lack of co-ordination and synchronisation of various activities of the contract. Though such rates should not be the guiding factor for preparation of subsequent estimates, there existed no system to exclude such cases for preparation of future estimates.

The Management stated (November 2010) that packages which have been accepted with substantially higher and unreasonable rate from estimated cost due to paucity of time and tight schedules were now being generally kept out of purview of future cost estimate.

The reply is not acceptable as Company had considered rates of works awarded on emergent basis for preparation of subsequent estimates e.g. estimate of Coal Handling Plant of Farakka-III was based on rates of Barh-I which was 28 *per cent* higher than estimate. Similarly, cost estimate of main plant & off-site area civil works package for Barh-II was prepared on the basis of similar package of Barh-I which was awarded at 22 *per cent* higher than estimate.

4.1.1.3 Audit also observed that three projects[22] were completed within approved cost despite significant time overrun of 9-33 months and increase in the prices of Steel and Cement by 61 *per cent* and 76 *per cent* respectively from 2003 to 2010. This indicates that cost was not estimated on real-time basis and appears to be unrealistic.

4.1.2 Invitation and evaluation of bids

4.1.2.1 Qualifying Requirement

The Qualifying Requirement (QR) of prospective bidders was decided on the basis of recommendation of a standing committee called QR committee. The QR was disclosed in the notice inviting tenders (NIT). Audit examined the records to verify whether the QR was fixed judiciously and generated adequate competition.

Audit observed that in 14 cases, QR was relaxed after NIT to bring more prospective bidders within qualifying criteria ***(Annexure-VII)*** due to inadequate response from the bidders. This indicated that proper analysis as regards fixing of QR had not been made. Subsequent change in QR contributed towards delay in completion of the pre-order activity. Further, in 12 out of 14 cases, the Company allowed 9 to 18[23] days for bid submission subsequent to revision in QR. The time allowed was insufficient for global tenders. As a result, except in one case, there was either nil response or very poor response even after revision of QR.

The Management while agreeing with Audit stated (November 2010) that in order to reduce the possibility of need for revision of QR after NIT, action for collection of vendor data base through expression of interest has been taken and new QRs are prepared taking into account the vendor data base.

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[22] *Kahalgaon-II, Sipat-II and Bhillai.*

[23] *Against four weeks generally allowed by the Company for bid submission.*

4.1.2.2 Notice Inviting Tenders

To achieve synchronization date of the project, it is necessary that NIT for each package is issued as per schedule mentioned in master network. However, audit observed that out of total 146 contracts examined in audit, in case of 34 contracts, delays of one to 17 months were noticed in issuing NIT due to delay in finalization of tendering documents.

4.1.3 Awarding of contract

Of 146 Contracts examined in audit, 135[24] contracts related to construction of Thermal projects and remaining 11 were for construction of Hydro projects. Issues related to awarding of these thermal and hydro projects are discussed below:

4.1.3.1 Thermal projects

- For achieving the Capacity Addition Programme by March 2012, the Company should have ensured during the initial period that there was no slippage in awarding of the main plant Packages. It was observed that due to excessive time taken during pre-order activities, awarding of main plant contracts in six projects was delayed. As a result, capacity of 5210 MW right away slipped beyond March 2012 by 7 to 20 months as is evident from the table given below:

Sl. No.	Name of the Project	Capacity to be added (in MW)	Date of award of main plant contract	Scheduled date of completion as per Investment Approval (Unit-I / Unit)	Delays beyond March 2012 in scheduled completion (in months)	Reasons of delay in award of main plant contract
1.	Barh-II (2 x 660)	1320	14.10.08	January 2013 / November 2013	20	Delay in finalization on main plant contract
2.	Mouda (2x500)	1000	28.11.08	May 2012/ November 2012	8	Delay in acquisition of land
3.	Rihand-III (2x500)	1000	18.02.09	July 2012/ January 2013	10	Delay in initiation of pre-order activities
4.	Vindhyachal-IV (2x500)	1000	18.02.09	July 2012/ January 2013	10	Delay in initiation of pre-order activities
5.	Vallur, Phase-II (1x500)	500	28.07.09	January 2013	10	Delayed decision about project size
6.	Muzaffarpur Expansion (2x195)	390	12.03.10	October 2012/ January 2013	10	Delay in finalization of configuration of unit size
	TOTAL	5210				

[24] *Main plant Packages-32; Balance of Plant-103*

The Management stated (November 2010) that the award of work in case of Barh –II was delayed due to extension of time at the request of bidders and considerable time was taken to resolve various deviations of the package with BHEL as it was the first super critical project for BHEL. In case of Vallur project, the decision to add one more 500 MW unit was taken subsequently with the announcement of Hon'ble Minister of Power at the foundation stone laying ceremony.

Audit does not agree with the Management because the Company took inordinate time to resolve the issues associated with the award of main plant packages. The feasibility of adding one more unit at Vallur project should have been examined and decided at the stage of initial planning itself.

- Master network in respect of every project had to be developed indicating matching programme for each balance of plant contracts such that synchronization of the project is achieved as per schedule agreed for main plant contract. A review of awarding of 103 balance of plant contracts revealed that in 74 contracts, master network dates were not adhered to and delays ranging between one and 24 months were noticed as is evident from the table given below:

Range of delay (in months)	Number of contracts	Name of the Projects
One to three months	27	Barh-II, Farakka-III, Kahalgaon-II, Korba-III, Dadri-II, Simhadri-II, Sipat-I, Sipat-II, Jhajjar,
More than three up to Six months	23	Barh-I, Barh-II, Bongaigaon, Farakka-III, Kahalgaon-II, Korba-III, Dadri-II, Simhadri-II, Sipat-II, Vallur, Jhajjar
More than six but up to nine months	7	Barh-I, Kahalgaon-II, Dadri-II, Simhadri-II, Vallur,
More than nine up to 12 months	10	Barh-I, Bongaigaon, Farakka-III, Korba-III, Nabinagar, Vallur,
More than 12 and up to 24 months	7	Korba-III, Nabinagar, Vallur,

These delays could have been avoided as they had significant impact on the overall progress of the projects.

The Management stated (November 2010) that various activities like finalization of QRs, cost estimates, assessment of new bidders, extension of bid opening date to enhance competition could not be anticipated in advance and hence could not be taken into account while finalising the Master network.

The reply is general and does not address the specific cases pointed out in Audit. Further, since these activities are part of the normal award process these could have been expedited through proper planning.

- Further, in addition to sample of 146 contracts selected, 15 critical packages of seven projects as detailed in Annexure-VIII were awarded with delays of 8 to 27 months. As a result, Capacity Addition Programme suffered significantly.

The Management stated (November 2010) that delay was mainly due to extension of bid opening dates at the request of the bidders to enhance competition, re-tendering due to higher prices, sorting out technical and commercial issues with bidders, delay in finalisation of QR and specifications in some cases.

We do not agree with the Management because in most of the cases, the NIT itself was issued by the Management close to the scheduled date of award of contract as per the Master network and thus sufficient time was not available to evaluate and finalise the bids by the scheduled date. Further, finalisation of QRs and technical specifications which were controllable activities could have been expedited by the Management.

4.1.3.2 Hydro Projects

The date of commissioning of the hydro projects was to be worked out from the date of award of the first contract of main civil works package as per TEC issued by CEA. In order to achieve the capacity addition program (2007-12), the first contract for main civil work of hydro projects should have been awarded after TEC at the earliest. However, it was observed that the Company had taken inordinate time ranging from 18-27 months for awarding of first package of main civil works from the date of TEC as is evident from table given below:

Sl. No.	Name of the Project	Date of TEC	Date of award of first package of main civil work	Time taken from TEC to award
1	Koldam	30.6.02	12.12.03	18
2	Loharinag-Pala	11.8.04	06.07.06	22
3	Tapovan-Vishnugad	11.8.04	28.11.06	27

Project wise delays were attributed to:

(i) Changes in project parameters (June and December 2005) after TEC clearance due to provision of Pelton turbine in place of Francis turbine in Loharinag-Pala and Tapovan Vishnugad projects,

(ii) Changes in construction methodology (August 2005) of Head Race Tunnel from Drill & Ballast Method to Tunnel Boring Machine after TEC clearance in Tapovan Vishnugad project,

(iii) Management's decision to review the bidding procedure for civil works when tenders already invited under two stage bidding were under evaluation in case of Loharinag-pala project. This led to holding up of tendering process for three months (February 2006 to April 2006).

The Management stated (November 2010) that in case of Loharinag Pala and Tapovan Vishnugad projects the land acquisition could be started only after accord of TEC by CEA and ground activities of transfer of forest land starts after accord of forest clearance.

We find it difficult to agree with the reply because action for land acquisition and forest clearance should have been initiated simultaneously with the proposal for Techno-economic clearance to avoid project delay as is being done by other power majors like NHPC Limited for their hydro projects. The forest clearance was applied by the Company for Tapovan Vishnugad and Loharinag Pala projects after 11 and 8 months respectively from techno-economic clearance. In fact the Ministry of Environment and Forests had accorded the forest clearance within one month of the application in both the cases.

4.2 Execution of project

Time is the essence of every contract for achieving completion of any work as per agreement between two parties. Audit examined the execution of contracts awarded for construction of projects under capacity addition programme. The results of such examination highlighting the main reasons for project-wise delays are stated below:

4.2.1 Thermal projects

4.2.1.1 Kahalgaon-II (2x500 MW)

Sl. No.	Scheduled COD*	Actual COD	Delays in completion (in months)	Financial progress/ status as on March 2010
6	July 2007	December 2008	17	Completed
7	June 2007	March 2010	33	Completed

**Commercial operation Date*

Delays were attributable to slow progress made by the main plant civil contractor and delayed supply by main plant contractor. Delay is also attributable to shortage of coal because of which 9 months ***(Annexure-IX)*** were taken for COD after synchronization against normal time of three months[25].

It was also observed that even after COD, the plant is not operating at the desired PLF[26] due to shortage of coal. The PLF of the plant which was 100 *per cent* in May 2007 slipped to 56 *per cent* (July 2010) after completion of the project due to shortage of coal. The fuel supply agreement was yet to be finalised by the Company (May 2010).

Had the management explored the possibility of meeting the shortage of coal from alternate sources, idling/under-utilisation of capacity could have been avoided. Thus, the objective of capacity addition by this project is partially defeated.

The Management accepted the shortage of coal and stated (November 2010) that measures had been taken to mitigate the shortage of coal by entering into MOUs with coal companies, procuring coal through e-auction, diversion of coal from Northern Coalfields Limited, import of coal and improved haulage of coal through Inland Waterways transport from Haldia to Farakka.

[25] *As per guidelines of the Company regarding synchronization, full load and declaring under commercial operation of thermal projects.*

[26] *85% at which full fixed charges are recoverable through tariff as per CERC Regulations.*

4.2.1.2 Sipat-II (2x500 MW):

Unit No.	Scheduled COD	Actual COD	Delays in completion (in months)	Financial progress/ status as on March 2010
4	September 2007	June 2008	9	Completed
5	March 2007	January 2009	9	

The delay in commissioning of the project was due to delayed supply of material by the main plant contractor and non-availability of water for trial run and operation. The later being a pre-order activity should have been resolved timely with the State Government. Delay is also attributable to inordinate time of 8 months ***(Annexure-IX)*** taken against normal time of three months for COD after synchronization of units due to shortage of water.

The Management stated (November 2010) that water availability was properly tied up and the Company started drawing water from May 2006 as per the condition of the letter of allotment. However, due to change in attitude, the State Government decided to cancel the water allocation and returned the cheque which was paid to them on account of water usage.

Audit does not agree with the Management as water allotment was cancelled by the State Government because the Company had neither drawn allotted water within prescribed period up to November 2006 nor deposited commitment charges before February 2007 for extension of water allotment as demanded by the State Government.

4.2.1.3 Bhilai JV (2x250 MW)

Unit No.	Scheduled COD	Actual COD	Delays in completion (in months)	Financial progress/ status as on March 2010
1	January 2008	April 2009	13	Completed
2	July 2008	October 2009	13	

Bhillai JV project could not progress satisfactorily owing to poor mobilization & slow progress by sub-agencies of the main plant contractor and late/non-sequential supply by Main plant Contractor.

Further delay of 8 months (Annexure-IX) was noticed in synchronization from oil (April 2008) to coal firing (January 2009) due to delay in supply, erection and commissioning of Milling System, bunker erection and insulation work.

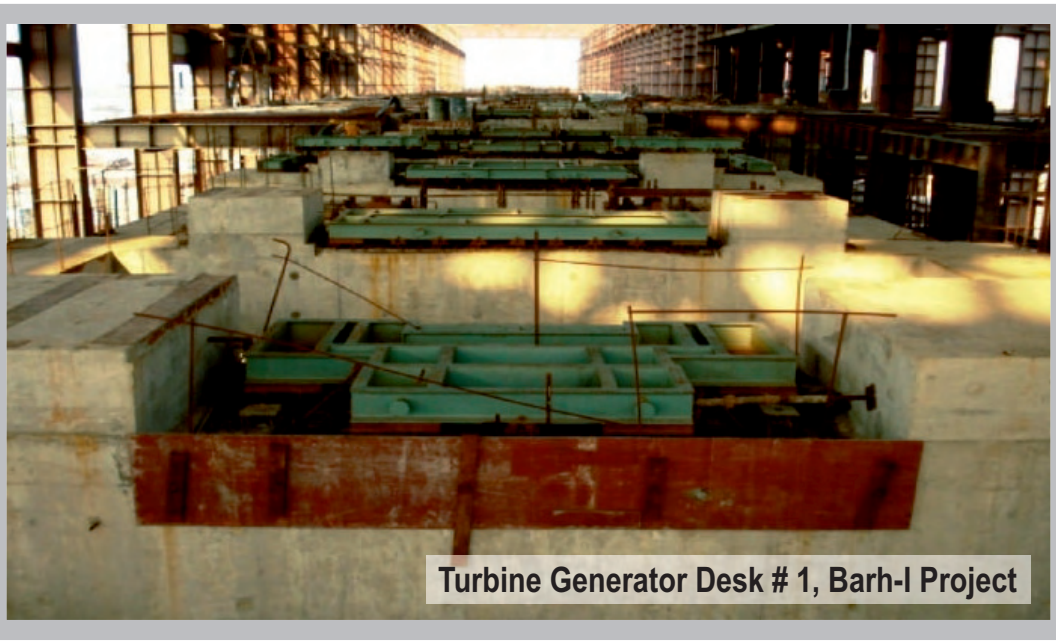
The Management while accepting (November 2010) the reasons for delay added that the issues were taken up at the Apex level meetings with the main plant agency and civil agency to expedite the process.

Audit observed that the problem arose because the Company had relied mainly on a single vendor for main plant packages who had failed to adhere to the schedule date in most of the projects. The contractors' base should have been widened to avoid issues like poor mobilization and slow progress by the contractor during execution stage.

4.2.1.4 Barh-I (3x660 MW)

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	June 2009	February 2013	44	55%
2	April 2010	August 2013	40	
3	February 2011	February 2014	36	

Tardy progress of above projects is due to late commencement of erection of steam generator by the contractor. Audit observed that a contractual dispute has arisen between the company and the Contractor due to commercial issues including removal of price variation ceiling of 20 *per cent*. The management did not take timely action for resolving this issue and the dispute is yet to be resolved.



Turbine Generator Desk # 1, Barh-I Project

4.2.1.5 Sipat-I (3x660 MW)

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	June 2008	January 2011	31	82%
2	April 2009	July 2011	27	
3	February 2010	January 2012	23	

The Management took inordinate time[27] to resolve the contractual disputes relating to time extension and removal of price variation ceiling of 20 percent with the main plant contractor. Further, there were also late supply of critical equipments & materials by main plant contractors. Due to above, the project has missed the scheduled COD as indicated above.

Turbine Unit # 1, Sipat-I Project

In respect of Barh-I and Sipat –I, th e Management merely stated (November 2010) that the delay was due to dispute with the main plant contractors.

The fact is that the disputes arose because of the contractual provision limiting escalation to 20 *per cent* without any flexibility to enable the Company to deal with delay by the Company itself in providing necessary inputs. Thereafter, the Company took an inordinate amount of time to change the contract terms and put the implementation of the contracts back on track.

4.2.1.6 Simhadri-II (2x500 MW):

Unit No.	Scheduled COD	Actual COD	Delays in completion (in months)	Financial progress/ status as on March 2010
3	February 2011	March 2011	1	59%
4	August 2011	April 2011	0	

[27] *Settled in September 2009.*

Poor mobilization of manpower & machinery by the Civil Work agency and delay in finalization of erection agency by the main plant contractor were the main reasons of delay. Diversion of IP turbine meant for this project to Jhajjar project which is linked with Common Wealth Games having cascading effect on the overall project schedule may further increase the anticipated delays as the financial progress upto March 2010 was only 59 *per cent*.

The Management accepted (November 2010) that the project was delayed due to diversion of IP turbine of this project to Jhajjar project which was targeted to be commissioned for the Commonwealth games.

Audit observed that even after delaying the Simhadri project due to diversion of IP turbine, the Company could not complete its Jhajjar project before the Commonwealth Games.

Unit 3&4, Simhadri-II Project

CW & Make up water civil ducts erection in front of Cooling Water Pump House

4.2.1.7 Vallur JV (3x500 MW):

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	February 2011	November 2011	9	31%
2	August 2011	January 2012	5	
3	December 2012	December 2012	0	

The reasons for slow progress were (i) late supply of critical equipments, (ii) late deployment of high capacity cranes and (iii) delay in finalization of erection agency by the main plant contractor. Further, the Company had also not awarded critical balance of plant packages in time with respect to master network.

The Management stated (November 2010) that delay was mainly on account of BHEL not meeting its target schedule and added that the decision to add one more 500 MW unit was taken subsequently with the announcement of Hon'ble Minister of Power at the foundation stone laying ceremony.

Force Draft Fan # 1 B erection intermediate pressure turbine, Vallur Project

Audit does not agree with the Management because the feasibility of adding one more unit at Vallur should have been examined and decided at the stage of initial planning itself to avoid delays.

4.2.1.8 Korba-III (1x500 MW)

Unit No.	Scheduled COD	Actual COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
7	May 2010	November 2010	6	81%

Execution of this project started in March 2006. However, due to poor mobilization of manpower and machinery by the civil work agency and delayed supply of critical equipments by the main plant contractor, this project missed the scheduled COD. Based on financial progress achieved upto March 2010, the project may not be commissioned even by the anticipated COD.

The Management accepted (November 2010) that there were delays in civil work and added that they had reviewed the progress with the highest level of civil agency. As no significant improvement was forthcoming, they had to blacklist the civil agency for future contracts.

We do not agree with the Management because the main plant civil work was awarded in September 2006 and the slow progress was evident from the initial stages itself. The Management, however, took up the high level review with civil agency only in April 2010 just before the scheduled date of commercial operation.

4.2.1.9 Farakka-III (1x500 MW):

Unit No.	Scheduled COD	Actual COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
6	November 2010	March 2011	4	65%

The main plant contractor did not finalise erection agencies in time and also made late supply of materials. Slow progress of work by civil contractors was another reason for delay of project.

Audit also observed that existing units of Farakka projects have consistently witnessed generation loss during the last three years[28] due to shortage of coal. With addition of one more unit of 500 MW which the management anticipates to commission in March 2011, the situation would worsen further as witnessed in Kahalgaon-II. Thus, coal supply issue should be resolved in advance.

The Management accepted (November 2010) that there was delay in finalisation of erection agency by BHEL and slow progress in civil works. The Management added that to avoid delay, NTPC allowed BHEL to part award the erection work.

The fact remains that despite steps taken by the Management there was delay of four months from the scheduled date of commercial operation.

4.2.1.10 Bongaigaon (3x250 MW):

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	February 2011	August 2011	6	25%
2	June 2011	February 2012	8	
3	October 2011	April 2012	6	

The Bongaigaon project was delayed due to slow progress of work by main plant civil work contractor and delay in appointing of erection agencies by the main plant contractor. It is observed that the delay in project completion would be much more than that anticipated by the management because Coal Handling Package with work schedule of 30 months was awarded in January 2010 only.

The Management accepted (November 2010) that civil agency took inordinate time to complete the civil works and showed no improvement in spite of repeated requests. The work was, therefore, offloaded from the civil works agency. Further, 80 days of work had been lost on account of Bandhs alone as the project is in the disturbed Bodoland area of Assam.

We do not agree with the Management because the civil work was awarded (March 2008) in this project to the same agency who had already been performing slow in Korba-III project. Further, 80 days lost on account of bandhs do not justify the total delay of six to eight months in different units of the project.

[28] *2007-08: 655 MUs; 2008-09: 1284 MUs; 2009-10: 2123 MUs*

4.2.1.11 Nabinagar (4x250 MW):

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	January 2011	October 2012	21	10%
2	July 2011	February 2013	19	
3	January 2012	June 2013	17	
4	July 2012	October 2013	15	

This project was conceptualized in January 2002. Main plant contract was awarded in January 2008 but work was started in January 2010 as possession of land was acquired between July 2009 and December 2009. Audit also observed that the Company released (March 2008) interest free advance of ₹ 256 crore to the contractor though land was not in the possession of the Company. As a result, the advance of ₹ 256 crore remained blocked for twenty one months on which NTPC had to forego interest income of ₹ 45 crore.

The Management stated (November 2010) that land acquisition in the project was delayed due to floods, elections and other hurdles.

The reply does not address the audit observation regarding award of work of main plant before acquisition of land.

Civil Works in progress, Nabinagar Project

4.2.2 Hydro Projects

4.2.2.1 Koldam HEP (4x200 MW)

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	December 2008	April 2012	40	71%
2	February 2009	April 2012	38	
3	April 2009	April 2012	36	
4	May 2009	April 2012	35	

Management's anticipation of commissioning the project in April 2012 is doubtful in view of poor progress of main dam contractor. Balance quantity of clay filling and spillway concreting at the end of July 2010 was 6.95 lakh cubic metres and 2.29 lakh cubic metres, respectively. However, on the basis of average monthly progress of 0.38 lakh cum and 0.062 lakh cum achieved during January 10 to July 10 another 18 and 37 months would be required to complete the above critical items. Besides six months would be required for impounding of Dam before commissioning. Poor equipment availability and cash flow problem of the Dam contractor are the main reasons for slow progress on the project.

The Management stated (November 2010) that the delay was on account of right bank slide, increase in quantities for grouting and cash flow problem of the contractor. The project is anticipated to be commissioned in March 2013.

Audit finds it difficult to agree with the Management because these reasons do not justify inordinate delay of 47 to 52 months.

4.2.2.2 Loharinag Pala HEP (4x150 MW)

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	May 2011	October 2012	17	23%
2	July 2011	November 2012	16	
3	September 2011	December 2012	15	
4	November 2011	January 2013	14	

Work on the project is under suspension since February 2009 because of environment issues. There are also indications that Government of India has decided to scrap this project. As a result, an amount of ₹ 660.61 crore incurred so far (upto March 2010) would become infructuous.

The Management stated (November 2010) that Ministry of Power was finalizing a note for approval of Union Cabinet to compensate NTPC for project related expenditure and commitments to avoid any financial loss.

4.2.2.3 Tapovan-Vishnugad HEP (4x130 MW)

Unit No.	Scheduled COD	Anticipated COD	Anticipated delays in completion (in months)	Financial progress upto March 2010
1	October 2012	October 2012	Proposed to be commissioned on best efforts basis.	28%
2	December 2012	December 2012		
3	February 2013	February 2013		
4	April 2013	April 2013		

Management's claim of commissioning the project between January 2012 and April 2012 on Best Effort Basis is not supported by the progress on the project. Out of 12087 meter of Head Race Tunnel excavation to be done, only 4,479 metre was done by July 2010 and average monthly progress achieved during last six months was just 80 meter. Further Desilting Basin concreting (total quantity 1,23,500 cubic metres) is yet to be started (December 2009) for which 32 months are required as per terms of the contract agreement.

Company's failure in handing over inputs like working fronts free from encumbrances, Intake Adit, approach roads to work sites, construction power, etc. in time to the contractors and uncontrollable reasons like adverse geological occurrences and stoppage of work due to local problems attributed to delay in project implementation.

The Management stated (November 2010) that the delay was due to cash flow problem of the contractor, delay in land acquisition and geological occurrences.

Audit observed that action for land acquisition and forest clearance should have been initiated simultaneously with the proposal for Techno-economic clearance to avoid project delay. The Company was able to remove all hindrances from the working fronts in the Barrage package only by December 2008 i.e. after 20 months after start of excavation work in April 2007.

4.2.3 Analysis of reasons for delays

Reasons responsible for delay in execution of thermal projects indicated in Para 4.2.1 were also examined. It revealed that poor performance of the Civil Contractors and delay in supplies of material by the main plant contractors emerged as common and significant reasons in all thermal projects under capacity addition programme. Besides, contractual disputes in two projects[29] also led to delays. A further analysis of these two reasons revealed the following:

- The main plant packages (i.e. SG and TG) of 17 out of 19 thermal power projects were awarded by the Company to a single vendor without assessing capacity and capability to deliver. The vendor had not always furnished information regarding capacity in hand and balance capacity

[29] *With Doosan & Power Machine in case of Sipat-I whereas with TPE & PM in case of Barh-I.*

along with bid and the Company also did not insist for the same, though required as per tender documents. The Administrative Ministry had also raised (July 2007) concern on delay in material supply by the main plant contractor and desired that due diligence be done regarding manufacturer's capacity to deliver.

- As far as award of main plant civil works contract was concerned, the contractor who was found responsible for slow and delayed progress in earlier completed/ongoing projects was recommended for award on the basis of L1 position by following single stage bidding system. It was observed that such recommendations were made by the management on the plea that issues which caused delay would be discussed and tied up during post-bid discussions. Such tie ups, however, did not prove effective as same reasons of delays were noticed in subsequent contracts also.

Audit also observed that out of 14 contracts related to main plant civil works, seven[30] contracts were awarded to one contractor viz. ERA Construction (India) Limited, which failed in mobilizing adequate manpower and timely handing over front to main plant contractor in case of Simhadri-II, Mouda and Kahalgaon-II. The administrative ministry also raised concern over delay in carrying out civil works and directed (December 2008) the Company to assess the desirability of awarding future contracts to the defaulting contractors/agencies.

The Management stated (November 2010) that based on the competitive bids invited; ERA Construction was found to be lowest and was awarded the work.

We find it difficult to accept the reply of the Management because the past performance of the contractor should also have been considered by the Company before award of work.

Bidding Documents provided that actual payment of escalation at any stage would not exceed 20 percent of cumulative price of plant and equipment already supplied (in case of supply contracts) and 20 to 23 percent of the contract price as awarded (in case of civil works). The contractual provision also states that in case of delay on the part of the Company in handing over site, drawings, instruction, etc., the Company would consider suitable time extension with price variation within overall ceiling (not compensation). Both these provisions taken together are totally inequitable and, while they succeed in limiting the liability of the Company, they provide little comfort to the contracting agencies especially when inputs to be provided by the Company or interfacing contractors are delayed substantially which ultimately affects progress of the project. Such a clause has been found to be the main cause of dispute with main plant contractors of Barh-I and Sipat-I.

Power Machine, Russia (main plant contractor of Sipat-I) raised (July 2008) claim for additional price variation beyond contractual limit of 20 *per cent*. The Company though accepted (September 2009) the claim of Power Machine, Russia, the similar issue raised by main plant contractor of Barh-I is yet to be resolved.

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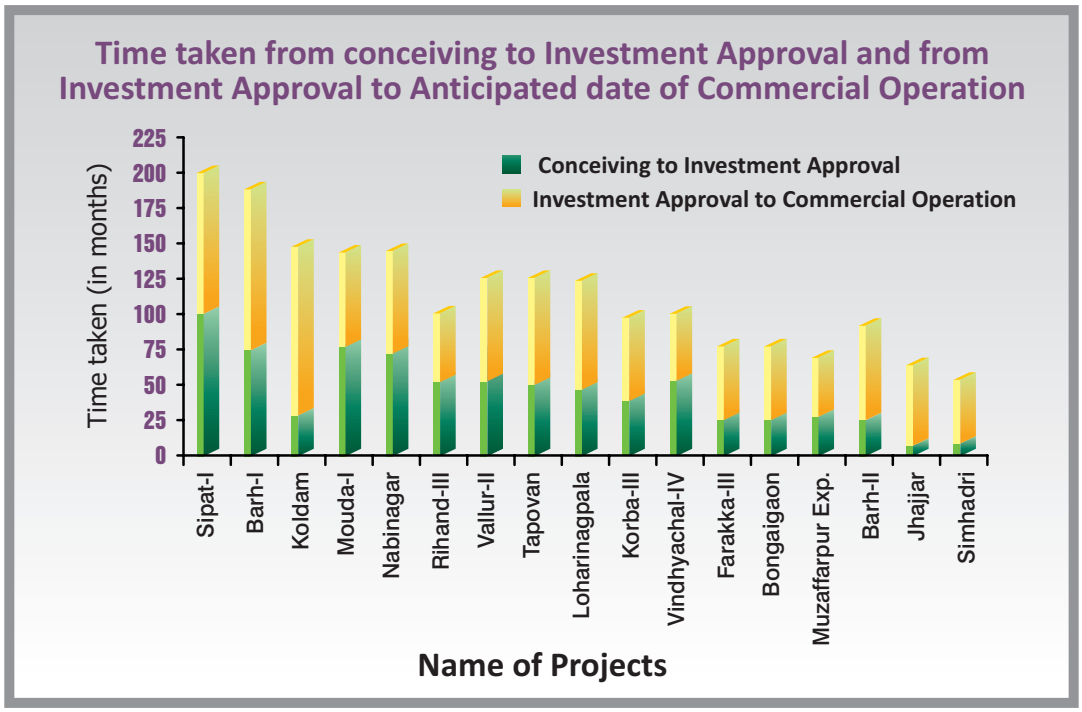
[30] *Dadri-II, Simhadri-II, Jhajjar, Mouda, Nabinagar, Kahalgaon-II and Sipat-I.*

4.2.4 Other points of interest

Other points of interest noticed during examination of records related to award and execution of contracts are listed in ***Annexure-X*** along with Management's reply and further remarks. These observations mainly related to relaxation of QRs to suit a specific party, ambiguity in interpretation of QRs, fixation of unreasonably high QRs, fixation of QRs irrespective of schedule of erection and quantity to be executed, acceptance of experience of unrelated work, excessive interference by the Company in selection of sub-vendors by the vendors, uncertainties in tender documents of civil contracts of hydro works, award of work to ineligible bidder, improper assessment of reasonableness of price, relaxation of tender conditions at the time of conclusion of contracts and non-compliance of IS Code relating to safety of structures.

4.2.5 Overall time taken for Planning and execution of projects

- Based on the anticipated date of commercial operation of the 17 ongoing projects, the Company would take 60 to 200 months from conceptualization to commercial operation. More than 10 years would be taken in respect of five thermal projects[31] and three hydro projects[32] as is evident from the following chart:



- Further, it has also been observed that in the four projects[33] completed so far, management has taken 75 to 137 months ***(Annexure-IV)*** from the date of conceptualization to commercial operation. Thus, systematic approach was not adopted by the Company from conceptualization to commercial operation.

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[31] *Sipat-I, Barh-I, Mouda, Vellure and Nabinagar*
[32] *Koldam, Tapovan and Loharinag Pala*
[33] *Kahalgaon-II, Sipat-II, Bhillai and Dadri-II*

4.3 Conclusion

From the above, it is evident that cost estimates were not realistic and not based on current market prices of inputs. The management has followed single stage single envelope bidding system instead of single stage double envelope – the latter is well recognized as a better practice. Contracts were awarded with delays affecting the schedule of the projects. The main plant and civil works contracts were not awarded judiciously. The management took inordinate time in finalizing the main plant contracts and balance of plants packages which should have been avoided for speedy completion of the project. The management was very slow in reacting to mid-stream contractual disputes and problems. Overall, it was observed that the management has been taking upto 200 months (16 years plus) from conceptualization to COD.

Chapter-5

5 Project Monitoring and Impact Analysis

5.1 Project Monitoring System

The Company has developed IPMCS for ensuring timely completion of projects. IPMCS covers project conceptualization, proactive planning process, aggressive & visionary engineering and contracting management & meticulous monitoring mechanism.

The projects are being monitored at different levels of management, i.e., General Manager at site, Corporate Monitoring Group, Regional Executive Director, Director (Project) and Chairman & Managing Director. The actual progress vis-à-vis schedule was also discussed by the Contract Services Department in the Contract Review Meetings and Technical Coordination Meetings. Regular progress review meetings were also held at manufacturing site to assess the progress. The Project Review Team[34] (PRT) meetings were held every month at project site office and progress of projects as a whole was reviewed. It also discusses various issues causing hindrances in the progress of projects and tries to resolve them along with responsibility centers.

Besides above, the Ministry of Power also evolved a monitoring system for the capacity addition programme to ensure that the cleared projects are executed in time. Their monitoring is carried out at three broad levels viz. by Central Electricity Authority; by Power Project Monitoring Panel (PPMP); and by Ministry of Power itself.

5.2 Monitoring of Projects

5.2.1 Audit observed that PRT meetings were held regularly for all the projects. However, these meetings had no significant impact in containing delays in commissioning of projects as three out of four projects were completed with delays ranging from 9 to 33 months and ten ongoing projects[35] are also delayed by one to 45 months despite regular monitoring. In PRT meetings, the responsibility centers were identified for removing the hindrances noticed. On enquiry about the relevant records as to what action was taken by the concerned official, no information/documents were furnished by the Company. Hence, audit could not assess the effectiveness of these meetings. For example, minutes of PRT meetings identified some issues like non-mobilisation of adequate manpower, non-deployment of high capacity crane, non-supply of materials, etc. which were discussed in PRT for a few months.

The Management stated (November 2010) that all the responsibility centres had submitted the action taken report which resulted in high level reviews and alternate action by the contractors in providing the resources which had a significant impact in containing the delays.

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[34] *PRT consist participants from Engineering, Contracts, Project site and Corporate Project Monitoring Group.*

[35] *Eight Thermal Projects (Barh-I, Sipat-I, Simhadri-II, Korba-III, Farakka-III, Bongaigaon, Vallur JV and Nabinagar JV) and two Hydro Projects (Koldam and Loharinagpala).*

We do not agree with the Management as we had called for monthly action taken reports for all the 21 ongoing/ completed projects for the period April 2007 to October 2010 (730 reports). The Management, however, provided only 25 reports in respect of 10 projects. Thus, in the absence of full details we could not assess the impact of action taken by the responsibility centers.

5.2.2 Civil work contracts were not executed with desired results mainly due to poor deployment of construction equipment (refer Para No. 4.2.1.1 to 4.2.1.11) especially Piling Rigs. From the review of minutes of PRT meetings it was observed that contractors did not import construction equipment as per undertaking in the bid, resulting in poor deployment of equipment at project site. This shows that monitoring mechanism could not speed up the progress of the projects by enforcing commitment given by the contractors in their bids as regard deployment of construction equipment specified for respective projects.

5.2.3 Various activities carried out for construction of thermal power projects inter-alia includes ten[36] important activities related to boiler and turbine. These activities are required to be carried out in such a manner that the project may be synchronised in time.

Analysis of these ten important activities related to main plant ***(Annexure-XI)*** revealed that the monitoring mechanism of the Company could not ensure that such activities were carried out in timely manner in respect of completed/ongoing projects as there were delay ranging between one to 55 months in commencement of boiler erection, one to 20 months for boiler drum lifting, two to 54 months for boiler hydraulic test, one to 52 months for boiler light up, two to 51 months for steam blowing completion. Similarly, there were delays ranging between two to 33 months in commencement of turbine erection, one to 39 months for TG box up, one to 43 months for oil flushing completion, three to 51 months for TG Rolling and, one to 51 months for synchronisation. It was also observed that though the Company managed to complete first 2-3 activities as per schedule, however, thereafter remaining activities were delayed due to various reasons discussed in Chapter-IV.

5.2.4 The monitoring mechanism of the Company failed in coordinating with main plant contractor to ensure timely supply of critical equipment in case of thermal projects. It was also observed that though the Company claimed that the delay was on the part of vendor but ground reality is that NTPC was at fault due to late handing over of site to vendor.

The Management stated (November 2010) that if the projects were delayed, efforts were made to find out the alternate action regarding offloading of work when the contractor was not performing and to provide additional support from NTPC side like provision of crane, material, etc.

The fact remains that the action taken by the Management could not ensure timely completion of the projects.

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[36] ***Boiler:*** *Commencement of SG erection, Boiler Drum Lifting, Boiler Hydraulic Test, Boiler Light Up and Steam Blowing completion.*
Turbine: *Commencement of TG erection, TG Box Up, Oil Flushing completion, TG Rolling and Synchronisation*

5.2.5 Ministry of Power reviewed all the projects under capacity addition programme and issued necessary directions for timely completion of projects from time to time (June 2007 to June 2010). Some of the suggestions given by Secretary (Power) in respect of each projects is enclosed in ***Annexure-XII***. Despite this, some of the major issues like contractual disputes, delay in supply of equipments by vendor, delay in finalisation of erection agency by vendor, slow progress of work by civil work contractor, fuel supply issues, etc. could not be resolved timely.

Therefore, even after monitoring at various levels, delays in completion could not be avoided.

5.3 Impact analysis

Audit made analysis to assess the impact of delayed project execution both on the Company and economy at large which are discussed below:

5.3.1 Availability of affordable power is of critical importance for development of national economy. Therefore, it is important for the country to bridge the gap between the supply and the demand of power to achieve higher rates of economic growth on a sustained basis. NTPC, being the leading power generating company in India, had drawn up an ambitious programme for addition of 22,430 MW upto 2012. However, the Company added only 4,220 MW during the last three and half years and expects to achieve another 5,000 MW by the end of March 2012. The slow progress of capacity addition programme may deprive benefits directly or indirectly to the people of the country.

5.3.2 Due to delay in realising capacity addition, the Company would lose the opportunity of generating 1,69,440 million units[37] involving ₹ 38,463 crore in revenue (including return on equity of ₹ 4,340 crore) over the period of delay from scheduled to actual/ anticipated date of commercial operation.

5.3.3 As per Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, applicable for the period 2009-2014, an additional Return on Equity at the rate of 0.5 *per cent* is allowed if projects are commissioned on or after 1st April 2009 within the timeline specified in Appendix-II of the CERC's regulations. Therefore, the Company has forgone additional return on equity of ₹ 2,056 crore due to non-completion of projects within stipulated timeline.

5.4 Conclusion

The continuous monitoring of the projects through the monitoring mechanism established by the Company as well as monitoring by the Ministry failed to accelerate the progress of the projects under the capacity addition programme to be achieved by March 2012 and delays remained major constraint for the Company in achieving the target. Due to delays, the Company will lose the opportunity of generating at least 1,69,440 MUs and earning a revenue of ₹ 40,519 crore.

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[37] *Generation loss for the period of delay in completion of projects based on the average plant load factor of the Company for the last five years ended March 2010. Out of this 33,142 million units involving revenue of ₹7,523 crore has already been lost in respect of four projects actually completed and 38,669 million units involving revenue of ₹8,778 crore on 10 ongoing projects up to August 2010.*

Chapter-6

6 Conclusion and Recommendations

6.1 Conclusion

The Company undertook a capacity addition programme 22,430 MW to be achieved during 2007-12 through 24 projects, however, it did not fix year wise targets for achieving the target. Audit observed that the capacity addition programme suffered due to lack of scientific approach to planning, inordinate delays from conceptualization to investment approval, delays in pre-order activities and award of contracts. This was coupled with management slow response to mid-stream contractual disputes and problems. In essence, the management was taking up to 16 years and more from conceptualization stage to commercial operation .

The monitoring mechanism though in place, could not accelerate the requisite progress of the projects and delays remained major constraint for the Company in achieving the target. Thus, due to delays, the Company would lose the opportunity of generating at least 1,69,440 MUs and a revenue of ₹ 40,519 crore.

6.2 Recommendations

Based on the audit findings discussed in the foregoing chapters, the following recommendations are proposed to facilitate the Company improve its performance.

I. NTPC should shorten the planning process and fix benchmark for all the pre-order activities.

II. The Company should evolve a mechanism of informing the Board about a project right from its conceptualization.

III. The Company should consider adopting super critical technology in more and more projects as the technology is more cost effective, thermal efficient and environment friendly.

IV. Data bank of the prices of various inputs required for setting up a power plant should be maintained on real time basis for realistic cost estimation.

V. Utmost care should be taken while finalizing qualifying requirements to avoid subsequent revision.

VI. Company should explore the possibility of encouraging alternative sources of supply of main plant equipments so that better competition is generated and competitive rates could be availed.

VII. The civil contractors should be selected judiciously taking into account their capacity and past performance.

VIII. To make the monitoring system more effective, Action Taken Reports on minutes of various meetings held for monitoring purpose should be invariably prepared and recorded.

The matter was reported to the Ministry in September 2010; reply was awaited (October 2010).

New Delhi
Dated : 4 December, 2010

(SUNIL VERMA)
Deputy Comptroller and Auditor General
and Chairman, Audit Board

Countersigned

New Delhi
Dated : 4 December, 2010

(VINOD RAI)
Comptroller and Auditor General of India

Annexure - I

(As referred to in Paragraph 1.2)

Details of the projects identified by NTPC for Capacity Addition Programme (2007-2012)

Sl. No.	Name of Project	State	Capacity Envisaged (MW)					Status of project (Greenfield or expansion)
			Hydro	Coal	Gas	Wind	Grand Total	
Projects to be executed by NTPC exclusively								
1.	Koldam	Himachal Pradesh	800	-	-	-	800	Greenfield
2.	Lahorinag Pala	Uttrakhand	600	-	-	-	600	Greenfield
3.	Tapovan Vishnugad	Uttrakhand	520	-	-	-	520	Greenfield
4.	Dadri-II	Uttar Pradesh	-	980	-	-	980	Expansion
5.	Sipat-I	Chhatisgarh	-	1980	-	-	1980	Expansion
6.	Sipat-II	Chhatisgarh	-	1000	-	-	1000	Greenfield
7	Korba-III	Chhatisgarh	-	500	-	-	500	Expansion
8	Mauda	Maharashtra	-	1000	-	-	1000	Greenfield
9	Simhadri-II	Andhra Pradesh	-	1000	-	-	1000	Expansion
10	Kahalgaon-II	Bihar	-	1000	-	-	1000	Expansion
11	Barh-I	Bihar	-	1980	-	-	1980	Greenfield
12	Farakka-III	West Bengal	-	500	-	-	500	Expansion
13	Barh-II	Bihar	-	1320	-	-	1320	Expansion
14	Bongaigaon	Assam	-	750	-	-	750	Greenfield
15	Rihand-III	Uttar Pradesh	-	1000	-	-	1000	Expansion
16	Vindhyachal-IV	Madya Pradesh	-	1000	-	-	1000	Expansion
17	North Karanpura	Jharkhand	-	660	-	-	660	Greenfield
18	Guledagudda	Karnataka	-		-	100	100	Greenfield
	Total		**1920**	**14670**		**100**	**16690**	
Projects to be executed by NTPC through its Joint Ventures/Subsidiaries								
19	Bhilai (JV with SAIL)	Orissa	-	500	-	-	500	Expansion
20	Jhajjar (JV with HPGCL)	Haryana	-	1500	-	-	1500	Greenfield
21	Ratnagiri GPPL (JV with GAIL, Banks and FIIs)	Maharashtra	-	-	740	-	740	Revival Project
22	Vallur (JV with TNEB)	Tamil Nadu	-	1500	-	-	1500	Greenfield
23	Nabinagar (JV with Indian Railways)	Bihar	-	1000	-	-	1000	Greenfield
24	Muzaffarpur Expn.	Bihar		500	-	-	500	Expansion
	Sub- Total		**-**	**5000**	**740**	**-**	**5740**	
	Grand Total		**1920**	**19670**	**740**	**100**	**22430**	

Note: The Capacity of Kawas-II (1,300 MW) and Gandhar –II (1,300 MW) as initially envisaged was substituted subsequently by Rihand-III-Unit-2 (500 MW), Vindhyachal-IV (1000 MW), Vallur -Unit 3 (500 MW), Guledagudda 100 MW and Muzaffarpur Expansion (500 MW). The figures in the above table indicate the subsequently adjusted capacities.

Annexure - II

(As referred to in Paragraph 2.5)

Details of the approved sample

Criteria	Population		Sample Selected		Basis of sample selection
	No. of contracts	Value (₹ In crore)	No. of contracts	Value (₹ In crore)	
Contracts valuing more than ₹ 100 crore	96	49901.00	96	49901.00	100%
Contracts valuing between ₹ 5 and ₹ 100 crore	296	8783.00	50	798.00	10% or 50 contracts whichever is greater
Contracts valuing less than ₹ 5 crore	50	67.67	4	7.28	2% or 4 contracts whichever is greater
	442	**58751.67**	**150**	**50705.28**	

Annexure - III

(As referred to in Paragraph 3.2)

Procedures followed by the Company during Pre-order activities

Sl. No.	Type of clearances	Issuing Authority	Reason for its requirement	Procedure
I	LAND In-Principal Availability of Land	State Govt.	To ensure land availability	Application to concerned state Revenue Department along with marked up drawing indicating location and land requirement is submitted
II a)	WATER In-Principal Availability of Water	Sate Govt.	To ensure water availability	Application indicating make up water requirement source and drawal point is submitted to State Water Resource Department
b)	Water availability concurrence	CWC	To ensure water availability free from any dispute	Application is submitted to CWC subsequent to receipt of water commitment from State Govt. CWC internally takes clearances from MOWR where water source is from International river water.
III	FUEL Fuel Linkage	Standing Linkage Committee Long Term (SLC-LT)	Fuel linkages are required to ensure the timely and continuous supply of fuel to power stations	NTPC has to apply for Long Term coal linkage in the prescribed format
IV	NOC from Airport Authority of India (AAI)	AAI	This is necessary to ensure that the project will not create any obstruction to the existing/ proposed fly paths.	Application in prescribed format, undertaking on Non-Judicial Stamp Paper along-with vicinity plan, general layout plan, plant cross section indicating location of tallest structure, site elevation certificate etc. is submitted to AAI. The validity of original NOC is 4 years, which can be subsequently renewed for 2 years period.
V	Comfort letter from Beneficiaries	Concerned SEBs	Willingness of SEBs to buy power.	Letters sent to SEBs/ successor entities for giving their consent to buy power.
VI	Forest clearances (if applicable)	District Forest Officer	This is required as per law.	Application to be submitted to Forest Department. Showing forest area involved in land acquisition. Presently it is issued in two stages, first in-principal and once conditions stipulated are complied then formal clearance.

VII	Defence clearances (for green field projects)	Defence Authority	This is required as per law.	Application giving location and other details is submitted to Defence Authority.
VIII	Clearances from Archeological Survey of India (ASI)	ASI	This is required as per citing criteria of MOEF	Application is submitted to Archeological Survey of India indicating location of project and other details.
IX	Preparation and approval of Feasibility Report/Detailed Project Report	Board of Directors	As per procedure of the Company	FR/DPR detailing out General layout plan, mechanical, electrical, control & instrumentation systems and equipments, estimated cost of the project, status of various tie up is approved by the Project Sub Committee (PSC) of the Board of Directors
X	Techno-economic clearance [1]	Central Electricity Authority	Electricity Act, 1948 amended from time to time	The FR/DPR is submitted to CEA for techno-economic clearance.
XI	Terms of Reference (TOR) approval from MOEF	MOEF	Approval of TOR from MOEF is required under the act	TOR is submitted to MOEF for approval.
XII	Public Hearing by State Pollution Control Board (SPCB)	SPCB	Public Hearing is required under the Act and hence cannot be done away with.	Application along with draft EIA and its executive summaries in English and local language are to be submitted. SPCB to issue a notice in two local newspapers for public hearing.
XIII	Environmental clearances	MOEF	Obtaining environmental clearance is required under the Act.	Final EIA report incorporating comments received during Public consultation process is to be submitted to MOEF. The proposal is referred to Expert Appraisal Committee.
XIV	Financial appraisal of the Project	Independent agencies	As per policy of the Company	The financial appraisal of the Projects are undertaken to establish the viability of the Projects.
XV	Investment approval	Board of Directors	Due to Navratna status of the Company, Board of Directors accord investment approval.	Investment proposal is submitted to Board of Directors for approval.

[1] After Electricity Act, 2003 TEC by CEA for Thermal Projects has been discontinued. The requirement however continues for Hydel Project.

Annexure - IV

(As referred to in Paragraph 3.3.1)

Statement showing time taken by the management from conceptualization to COD at various stages

Sl. No.	Project Name	Date of conception/ identification/ of Project	Date of application of Environment clearances by MoEF	Date of Environment clearances	Date of approval of FR/DPR	Date of Investment Approval	Actual/ Anticipated date of commercial operation of Project (COD)	Time taken from conceiving to Investment Approval	Time taken from Investment Approval to Commercial Operation	Total time taken from conceptu alisaion to COD
	Thermal Projects									
1	Sipat-I	30.05.95	15.05.97	30.04.02	16.06.97	08.12.03	January 2012 (Anticipated)	102	97	200
2	Barh I	28.07.98	04.10.00	11.09.01	15.05.00	21.02.05	February 2014 (Anticipated)	79	108	187
3	Kahalgaon STPP-II	29.01.99	21.07.00 and 04.06.2003	15.06.01 amended vide letter dated 13.06.2003	15.02.03 & 05.06.03	02.07.03 & 05.11.03	March 2010	57	80	137
4	NCTPP- II Dadri	13.03.00	26.07.06 (U-I) & 04.12.06 (U-II)	Unit I 18/10/06 & U-II 05.03.07	31.07.06	31.07.06	July 2010	76	48	124
5	North Karanpura	13.03.00	30.01.02	29.11.04	07.12.05	Awaited	Investment approval awaited	Awaited (125 months)	--	-
6	Sipat II	13.03.00	19.05.03	08.06.04	05.06.03	25.11.03	January 2009	44	62	106
7	Mauda	20.02.01	06.09.07	25.01.08	30.01.07	26.11.07	August 12 (Ant)	81	57	138
8	Nabinagar	Jan-02	22.10.03	03.08.04	December 2006	10.01.08	October 13 (Ant.)	72	69	141
9	Bhilai	03.04.02	31.120.3	01.07.04	23.12.03	30.11.04	October 2009	32	43	75
10	Rihand-III	05.04.04	24.09.08	05.02.2009	25.09.07	24.01.09	August 12 (Ant.)	57	43	100
11	Vallure	05.06.02	03.10.06	18.04.07	17.08.06 & 24.11.07	14.07.07 & 19.05.09	December 2012 (Ant.)	61	65	126
12	Korba-III	21.02.03	03.03.06	31.08.06	16.02.06	24.03.06	November 2010 (Anticipated)	37	56	93

13	Vindhyachal –IV	05.04.04	26.09.08	05.02.09	29.05.08	13.01.09	August 12 (Ant.)	57	43	100
14	Farakka STPP-III	21.06.04	03.10.06	07.02.07	26.06.06	31.07.06	March 11 (Ant.)	25	56	81
15	Bongaingon	08.09.05	23.02.07	07.06.07	14.09.06	30.01.08	April 12 (Ant.)	28	51	79
16	Muzafarpur Expn	02.08.07	22.07.09	09.11.09	13.05.09	06.03.10	February 13 (Ant.)	31	35	66
17	Barh II	28.02.06	24.05.07	23.10.07	26.10.06	29.02.08	November 13 (Ant.)	24	69	93
18	Simhadri-II	24.04.06	23.02.07	01.08.07	14.09.06	23.03.07	April 11 (Ant.)	11	49	60
19	Jhajjar	08.09.06	06.04.07	08.08.07	18.12.06	05.07.07	September 11 (Ant.)	10	56	66
Hydro Projects										
20	Koldam Hydro	01.02.00	11.04.2000	10.05.2000	27.06.01	28.10.02	April 12 (Ant.)	33	114	147
21	Tapovan Vishnugarh Hydro	07.11.02	08.10.04	08.02.05	21.04.04	16.11.06	April 13 (Ant.)	48	77	125
22	Lohari Nag Pala Hydro	17.12.02	17.09.04	08.02.2005	21.04.04	26.06.06	January 13 (Ant.)	42	79	121
Wind Power										
23	Guledagudda wind power	06.09.08	Not applicable	Not applicable	Apr-10	Awaited	Investment approval awaited	-	-	-
Average								48	65	113
								Average =49.24		

Note: (The date of conceptualization of Simhadri-II were not available in the records and hence Date of request for allotment of land has been taken as coneptualisation date. Data of Ratnagiri has not been considered as it is a revival Project. Investment approval is still awaited in r/o North Karanpura Thermal Project and Guledagudda wind Project).

Annexure - V

(As referred to in Paragraph 3.5.1.2)

Table showing comparison between actual per MW cost of projects approved by BOD of NTPC after Feb. 2007 and 6 months earlier to Feb. 2007 and per MW cost as per Working Group Report of Feb.2007 (considering actual inflation subsequent to Feb.07)

(Amount: ₹ in crore)

Project Name	Reference of BOD meeting and date	Total Capacity (in MW)	Approved cost including IDC & FC	Current per MW cost	Per MW cost adjustment for Greenfield projects/ additional special expenditure	Current per MW cost after adjustment for Greenfield projects and additional special expenditure	Current cost excluding IDC &WCM	Per MW current cost excluding IDC &WCM and Greenfield adjustment	Per MW cost as per Working Group Report 2007 and subsequent effects of inflation	Difference between per MW current cost without IDC&FC and as per Working Group Report	Total excess expenditure of the project without IDC &FC and WCM
		A	B	C	D	E = C - D	F	G	H	I = G - H	J=A × I
Simhadri-II	23.03.07	1000	5103.39	**5.10**	0	5.10	4435.41	4.44	4.00	0.44	435.41
Jhajjar	05.07.07	1500	7892.43	**5.26**	0.26	5.00	6706.83	4.21	4.06	0.15	225.00
Vallur	14.07.07	1000	5552.78	**5.55**	0.28	5.27	4926.54	4.65	4.06	0.59	588.76
Mauda	26.11.07	1000	5459.28	**5.46**	0.27	5.19	4830.67	4.56	4.14	0.42	421.11
Nabinagar	10.01.2008	1000	5352.5	**5.35**	0.27	5.08	4624.90	4.35	4.15	0.21	210.00
Bongaigaon	30.01.08	750	4375.35	**5.83**	0.40	5.43	3902.29	4.80	4.15	0.65	489.39
Barh-II	29.02.08	1320	7341.04	**5.56**	0	5.56	6156.14	4.66	4.15	0.51	678.14
Rihand-III	January ,09	1000	6230.81	**6.23**	0.50	5.73	5400.99	4.90	4.45	0.45	450.86
Vindhyachal-IV	13.01.09	1000	5914.98	**5.91**	0	5.91	5099.92	5.10	4.45	0.65	649.92
Vallur	19.05.09	500	3086.78	**6.17**	0.31	5.86	2685.39	5.06	4.45	0.61	305.74
Dadri II	31.07.06	980	5135.33	**5.24**	0	0	4344.13	4.43	4.00	0.43	424.13
Farakka III	31.07.06	500	2570.43	**5.14**	0	0	2187.68	4.38	4.00	0.38	187.68
											5066.14

1 Additional amount of 5% of the current Per MW cost is adjusted for Greenfield projects for the calculation of per MW current cost
2 In Bongaigaon R 300.48 crore adjusted for adopting FGD technology
3 Rihand additional 496 crore is subtracted towards centralised repair Factory and canal lining

Annexure - VI

(As referred to in Paragraph 4.1.1.1)

List of Contracts where Percent difference between Estimated Cost and Award Value is exceeding (±) 10% or more in respect of Sample for Performance Audit on Capacity Addition Programme of NTPC Limited

Sl. No.	Name of Project	Name of Package, Package Specification	Name of party	Date of LOA	Cost Estimate R in Crore	Value in R Crore	% Difference b/w cost and award value	Reasons recorded by TEC for accepting higher rate
1	IGSTPP, Jhajjar	NDCT Package	Gammon India Ltd.	31.01.08	162.48	217.00	(+)33.55	TEC noted that finally offered price by L-1 bidder was found to be comparable with the recently awarded prices of similar package (Dadri-II) & in view of tight schedule for awarding the subject work to meet the requirement of Commonwealth Games.
2	Simhadri STPP- II (2 x 500 MW)	NDCT Package	Gammon India Ltd.	06/05/08	129.13	171.12	(+)32.52	TEC noted that re-tendering will not suit the project implementation schedule. This package was most critical as per exception report.
3	Korba STPP-III (1x500 MW)	Chimney and Chimney Elevator Package	Unitech Limited Gammon India Ltd.	14//0207	10.68	13.77	(+)28.93	TEC noted that the subject package has already been re-tendered
4	Barh STPP-I	Coal Handling Plant Package	Larsen & Toubro Ltd.	01/08/06	296.01	379.71	(+)28.28	TEC noted that in case re-tendering is resorted to inadequate time will be left for evaluation of package which may jeoparadise project execution.
5	Barh STPP- II (2 x 660 MW)	Turbine Generator package	Bharat Heavy Electricals Limited	14/10/2008	1078.94	1,329.55	(+)23.23	TEC justified higher rate by comparing the price of BHEL with bid price of L&T-MHI JV for Krishnapatam project

								(2 X 800 MW OBD: June 08) which was on firm price basis.
6	Bongaigaon TPP (3x250 MW)	Main Plant, CW and Offsite Civil Works Package	Subhash Project & Marketing Ltd.	31/03/08	271.69	329.48	(+)21.27	TEC noted that if re-tendering is opted, awarding may affect project execution schedule. TG and SG packages were already in advance stage of award
7	Bongaigaon TPP (3 x 250 MW)	Station Piping Package	Techno Electric & Engineering Co. Ltd.	28/01/2009	23.99	28.39	(+)18.34	TEC noted that award of this package is critical to meet the commissioning schedule of project and as such award of this package is already delayed with respect to MNW schedule. Re-tendering may not be desirable.
8	Barh STPP-I (3x660 MW)	Offsite Area Civil Works Package	Subhash Project & Marketing Ltd.	10/08/06	98.89	120.62	(+)21.98	TEC noted that CMG in its exception report had been emphasising expedition award of package
9	NTECL	Main Plant off site area civil work	Gammon India Limited	18.2.2008	255.9	286.45	(+)11.94	No specific comments noted
10	Lahorinag Pala HEPP (4x 150 MW)	Penstock and Power House Package	Patel Engineering Limited	23/09/06	332.73	370.66	(+)11.40	No specific comments noted
11	NTECL	Ash Handling System Package	Indure Pvt. Ltd.	26.2.2009	204.43	183.85	(-)10.07	No specific comments noted
12	NCTPP-II, Dadri (2x490 MW)	Main Plant, CW and Offsite Civil works Pkg.	Era Constructions (India) Ltd.	08/01/07	209.21	188.04	(-)10.12	TEC noted that lower rates were probably due to market conditions, increased competition and project logistics.
13	NTECL	Power Transformer Package	BHEL	17.10.2008	112.62	100.02	(-)11.19	No specific comments noted

14	Simhadri STPP-II (2x500 MW)	Main Plant and Off Site Civil Works Package	Era Construction (India) Ltd.	01/08/07	154.37	136.38	(-)11.65	No specific comments noted
15	Barh STPP- II (2 x 660 MW)	Cooling Tower Package	Paharpur Cooling Towers Ltd	17/03/2009	142.51	125.60	(-)11.87	No specific comments noted
16	Lahorinag Pala HEPP	Electro Mechanical Package	Voith Siemens Hydro Power Gene Joint Venture	16/01/08	475.22	405.51	(-)14.67	No specific comments noted
17	Bongaigaon TPP- (3 x 250 MW)	Architectural, Civil and Structural Design Consult for Main Plant and Other Building of Bongaigaon	TCE Consulting Engineers	08/07/2008	6.22	5.25	(-)15.59	No specific comments noted
18	Lahorinag Pala HEPP	Construction of Barrage and Desilting Chamber	Hindustan Construction Co.Ltd.	03/08/06	300.38	246.92	(-)17.80	No specific comments noted
19	Lahorinag Pala HEPP	Construction of Head Race Tunnel	Patel Engineering Limited	06/07/06	388.23	318.01	(-)18.09	No specific comments noted
20	Barh STPP- II (2 x 660 MW)	Main Plant and Off Site Civil Works Package	Navayuga Engineering Co.Ltd	30/07/2008	347.22	274.23	(-)21.02	No specific comments noted
21	NTECL	Switchyard Package 400/220 KV	Hyosung Corp.	15.11.2008	152.03	110.07	(-)27.60	No specific comments noted

22	Tapovan-Vishnugad HEPP (4x130 MW)	Electro-Mechanical Package	Bharat Heavy Electricals Ltd.	21/01/08	439.67	318.09	(-)27.65	No specific comments noted
23	Tapovan Vishnugad HEPP (4x130 MW)	Construction of Barrage and Desilting Chamber Package	SSJV Projects Pvt Ltd. & Zaruberzhrodstroy(ZVS),Zarvbezhvodstroy(ZV)	24/01/07	405.02	276.92	(-)31.63	No specific comments noted
24	Nabinagar TPP	LT Switchgears & LT Bus Ducts	Larsen & Toubro Limited	31.03.2010	26.07	15.47	(-) 40.66	TEC noted that the bidder have quoted their prices substantially lower than the updated cost estimate, may be due to prevailing market conditions and may be considered as workable.
25	Dadri-II	Generator Bus Ducts, 11kv, 6.6kv & 3.3kv	Control & Switchgears Co. Ltd.	18.05.2007	20.65	16.06	(-) 22.23	No specific comment noted
26	Kahalgaon-II	LT Switchgears & Bus Ducts	GE Power Controls India Pvt. Ltd.	11.11.2004	12.83	14.96 Incl. test charges-22.92 lac + SC 7.60 lac	(+) 14.26 Incl. test charges	No specific comment noted
27	Koldam HEP	Penstock & Power House	Gammon India Ltd.	07.05.2004	211.91	189.22	(-)10.70	No specific comment noted
28	Simadri-II	Fire Detection & Protection System	Nohmi Bosai Ltd & Unitech Machines Ltd.	31.03.2008	21.05	18.72	(-) 11.09	No specific comment noted
29	Sipat-II	765 kv Switchyard	Areva and Alstom India	16.05.2005	218.60	179.17	(-)18.03	No specific comment noted

30	Farakka-III	33kv, 11kv, 6.6kv & 3.3kv Switchgear	ABB Ltd.	29.06.2007	53.01	26.80	(-) 49.43	TEC noted that the bidder have quoted their prices substantially lower than the updated cost estimate. Cost Estimate has been prepared for the first time considering numerical relays based on budgetary offers. Due to market forces. As ABB is a reputed party, it is considered that the price quoted is reasonable and they are expected to complete the work.
31	Nabinagar	MV Switchgear	Megawin	27.03.2010	12.87	10.94	(-)15.03	TEC noted that Megawin was found to be working for many other reputed clients including SEBs & PSUs. The wide gap between quoted prices of Megawin & revised cost estimate may be due to close competition & present market forces and the price quoted by Megawin may be considered for award.
32	Farakka-III	400 kv Switchyard	Areva	07.05.2007	116.89	90.48	(-) 22.59	No specific comment noted
33	Sipat-I	Electrostatic Precipitator	BHEL	31.01.2005	164.83	184.28	(+)11.79	No specific comment noted
34	Farakka-III	Station Control & Instrumentation	BHEL	15.02.2008	78.88	92.50	(+) 17.27	TEC noted that cost estimate was prepared based on the awarded prices of KhSTPP-II & Sipat-II and L1 bid price for Barh-I, all Mega Power Projects. However, all the three present projects are non Mega and ED benefits are not available for these projects.
35	Simadri	CW & Make Up Water System Equip	WPIL Ltd.	03.10.2007	34.81	24.22	(-) 30.42	No specific comment noted
36	Nabinagar	Steam Generator with ESP	BHEL	22.01.2008	1215.35	1408.37	(+) 15.88	No specific comment noted
37	Sipat-II	Steam Turbine Generator	BHEL	15.12.2003	548.62	615.91	(+) 12.27	TEC noted that the quoted price of BHEL was considered reasonable.
38	Jhajjar	11kv & 3.3kv Switchgears	BHEL	27.03.2008	25.56	21.99	(-) 13.97	TEC noted that the quoted prices of all the bidders are lower than the approved

								cost estimate. It is considered that the price quoted is reasonable.
39	Dadri	Generator Circuit Breaker	ABB	10.10.2007	13.42	16.42	(+) 22.32	No specific comment noted
40	Barh-I	400kv/132kv Switchyard	BHEL	07.03.2006	94.65	114.17	(+) 20.62	No specific comment noted
41	Barh-I	ESP	BHEL	09.01.06	215.92	238.04	(+)10.25	No specific comment noted
42	Sipat II	Ash Dyke	National Project Const Co.	17.11.04	18.29	14.30	(-)21.80	No specific comment noted
43	Kahal-II	DM Plant, CW Treat. System & Condensate Polishing plant	Diplex		15.23	12.90	(-)15.30	No specific comment noted
44	Farakka-III	Fire Detection and Protection System	KIDDE India Ltd.	12.07.07	13.73	10.71	(-) 22.00	No specific comment noted
45	Jhajjar	HT Power Cables	KEI	30.06.08	9.19	8.25	(-) 10.22	No specific comment noted
46	Korba-III	Station Piping	Unitech	16.03.07	14.18	12.44	(-) 12.22	No specific comment noted
47	Farakka-III	Water Treatment Plant	Driplex	25.09.07	13.63	15.44	(+) 13.29	Due to market forces, implementation of many infrastructure projects by contractor and the location of the project.
48	Farakka- III	Lift Pump equipment	Hyosung	26.04.07	56.95	25.92	(-)54.47	No specific comment noted
49	Farakka-III	CHP	Bengal Tools Ltd	05.05.08	15.17	9.89	(-) 34.79	Workability of rates was not deliberated by TEC in view of award rates being significantly lower than estimated and L2 rates (₹16.05 crore)

50	Dadri-II	CW System Equipment	WPIL	16.08.07	51.24	28.84	(-) 43.71	Workability of rates was not deliberated by TEC in spite of rates offered being 44% lower than approved cost estimates.
51	Sipat-II	Condensate Polishing Plant	ION Exchange	15.10.04	12.73	10.80	(-) 15.15	No specific comment noted
52	Sipat-I	Balance site leveling works	NPCC	24.12.03	9.76	7.76	(-) 20.43	Workability of rates was not deliberated by TEC in spite of rates offered being 44% lower than approved cost estimates.
53	Korba-III	Ash water circulation & treatment plant	TEECL	24.03.08	24.86	18.85	(-) 24.05	No specific comment noted
54	Sipat-II	Power Transformer	ABB	13.12.04	204.15	178.13	(-) 12.70	No specific comment noted
55	Sipat-I	Main Plant (Pt.-A) SG	Doosan	15.04.04	1511.56	1837.53	(+) 21.56	TEC noted that the price have been obtained during snap bid in which two out of three bidders have participated. Accordingly, the price of Doosan may be considered competitive.
56	Sipat-I	CHP	THKP	10.01.05	185.33	204.90	(+) 10.56	No specific comment noted
57	Kahal-II 2x500	Steam Turbine Generator	BHEL	07.08.03	496.92	586.93	(+) 18.11	No specific comment noted

Annexure - VII

(As referred to in Paragraph 4.1.2.1)

Statement showing cases in which Qualifying Requirements were revised after issuance of NIT

Sl. No.	Name of the Project	Name of the Package	Date of NIT	Bid Document sale period	Time given for bid submission (in days)	Bid document re-sale open period after revision of QR	Time given for bid submission after re-sale of bid documents (including extension period)	Reasons	Response as a result of revision of QR (no. purchased/no. submitted)
1	Barh STPP –I (3x660 MW)	Coal Handling Plant (CHP) Package	29.06.05	01.07.05 to 28.07.05	32	**Corrigendum-1 20.09.05** (20.09.05 to 29.09.05) **Corrigendum-2** (29.11.05 to 22.12.05)	9(24)	Revision of QR (Both corrigendum were related to revision of QR)	NIL/NIL
2	Barh STPP -I (3x 660 MW)	Ash Water recirculation system package	15.09.05	15.09.05 to 14.10.05	33	**Corrigendum-1 on 30.03.06** (30.03.06 to 07.04.06)	11 (26)	Revision of financial QR	Two/one
3	Simhadri STPP-II	Ash Handling System Package	25.5.07	25.05.07 to 25.06.07	25	**(Corrigendum-1 on 08.08.07)** 08.08.07 to 18.08.07	10 (40)	Revision of QR	NIL/NIL

4	Tapovan-Vishnugad HEPP (4x130 MW)	Construction of barrage and desilting chamber package	12.01.06	12.01.06 to 20.02.06	30	**(corrigendum-1)** 09.06.06 to 19.06.06 **(corrigendum-2)** 12.07.06 to 21.07.06	10	Revision of QR (Both corrigendum were related to revision of QR)	NIL/NIL
5	NTECL, Vallur	Desalination Plant Package	20.02.08	20.02.08 to 19.03.08	33	**(corrigendum-1)** 23.06.08 to 22.07.08 **(corrigendum-2)** 07.08.08 to 22.08.08	15(40)	Revision of QR (Both corrigendum were related to revision of QR)	14/4
6	IGSTPP, Jhajjar	CHP Package	31.03.07	03.04.07 to 27.04.07	32	**(corrigendum-1)** 07.09.07 to 17.09.07	10 (43)	Revision of QR	NIL/NIL
7	Barh STPP-II (2x 660 MW)	IDCT Package	22.08.08	26.08.08. to 26.09.09	25 (46)	**Corrigendum-1** 22.10.08 to 29.10.08	13 (23)	Revision of QR	NIL/NIL
8	Loharinag Pala HEPP (4x 150 MW)	Construction of Barrage and desiliting Chamber Package	16.08.05 (With revised QR 08.11.05)	16.08.05 to 23.09.05	25 (54)	**Corrigendum-1 08.11.05** 08.11.05 to 18.11.05	14 (28)	Revision of QR	One/
9	Loharinag Pala HEPP (4x 150 MW)	Construction of Head Race Tunnel (HRT) Package	18.04.05	18.04.05 to 27.05.05	21	09.08.05 to 19.08.05	12 (27)	Revision of QR	One/One
10	Loharinag Pala HEPP (4x 150 MW)	Penstock and Power House package	24.10.05	31.10.05 to 07.12.05	42	29.06.06 to 10.07.06	10	Revision of QR	One/NIL

11	Tapovan-Vishnugad HEPP (4x130 MW)	Electro-Mechanical Package	23.09.06	25.09.06 to 06.11.06	21	16.07.07 to 30.07.07	32(123)	Revision of QR	NIL/NIL
12	Koldam	Desilting Arrangement	31.03.04	01.04.04 to 28.05.04	33	**Corrigendum-I** 31.07.04 (02.08.04 to 13.08.04)	27 (86)	Revision of QR	NIL/NIL
13	Nabinagar	MV Switchgear	28.11.08	02.12.08 to 27.01.09	32	**Corrigendum-I** 27.08.09 (27.08.09 to 10.09.09)	14 (42)	Revision of financial QR	3/2
14	Bhilai Expansion Project (2x250 MW)	C.H.P.	01.04.05	01.04.05 to 16.05.05	69	**Corrigendum-I** 04.06.05 (07.06.05 to 17.06.05) **Corrigendum-II** 11.06.05 17.06.05 to 22.06.05	18 (128)	Revision of QR	NIL/NIL

Annexure - VIII

(As referred to in Paragraph 4.1.3.1)

Statement showing details of critical packages (in addition to sample) awarded with significant delay.

Sl. No.	Name of Project	Name of Package not awarded till December 2009	Schedule date of award	Date of award *	Delay in months*	Schedule Completion period (in months)
1	Barh-II	Coal Handling Plant	30.10.08	25.1.10	15	39
		Circulating Water & Make up Water civil works	14.10.08	26.2.10	16	30
		Chimney	14.11.08	5.11.09	12	30
		Station Control & Instrumentation	14.12.08	8.10.09	10	41
2	Bongaigaon	Coal Handling Plant	28.10.08	20.1.10	15	30
		Ash Dyke	17.10.08	Not awarded	19	-
3	Mouda	Coal Handling Plant	15.5.09	22.1.10	8	36
		Control & Instrumentation	6.7.09	Not awarded	11	-
4	Rihand-III	Coal Handling Plant	30.5.09	27.1.10	8	37
		Ash Handling Plant	29.7.09	14.5.10	9	38
5	Vindhyachal-IV	Coal Handling Plant	24.6.09	Not awarded	11	-
6	IGSTPP, Jhajjar	Ash Dyke	March 2008	11.11.09	19	
7	Vallur STPP	External Coal Handling Plant	12.12.07	30.3.10	27	20
		Internal Coal Handling Plant	15.6.08	29.3.10	21	32
		Ash Dyke	15.7.08	11.2.10	18	-

*Date of Award and Delay is taken on the basis of contract awarded up to May 2010

Source of Information: MNWs of respective project for schedule date of award and information furnished by management

Annexure - IX

(As referred to in Paragraph 4.2.1.1 to 4.2.1.3)

Statement showing excessive time taken by the management for declaring under commercial operation

Sl. No.	Name of project	Unit No.	Date of synchronization with coal	Date of Full load	Date of commercial operation	Time taken for Commercial operation (in months)
1.	Kahalgaon-II STPP (Phase-II)	6	March 2008	December 2008	December 2008	9
		7	June 2009	July 2009	March 2010	9
2.	Sipat-II STPP	4	November 2007	June 2008	June 2008	8
3.	Bhilai STPP	1	April 2008	January 2009	April 2009	12
		2	March 2009	July 2009	October 2009	7

Annexure - X

(As referred to in Paragraph 4.2.4)

Statement showing other points of interest observed in awarding and execution of contracts

Sl. No.	Observation	Management Reply	Further Remarks
1	For Coal Handling Plant package at IGSTPP (Jhajjar), after issuing NIT (March 2007) the QR was relaxed on the request of a party which initially was ineligible. Despite relaxation, no new party purchased the bidding document during extended period of sale of revised bid documents. Further, ten days allowed (against four weeks allowed initially) for bid submission after revision of QR indicated that QR was relaxed to suit a specific party. Incidentally, the contract was won by the bidder at whose request the QR was modified	Management stated (November 2010) that QR was reviewed to ensure that more number of parties quote for NTPC projects which was felt necessary in view of large number of projects planned for 11th and 12th Plan. Further, bid was kept open for a short period because of provision for online purchase of bid documents and considering long commissioning period of the CHP.	The reply is not convincing. From the minutes of QR Committee meeting it is clear that the QR was revised only for this specific project and not keeping in view the requirement of 11th and 12th Plan as stated in the reply. Further allowing ten days for bid submission (instead of four weeks as initially allowed) for a contract of such large magnitude and complex nature was not sufficient to ensure the desired wider participation even with the facility of online purchase of bid documents.
2	Though no laid down criteria existed, the Company generally fixed QR at 80 *per cent* of the work requirement. However, in case of NDCT package for Dadri-II, QR was fixed at 100 *per cent* of the technical requirement of 60,000 cum. /hr. Of three parties who submitted (January 2007) bids L1 and L2 with quoted prices of ₹ 129.41 crore and ₹ 129.95 crore failed to meet the QR and the evaluated price of L3 was ₹ 215.60 crore i.e. 113% higher than cost estimate. As such the tenders were re-invited (June 2007) after revising the QR to 30000 cum/hr. The party which was L1 initially, emerged as L1 in re-tender also, but, with quoted price of ₹ 145.71 crore. After negotiation the work was finally awarded (October 2007) at a cost of ₹ 142.25 crore, i.e. ₹ 12.84 crore higher than the initial offer.	Management stated (November 2010) that the QR for the package was fixed on the basis of QR for Simhadri-I and 9 parties were expected to qualify based on this QR. Further, as 8 years had elapsed since Simhadri-I, it was expected that more such towers would have been constructed in the intervening period. Therefore, no need was felt to revise QR for Dadri-II.	Reply is not acceptable because Company had to revise the QR drastically from 60,000/cum per hr to 30,000 cu m per hr. Such a situation could have been avoided by fixation of QR after proper market survey.
3	For 'Main Plant & Offsite civil area works package' which is a critical package in execution of a power project, identical QR in respect of concreting, fabrication and erection of steel and piling	Management stated (November 2010) that the issue raised by Audit had been deliberated by the duly	No remarks

	work was fixed for different projects irrespective of the schedule of execution and quantities to be executed. As a result the QR fixed for this package in respect of nine projects ranged from 10 to 79 *percent* of the quantities to be executed. In the absence of project specific QR, there are possibilities of an incompetent firm securing the work which may affect the schedule of the entire project. For instance in Bongaigaon (work awarded in March 2008) the contractor of the Main Plant & Offsite civil work, where the QR was fixed at 14 to 32 percent of project requirement, failed to adhere to the time schedule for handing over fronts to the contractors of Main Plant and Balance of Plants. The delay was caused mainly due to inability of the contractor to mobilize adequate manpower and machinery. As such the entire project schedule got affected adversely.	constituted committee for finalization of QRs before approving the same. However, based on updated details available from agencies, the QR parameters have been revised recently for the upcoming projects.	
4	One of the qualifying requirements for site leveling packages was that bidder should have achieved at least a given quantity of earthwork in filling involving mechanical compaction over a period of continuous twelve months. It was however not clear from the QR whether entire quantity of earth filling should involve mechanical compaction. In case of Vallur project the bid of a Public Sector Undertaking (PSU) was rejected (June 2007) on the ground that the entire quantity of earth filling offered by the PSU as reference did not involve mechanical compaction. However, in case of similar package for other projects Company relied on declaration furnished in Yes/No to the question in the bid: 'whether mechanical compaction was involved' without trying to ascertain the exact quantity of earth filling involving mechanical compaction.	Management stated (March 2010) that this had been the standard clause adopted for similar QRs in the past and no clarification was ever sought by any bidder. It however, noted the audit observation for consideration while finalizing QR in future.	No remarks
5	In case of Main Plant & Offsite civil area work packages for Barh-I & II, Korba-III, Farakka-III and Bongaigaon, against Qualifying Requirement of 'Fabrication and Erection of Steel Structures' experience in fabrication and erection of Mild Steel pipes was accepted. Since steel structures for Main Plant are load bearing structures and include columns, trusses etc. experience in fabrication and erection of Mild Steel pipes should not have been considered. In fact Progress of Structural Fabrication and Erection up to October 2009 in these four projects (except Barh-I where work under this package was already over) was only 0 to 49	Management stated (November 2010) that for upcoming projects based on updated details available from the agencies the QR has been revised seeking experience in construction of thermal power plants and similar structures including main power house.	No remarks

	percent of L2 schedule.		
6	The Bidding Documents required the bidders to indicate the names of the proposed sub-contractors/sub-vendors for all major items of supplies and services that it proposed to purchase or sub-let. The list of sub-contractors/sub-vendor had to be finalized prior to award of contract based on discussions with the contractor which formed part of contract agreement. Bidding Documents also provided that the bidders would be required to substitute an unacceptable sub-contractor or sub-vendor without impact on price. With such condition the bidders are likely to overestimate the rates in order to limit their exposure against risks which finally leads to extra cost for the Company. It was also observed that a sub-vendor/sub-contractor who had worked satisfactorily with NTPC was considered as acceptable sub-vendor for a particular package only when his name was proposed by the main contractor. Thus the company exercised only the right of rejection; and there was no system of NTPC proposing on its own the names of sub-vendors who had worked satisfactorily in other NTPC projects/packages, but whose names had not been proposed by the main contractor. Thus by rejection of sub-vendors from whom the main contractor proposed to source a particular material/service, NTPC restricted the extent of competition for the main contractor	Management stated (November 2010) that in the system being followed by them the list of vendors is not restrictive and contractors are totally free to propose new vendors.	The reply is not tenable as in such system the bidders are likely to overestimate the rates in order to limit their exposure against risk of non-acceptance of proposed vender by NTPC which finally leads to extra cost. This situation can be avoided if the Company provides list of acceptable vendors along with bidding documents.
7	The bidding documents for major civil work packages for execution of hydroelectric projects had the following uncertainties:		
(i)	The muck disposal areas were not firmed up and the same were subject to change as per actual site requirement like problem in acquisition of specified land	The Management stated (November 2010) that the bidders were asked to offer rate for haulage of material beyond one Km at tendering stage itself.	Reply is not acceptable because the rate obtained for haulage of material was for 'per cubic metre' unit which does not cover the risk for eventuality when distance is increased by more than one Km.
(ii)	The unit rates of various grades of concrete were to include the cost of minimum cement content and no extra payment was to be made in case the cement content during mix design stage/execution stage exceeded the specified minimum cement content. In the above circumstances the cost of uncertainties are bound to be built in by the bidders which may vary from bidder to bidder and also may be higher than the actual cost as the bidders ,in order to mitigate their risk may include the maximum possible cost.	The concept of specifying minimum cement content has been successfully implemented in many NTPC projects including thermal projects	Reply is not acceptable because, to eliminate uncertainty on account of excess cement a suitable item in BOQ for cement variation was desirable particularly in case of hydroelectric civil contracts where unexpected changes in mix design are very common.

8	**Award of work to ineligible bidder** In case of Main Plant, Circulating Water & Offsite civil works package for Dadri-II while recommending for award of work, TEC accepted the reference work of Steam Turbine Generator area civil works package for Kahalgaon STPP, Stage-II, Phase-I (2x500MW) submitted by the bidder. The fact that piling work at Kahalgaon was done by an associate of the bidder (and not by bidder himself) was not taken into account by the TEC and as such the work (valuing ₹ 188.04 crore) was awarded to an ineligible bidder	Management stated (November 2010) that bidder (ERA Construction) was responsible for executing the entire scope of work under the Kahalgaon contract including piling as such ERA construction was found to be meeting the QR for main plant CW and offsite civil work package for Dadri-II.	The reply is not acceptable because work at Kahalgaon-II was awarded to the contractor on the basis of experience of an associate firm for piling work and work done through associate can not be regarded as experience of the contractor.
9	**Non verification of Performance Reports** IPMCS provided that in cases where the bidders (in the zone of consideration) have executed or are executing jobs for NTPC, Performance Reports should invariably be obtained from concerned projects and considered by TEC. However, there existed no system to ensure that all such reports were received and considered by the TEC.	Management stated (November 2010) that feedback report is sought from all the NTPC projects before recommending award of work. A formal system in this regard is under finalization and guidelines in this regard shall be issued after approval of the competent authority.	No remarks
10	**Improper assessment of reasonableness of the price** Cost estimate (₹ 184.85 crore) for Induced Draft Cooling Tower (IDCT) package for Vallur Power Station was prepared (July 2008) by taking average of estimated costs under two options viz. (i) Cooling Tower with dimension of 130 M x 30 M considering single air inlet design: ₹ 217.18 crore and (ii) Cooling Tower with dimensions of 130 M x 21 m considering double air inlet design: ₹ 152.52 crore. Both the bidders who submitted (November 2008) their bids offered double air inlet design and price quoted by the L1 bidder (₹ 193.72 crore) was accepted (December 2008) after recording the justification that the same is only 4.8 percent higher than approved cost estimate. However, considering the type of Cooling Tower offered by the L1 bidder the cost accepted by the Company was 27 percent higher than the related estimated cost (₹ 152.52 crore)	Management stated (November 2010) that tender committee compared the quoted price of the bidder with respect to the approved cost estimate.	The reply is not acceptable because tender committee did not compare the tendered price with Double air inlet cost estimate which was available. Incidentally in case of Barh-II where also cost estimate was prepared (September 2008) on the same basis and L1 bidder had offered Double air inlet design, the tendered price, was justified (January 2009) by comparing with cost estimate of related design. The tendered price in that case was 5.22 *per cent* higher than the estimated cost. Thus justification recorded by TEC to establish reasonableness of award price in case of Vallur was not appropriate.
11	**Re-working out of BOQ to justify higher rates received** In case Natural Draft Cooling Tower (NDCT) package, Dadri-II, on receiving a high L1 price (₹ 142.50 crore) as compared to	Management stated (November 2010) that these being turnkey packages no in-house data for	The practice of modifying the BOQ after opening of tenders to justify the offered rates is not a correct practice.

	estimated price (₹ 107.34 crore), the BOQ of civil work was reworked jointly with the L1 bidder and based on the revised BOQ, cost estimate was revised upward to ₹ 122.10 crore to justify the L1 rate. The work was finally awarded to L1 at ₹ 142.25 crore. Similarly, in case of IDCT Package, Farakka-III on receiving a high L1 price (₹ 41.93 crore) as compared to estimated price (₹ 27.19 crore) BOQ was reworked and the cost estimates were revised upward to ₹ 34.98 crore to justify the L1 rate.	preparing cost estimates was available and bidder was asked to submit his quantity estimate in support of his quoted price	
12	**Relaxation of tender conditions at the time of conclusion of contracts** Main Plant packages in respect of three projects viz Dadri-II, Korba-III and Farakka-III were awarded to BHEL on nomination basis. In respect of eight projects (i.e. Vallur, Jhajjar, Simhadri-II, Bongaigaon, Mauda, Barh-II, Rihand-III and Vindhyachal – IV), response to tenders floated by the Company for award of Main Plant packages was very poor. Sixteen Main Plant packages finalized through ICB mode between 2006 and 2009 were reviewed in audit. BHEL emerged as the single tenderer in nine packages. Audit observed that BHEL resorted to deviations on many important issues which were agreed to by NTPC at the time of finalization of contracts. These deviations were not restricted to a single project. These were repeated in many subsequent projects giving the impression that requirements were not firm and may also have obstructed other competitors from bidding.	Management stated (November 2010) that deviation taken by a particular bidder against bidding documents depends on the perception of the bidder as to the risk involved and hence modification of the important conditions of bidding documents based on the deviations taken by a particular bidder is not desirable and may not lead to increase in competition.	The reply is not acceptable. Emergence of BHEL as only participating bidder for most of the Main Plant packages and acceptance by NTPC of the same deviations tender after tender provided sufficient reason for modification of bidding documents for increasing competition.
13	**Acceptance of equipment not-conforming to technical specifications** For execution of Sipat-I the contractor (M/s Doosan Heavy Industries & Construction Co. Ltd, Korea) responsible for supply of all plant and equipment along with all accessories, auxiliaries and mandatory spares on CIF basis for Steam Generator (SG) package, supplied (2007-08) certain items like Mills, APH fans and Boiler Recirculation Pumps valuing ₹ 167.18 crore without material dispatch clearance certificates (MDCC) issued by NTPC. These equipment though not conforming with the qualifying requirement of technical specification, were accepted on the basis of conditional dispatch clearance and allowed to be erected by NTPC subject to the condition that in case NTPC's position is	Management while agreeing with the fact that these equipments did not comply with the technical specification stated (April 2010/November 2010) that payment was withheld for the said equipment which shall be released only on submission of extended warranty, additional bank guarantee and rebate on this account by contractor.	The action taken by the Company is a *fait accompli.*

	upheld by the adjudicator, the contractor would replace the equipment already supplied/erected with such equipment which meet the specified qualifying requirement as per company's interpretation, as per agreed schedule and without any financial implication to the Company. However, since the Company did not properly safeguard its interest for loss of time, these non-conforming equipments would have to be accepted by the Company even if its position is upheld by the adjudicator because removal and replacement of these equipment by new equipment would further delay the already delayed project.		
14	**Failure to avail project import benefits on import of construction equipment** Hon'ble Supreme Court of India on 31 August 2006 decided that the exemption of custom duty under chapter 98.01 of Custom Tariff Act 1975 was available on import of construction equipment also. The Company approached the civil contractors of Tapovan-Vishnugad and Loharinag-Pala Hydroelectric Projects for availing the exemptions and passing the same to NTPC in July 2007 only and contractors working on thermal projects were not approached. In this regard the following observations are made: (i) In response, the contractor for HRT package - Tapovan-Vishnugad Hydro Electric project indicating that they expected to receive imported equipment from mid August 2007, raised (1.8.07) a question on the quantum of benefit to be passed on. NTPC, however, failed to resolve the issue before the import of equipment (October-November 2007) resulting in non-availing of custom duty benefit of ₹ 0.91 crore. On subsequent imports, out of import duty benefit of ₹ 21.94 crore availed by the contractor, between March 08 and July 08, NTPC had recovered (October 2009) only ₹ 1.08 crore thereby benefiting the contractor. (ii) Despite specific instructions, the contractors of Power House Package and HRT package of Tapovan-Vishnugad Project and contractors of Barrage, HRT and Power House packages of Loharinag Pala Project, did not avail the benefits and paid custom duty of ₹ 7.42 crore on import of construction equipments. The Company had not taken any action for recovery against the defaulting contractors (March 2010). (iii) Though the above duty benefits were available to the	Management stated (April 2010) that the copy of contractor's letter dated 1.8.07 was received by NTPC, NOIDA from site on 26.11.07 and the site had proposed for retention of appropriate amount of import duty from RA bill 24 onwards so that amount is recovered till the 80 *per cent* of the work is completed. Management stated (April 2010) that in case of HRT package, Tapovan-Vishnugad projects the reasons for levying of custom duty by Custom Authority was not understood as list provided by NTPC was available with the contractor and in turn with Custom Authorities. In other cases contractors did not make any request to NTPC for issuance of relevant certificates. Further there was no	The reply is not acceptable because benefit of ₹ 0.91 crore could not be availed due to failure of the Company in resolving the issue in time and the contractor was required to pay entire amount of custom duty right at the time of import of construction equipment therefore, total exemption from the same because of issuance of Essentiality Certificates by the Company should have been passed on to NTPC immediately The reply is not acceptable because after specific

	projects for which NTPC had issued essentiality certificates, there existed no system to ensure that the equipments imported under these certificates were actually used for these projects. Further, as the certificates issued for exemption of duty have financial bearing, NTPC has not maintained any control register to ensure that these were issued only for the *bonafide* purpose. In the absence of a control register, Audit could not assess the number of certificates issued and actually utilized for NTPC projects. Examination of two such certificates furnished by the management revealed that in respect of equipments imported for Jhajjar project while certificate was issued for six Piling Rigs, only five imported rigs were used at site as certified by the concerned Engineer	provision in contracts to make recovery in case the contractor does not avail the benefits on import of construction equipment. (iii) Management added (November 2010) that after completion of work at site, the contractor has to obtain a utilization certificate from site for the equipment brought to site for utilization in works under the contract which has to be submitted to the custom authorities for reconciliation of custom duty benefits extended to the contractor.	instructions from the Company, the contractors were under obligation to avail such benefits and pass on the same to the Company in view of clause 12 of volume I (Part 1) of the contract which provided that any project import benefits for any equipment including construction equipment that becomes applicable in future shall be finalized including corresponding price reduction to NTPC. The Company should maintain a control register to monitor issue of essentiality certificates and actual utilization of imported equipment at site during project execution stage.
15	**Non compliance of IS code relating to safety of structures** Technical Specifications for Main Plant & Offsite area Civil Work packages provided that all pile testing shall conform to IS:2911 (Part IV). As per Indian Standard code 2911 (Part IV) Routine Test on piles is carried out to determine the safe load of the pile, to check extent of safety for the specific functional requirement. The code further provides that the number of tests may generally be one-half percent of the total number of piles required which may be increased up to 2 percent in a particular case depending upon nature, type of structure and strata condition. It was, however, observed that taking a plea of expediency, in ten out of twelve projects where piling was carried out, these tests were either not carried out or lesser number of tests were conducted. The information in respect of one project was awaited.	Management stated (March 2010) that all the test results conducted were satisfactory hence it was felt that further testing was not required.	The fact remains that the requirement of IS was not complied with

Annexure - XI

(As referred to in Paragraph 5.2.3)

Statement showing delay in achieving important activities (in months) with respect to Scheduled date

Sl. No.	Project Name /Unit	Unit No.	Capacity (MW)	Boiler erection start	Drum lifting	Hydro test	boiler light up	steam blowing completion	TG erection start	TG box up	oil flushing completion	TG rolling	Synchronisation
1	Kahalgaon-II	6	500	-2	-1	0	4	9	-1	-1	0	10	10
		7	500	-2	-3	5	37	24	0	10	22	24	24
2	Sipat-II (500x2)	4	500	-2	-2	-1	30	0	-3	0	1	0	-1
		5	500	-3	-2	0	26	9	0	5	9	-3	8
3	Sipat-I (660x3)	1	660	-2		0	52	32	2	29	36	0	31
		2	660	-9		-3	48	27	0	29	28	0	26
		3	660	-12		6	44	23	0	25	24	0	22
4	Barh-I (660x3)	1	660	55		54	2	51	18	39	43	51	51
		2	660	51		50	5	47	33	35	39	47	47
		3	660	0		46	5	43	29	30	35	43	43
5	Bhilai (250x2)	1	250	-1	-2	0	-4	2	3	8	5	0	2
		2	250	-4	-4	0	-2	8	3	14	11	0	7
6	Korba-III (500x1)	7	500	-2	0	-1	5	8	3	4	6	7	7
7	Dadri-II (490x2)	5	490	-5	-4	-5	1	-4	-4	-3	-2	0	-4
		6	490	-4	-6	-7	0	-3	-3	-2	-2	0	-3
8	Farakka-III (500x1)	6	500	-5	6	7	0	4	0	0	5	3	3
9	Simhadri-II (500x2)	3	500	-6	-1	-1	6	0	-1	4	2	0	2
		4	500	-7	-3	-3	5	0	8	1	1	0	1
10	Ratnagiri		740										
11	Vallur (Phase-I) (500x2)	1	500	6	6	6	1	6	5	10	9	0	9
		2	500	6	6	6	-1	5	8	5	3	0	5
	Vallur (Phase-II) (500x1)	3	500	0	0	0	-4	0	0	0	0	0	-1

12	Jhajjar (500x3)	1	500	-2	1	2	0	0	-3	-3	-1	0	-1
		2	500	-2	-1	-1	0	-1	0	-2	-2	0	-2
		3	500	-3	0	-1	0	-2	2	-4	-5	0	-4
13	Mauda (500x2)	1	500	-2	3	0	0	0	0	0	0	0	-1
		2	500	0		0	7	0	0	0	0	0	0
14	Barh-II (660x2)	1	660	-4		0	9	-1	0	0	-1	0	-2
		2	660	-8		0	9	-1	0	0	-1	0	-2
15	Bongaigaon (250x3)	1	250	0	7	7	21	8	10	8	8	8	8
		2	250	9	11	15	19	9	9	7	7	7	8
		3	250	12	12	10	17	9	9	7	7	7	8
16	Nabinagar (250x4)	1	250	22	20	22	-3	20	23	22	21	0	21
		2	250	20	18	20	-8	18	21	20	19	0	19
		3	250	18	16	18	-3	16	19	18	17	0	17
		4	250	16	14	16	-3	14	17	16	15	0	15
17	Rihand-III (500x2)	5	500	1	2	-2	-8	-3	9	-3	-3	-3	-3
		6	500	-3	0	-7	0	-8	-7	-7	-7	-7	-7
18	Vindhyachal-IV (500x2)	11	500	2	0	-2	0	-3	-3	-7	-3	-3	-3
		12	500	-1	-2	-7		-8	-7	0	-7	-7	-7
19	Muzaffarpur expansion (195x2)	1	195										
		2	195										
Range of delays				**1 to 55**	**1 to 20**	**2 to 54**	**1 to 52**	**2 to 51**	**2 to 33**	**1 to 39**	**1 to 43**	**3 to 51**	**1 to 51**

Annexure - XII

(As referred to in Paragraph 5.2.5)

Statement showing delay in achieving important activities (in months) with respect to Scheduled date

Project Name	Issues (Period of Quarter progress of MOP meeting & dated)
Barh-I (3x660)	Boiler package could not be achieved due to non-performance of TPE. **(January to March 2007dt 06.06.2007)**
	Delay in on the part of TPE. Secretary (Power) desired that position on the matter be explained to the Trade Commissioner of Russia with the records of contractual and other relevant documents and efforts be made to resolve the issues at the earliest. **(July to September 2007 dated 27.11.2007)**
	The inordinate delay in supply of material from TPE, Russia for boiler and PM, Russia for turbine was also highlighted. **(October to December 2007dated 19.03.2008)**
	Inordinate delay in supply of material from TPE, Russia for boiler and PM, Russia for turbine is causing delay in commissioning. (**January to March 2008 dated 30.06.2008)**
	Company informed that 90% supplies for structures of unit # 1 have reached site (overall 26% of material supplies of TPE have been received at site). However, erection work has not been started and orders for critical components have not been placed. Slow progress in the execution of the contract by TPE and stated that in case no agreement is reached shortly in line with the Adjudicator's decision, NTPC will take alternate course of action within the contractual framework. (January to March 2009 dated 01.06.2009)
Sipat-I (3x660)	Secretary (Power) desired the gap for commissioning schedule for units 2 & 3 be reduced to 6-8 months **(January to March 2007dated 06.06.2007)**
	The generator stator has reached at site on 28.04.2008 from Kasera Ghat. Secretary (Power) advised Company to take action against the Executives responsible for the delay in transportation of the machine. **(January to March 2008 dated 30.06.2008)**
	NTPC informed that Boiler with its auxiliaries is ready for BLU. However, input from PM is affecting BLU and synchronization. Secretary (Power) advised NTPC to send a high level team to Russia immediately to resolve the issue. **(April to June 2008 dated 14.10.2008)**
	NTPC explained about the delay in TG erection, balance material supply by Russian contractor (PM). **(July to September 2008 dated 24.12.2008)**
	Board has approved the proposal of TG supplier (PM) for extra claims on account of escalation in prices and the same has been sent to CVC for their perusal. PM has started the work. NTPC further informed that SG supplier (Doosan) is insisting release of payments against 4 disputed items not accepted by NTPC. Matter is under discussion with Doosan to arrive at amicable solution in line with adjudicator's ruling. **(April to June 2009 dated 12.10.2009)**
Sipat-II	Delay in material supply by BHEL in respect of unit # 5. Secretary (Power) asked Company that before award, due diligence be done regarding

(2x 500)	manufacturers capacity to deliver. **(January to March 2007** dated **06.06.2007)**
	Company explained that though unit # 4 at Sipat is ready in all aspects, the non release of water is affecting the trial run required for COD. **(July to September 2007** dated **27.11.2007)**
	Company informed that coal firing is targeted for 21.10.2008 and COD for 15.12.2008. Additional mobilization by Vendor for rotating machinery is critical. Erection of C&D pass ducting is affected due to frequent crane breakdown. Secretary (Power) desired that Company should take up the matter with CMD, Vendor in writing. **(April to June 2008 dated 14.10.2008)**
Kahalgaon-II	Secretary (Power) was concern about of the delay for COD from the date of synchronization and advised Company to work out the modalities for reducing the time gap and further suggested that Board should consider adoption of a system for giving incentive to its staff which should provide adequate weight age for achieving COD. He asked NTPC to take disciplinary action against those people responsible for the delay. **(January to March 2008 dated 30.06.2008)**
	Secretary (Power) expressed his displeasure on 8 months delay from synchronization to COD and desired that COD should be attempted by 15.11.2008.**(April to June 2008 dated 14.10.2008)**
	Company informed that 500 MW unit (#7) achieved full load on 31.07.2009 and COD was expected in October 2009. However, coal supply shortage was a big concern. Augmentation of coal supply from Lal Matia and Chuperbita coal mines and import of coal top the technically possible extent were the possible solutions. Secretary (Power) suggested that import of coal and other options should be explored. **(April to June 2009 dated 12.10.2009)**
Vallur	Company informed that MoEF clearance for the project is held up for want of coal linkage for the project. Secretary (power) advised Company to consider building the project on imported coal.**(April to June 2008 dated 14.10.2008)**
	Finalisation of BoP is critical issue. Secretary (Power) asked NTPC to expedite it.**(July to September 2008 dated 24.12.2008)**
Bongaigaon	Delay in carrying out civil works. Secretary (Power) observed that NTPC should assess the desirability of awarding future contracts to the defaulting contractors/agencies. It was also observed that delay in Korba project is also due to same contractor and NTPC should review the eligibility of the contractor for future award of works.**(July to September 2008 dated 24.12.2008)**
	Slow progress in civil works by SPML was affecting release of fronts. Secretary (Power) expressed concern regarding fuel availability for Bongaigaon and asked CEA to resolve coal supply issues. He expressed that necessary co-operation from State Government regarding land, water, etc. is likely to be available.**(July to September 2009 dated 08.02.2010)**
Nabinagar	Serious issue of land acquisition for the project. Secretary (power) desired to issue a letter on the issue of land acquisition to State Govt.**(January to March 2008 dated 30.06.2008)**
Koldam HEP	Delay in the construction of Koldam project primarily due to 3 reasons. (i) Due to right bank slide, (ii) construction of spillway and (iii) transit zone grouting. **(January to March 2008 dated 30.06.2008)**
	Main dam filing was slow progress of work by ITD; a GM level committee has been constituted by the Board to resolve the issue. Secretary (Power) directed to issued show cause notice to the ITD for the slow progress of work. CEA intimated that there is a delay of 5 years in the project and 4 milestones may not be achieved if immediate action is not taken to resolve the issues.**(April to June 2008** dated **14.10.2008)**
	CEA informed that NTPC is shifting the commissioning schedule of the project in every QPR. Secretary (Power) observed that this project is in danger of delay unless NTPC takes some corrective measure. **(July to September 2008 dated 24.12.2008)**

Farkka-III	Environment clearance was received on February 2007 and Secretary (Power) desired that the project should be commissioned within 36 months of environment clearance by Feb. 2010. **(January to March 2007 dated 24th July 2007)**
	NTPC informed that there was problem in boiler erection. A high capacity crane was delayed deployed at site. **(July to September 2008 dated 24th December 2008)**
	NTPC informed that the delay in finalization of boiler erection agency by BHEL has caused the initial delay. **(October to December 2008 dated 6th March 2009)**
	Unit-6 NTPC informed that there was slow progress of Civil works in CW area by M/S KBL. Secretary (Power) advised to take immediate remedial action, NTPC expressed that all efforts will be done to maintain target of anticipated commissioning to be achieved by Feb-11 **(October 2009 to December 2009 dated 26th March 2010)**
Korba-III	Company informed that environmental clearance was received on August 2006 and Secretary (Power) desired that unit should be commissioned by Aug 2009 (36 months from date of environment clearance) **(January to March 2007 dated 24th July 2007)**
	NTPC informed that there was a delay in boiler drum lifting by about 2 months. Further, the Chinese company to whom CHP works was awarded did not perform. **MOP suggested that NTPC should bring in public domain the names of companies whose contract has been terminated due to non-performance.** Package has been re-tendered and unit expected to be commissioned by Feb-10 **(January 2008 to March 2008 dated 30th June 2008)**
	TG casting was completed in September 2008. However, there was an inordinate delay in civil works by M/s SPML. Secretary (Power) desired that action should be taken against the contractor.**(April 2008 to June 2008 dated 14th October 2008)**
	NTPC informed that the boiler of the plant was delayed by the concerned civil contractor. He desired that the concerned agency should be asked to complete the work on a time bound basis. **He also desired that indemnification for Koldam, Barh and Korba Transmission Projects should be given to PGCIL within a week (July to September 2008 dated 24th December 2008)**
Simhadri-II	Secretary (Power) expressed concern over the gap of 6 months between two units and suggested to reduce it to 4 months. CMD, NTPC agreed to the proposal. Secretary (Power) also advised Director (Finance) , NTPC not to allow such gaps between two units to avoid blockage of funds. **(April 2008 to June 2008 dated 14th October 2008)**
	Unit-3 NTPC informed that IP Turbine was diverted for Jhajjar Unit#1. Inner casing for Jhajjar unit #1 , Unit# 2 has been rejected due to casting defect. This is likely to delay the supply of IP Turbine by 3 months as per last BHEL Commitment of dispatch by 10.3.2010. The delay will affect TG Box-Up and anticipated target of commissioning by Jan-11 **Unit-4** Because of delay in Supply of IP Turbine of Unit# 3, as a cascading effect the IP Turbine supply of Unit# 4 is also delayed. **(October 2009 to December 2009 dated 26th March 2010)**
Bhilai Expansion Power Project	Unit-1, Company informed that the unit was synchronized in April 2008 and work on bunker, AHP, CHP was in progress. COD anticipated by 20.09.2008. Unit-2 Company informed that due to delay in supply of equipment by BHEL, the synchronization was expected by September 2008. Responding the query from Secretary (Power), it was informed by **NTPC that concerned Regional Executive Director/CEOs are responsible for the implementation of the respective projects.** (January 2008 to March 2008 dated 30th June 2008)
	NTPC informed that due to delay in repairing of IP rotor because of break-down in mid-way, the synchronization of unit-2 is now anticipated in

	December 2008. **Secretary (Power) desired that the person in-charge of the movement of the rotor may be replaced and disciplinary action may be initiated for the lapse.** (April 2008 to June 2008 dated 14th October 2008)
Jhajjar	Delay in supply of Bottom Ring Header and C.C Pump for Boiler and main turbine components. NTPC delayed in execution of auxiliary system like water system, Coal Handling Plant, Ash Handling Plant. Secretary (Power) expressed that Railway line should be expedited. Secretary (Power) was concerned about coal supply and asked CEA to expedite FSA for the project.**(April 2009 to June 2009 dated 12th Oct 2009)**
	Unit-2 and Unit-3: NTPC informed that there was casting defect in form of crack in IP turbine Inner Casing and therefore further processing of manufacturing work is delayed . Delay in IP turbine will affect the scheduled commissioning of Unit-2 and 3 in Mar-11 and Aug-11 respectively. Company informed that there will be cascading effect to Simhadri being delayed as IP Turbine from Simhadri was diverted for Aravali STPP. Secretary (Power) suggested that progress needs to be further expedited with BHEL. CMD , NTPC assured that he would be visiting BHEL, Haridwar in this regard and persuade BHEL to pre-pone the delivery and take support for MOP for this. **(October 2009 to December 2009 dated 26th March 2010)**
NCTPP Dadri-II Power Project	Company informed that the contract from implementation of Web-based project monitoring system based on Primavera software was awarded on June 2008 for Dadri-II as a pilot. The implementation was likely to be completed by August 2008. In view of engineering packages (used by NTPC) being non-compliant with the web based software, Secretary (Power) felt that a lot of precious time and money has been lost. He suggested that in future NTPC's Vendors should submit the drawings and execute the projects through system complaint with the new monitoring system. NTPC informed that main power house structural erection works in progress**(January 2008 to March 2008 dated 30th June 2008)**
	Company informed that unit-5 will be on full load by Dec-2009 NTPC further informed that FSA for both Dadri and Jhajjar are yet to be signed. Secretary (Power) was concerned about this as the projects are Commonwealth Games projects and the time left is too short. He asked the CEA to expedite FSAs for these projects on top priority. **(April 2009 to June 2009 dated 12th Oct 2009)**