

CHAPTER - II

Performance Audit on the Augmentation of Thermal Generation Capacity of Tamil Nadu Generation and Distribution Corporation Limited

Executive Summary

During XI Five Year Plan (2007-12), the State of Tamil Nadu planned capacity addition of 7,808 MW to meet the deficit of power. This included 3,270 MW of capacity addition by TANGEDCO of which 2,500 MW of power was proposed to be from four thermal projects. While the two thermal projects at North Chennai Thermal Power Station Stage-II (2 x 600 MW) (NCTPP) and Mettur Thermal Power Station Stage-III (1 X 600 MW) (MTPP) have already suffered time overrun of 24 to 31 months, the balance projects were either not taken up or abandoned midway. Consequently, the actual capacity addition of TANGEDCO by the end of March 2012 was only 112 MW which were from hydel and gas based power stations and increased to 712 MW due to completion of MTPP in October 2013. To assess the efficiency and effectiveness of implementation of thermal projects, a Performance Audit was taken up from April to August 2013.

Pre-implementation arrangements, planning and financial tie-ups

- TANGEDCO did not formulate any pre-order criteria, for implementation of the projects by laying down activity-wise schedules for each pre-order activity and took 28 months for finalising investment approval after getting administrative approval for the projects.
- TANGEDCO obtained coal linkage for all the three units when their capacity was fixed as 500 MW each. After enhancement of capacity of the units to 600 MW each, it did not obtain the enhanced coal linkage from Ministry of Coal, Government of India implying that it would have to be dependent on imported coal for additional capacity of 100 MW each for these units.

Cost estimation and project financing

- TANGEDCO did not pass on the additional interest burden of ₹ 58.68 crore to BHEL as per the contractual terms.
- In respect of MTPP, arrangement of the project finance in two spells instead of in one spell led to avoidable interest burden of ₹ 33.16 crore.
- TANGEDCO could not avail interest rebate of ₹ 36.14 crore from Power Finance Corporation/Rural Electrification Corporation due to delay in completion of the projects.

Award of contracts

- Award of contract for Unit-I of NCTPP to BHEL under Engineering, Procurement, Construction-cum-Finance

basis by TANGEDCO deviated from the guidelines of National Electricity Plan (NEP), 2007 which did not allow arrangement of financing packages from the manufacturers/suppliers as it could reduce competition among the bidders.

- TANGEDCO could not avail the benefits of Mega Power Projects due to award of NCTPP Unit-II on nomination basis instead of under International Competitive Bidding (ICB) route as required.

Project management

- There were delays up to 718 days in approving the drawings furnished by the contractor of MTPP and delays of 12 and 22 months in furnishing the Project Authority Certificate and Essentiality Certificate respectively, in respect of NCTPP which was essential for importing the equipment required for the project.
- Ambiguity in tender specification regarding Railway siding led to stoppage of work from April 2010 to June 2012 and avoidable cost escalation of ₹ 3.71 crore.
- The guidelines of Ministry of Environment and Forests (MOEF) with regard to zero discharge outside the plant boundary were not adhered to.
- Incorrect choice of installation of semi-wet bottom ash handling system instead of dry system would result in loss of revenue of ₹ 14.15 crore per annum.
- Due to non-readiness of the ash handling system, the excessive usage of oil to generate steam led to additional expenditure of ₹ 63.71 crore.

Supporting services

- Construction of the third dedicated coal berth at Ennore Port was delayed and expected to be completed only in 2015-16. The present contingency plan to operate coal berth of a private firm would result in additional expenditure of ₹ 6.55 crore per annum.

Non-adherence to pollution control requirement

- Construction of intake sea water channel for NCTPP was completed without obtaining the required permission from Coastal Regulatory Zone (CRZ)/Pollution Control Authorities.
- Installation of Effluent Treatment Plant required for segregation of oil waste was not completed as prescribed by the Tamil Nadu Pollution Control Board (TNPCB).

Conclusion

- Delay of more than two years in completion of these projects was due to (i) planning deficiencies such as not firming up the size of the projects and mode of execution, non-synchronisation of water facility, etc., and (ii) delays in implementation on account of delay in approval of drawings, issue of Project Authority Certificate/Essentiality Certificate and stoppage of work for more than two years due to incorrect tender specifications for railway siding etc. Delays in coal handling and ash handling systems were also noticed.
- The project monitoring was deficient as dedicated project monitoring team was not constituted as envisaged and the project monitoring information system included in the scope of work of EPC contractors was not implemented till date (December 2013).

- Despite delays in project execution, TANGEDCO did not fix the responsibility for the delays either at its end or on the EPC contractors.
- Due to delay in completion of thermal projects with a capacity of 1,800 MW, the State was deprived of TANGEDCO's own generation to the extent of 22,557 Million Units. This resulted in purchase of power from other costlier sources.

Recommendations

TANGEDCO should:

- have a plan for pre-order activities.
- prepare accurate and realistic tender specifications.
- comply with environmental norms for disposal of effluents.
- expedite implementation of ash handling, coal handling and other supporting facilities for thermal projects and
- continuously monitor the progress of projects to ensure timely completion.

Introduction

Company profile

2.1 The Tamil Nadu Electricity Board (TNEB) was formed (1 July 1957) as a Statutory Corporation under the Electricity Supply Act, 1948 for carrying out the functions of Generation, Transmission and Distribution of electricity in the State. With a need to re-organise the State Electricity Boards as per the requirement of the Electricity Act, 2003, TNEB was restructured (June 2009) into three new Companies viz., TNEB Limited, the holding company, its two subsidiaries viz., Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) and Tamil Nadu Transmission Corporation Limited (TANTRANSCO). While TANGEDCO is involved in generation and distribution of electricity within the State, TANTRANSCO manages and controls the transmission of electricity and grid operations in Tamil Nadu. TANGEDCO, which was incorporated on 1 December 2009, commenced its functions from 16 March 2010.

TANGEDCO is under the administrative control of the Energy Department of the State Government. The management of TANGEDCO is vested in a Board of Directors (BOD) comprising Chairman-cum-Managing Director (CMD), four full time Directors, a part time Director and three ex-officio Directors from the State Government. The day-to-day operations of TANGEDCO are carried out by the CMD with the assistance of Director (Generation), Director (Distribution), Director (Projects) and Director (Finance).

The financial position and working results of TANGEDCO for the last five years upto 2012-13 are given in **Annexure-7**. Analysis of the financial

position and working results (provisional for 2012-13) indicated that:

- (i) TANGEDCO¹⁸ suffered huge losses in all the five years upto 2012-13 with accumulated losses increasing from ₹17,413.92 crore in 2008-09 to ₹38,480.48 crore during 2012-13.
- (ii) The negative networth also increased from ₹7,623.43 crore in 2008-09 to ₹26,248.17 crore in 2012-13.
- (iii) As TANGEDCO was dependent on borrowed funds for meeting the Capital and Revenue expenditure, borrowings increased from ₹21,502.31 crore in 2008-09 to ₹42,207.48 crore in 2012-13.
- (iv) The revenue deficit which was at ₹7771.39 crore in 2008-09 increased to ₹13,321.33 crore in 2011-12 but the same decreased and remained at ₹11,679.07 crore at the end of 2012-13.
- (v) The revenue deficit was mainly on account of demand for power in the State being met mainly through costlier external sources (ranging from 59 to 68 *per cent* during 2008-13 as detailed in **Annexure-8**) due to inadequacy of TANGEDCO's own generating capacity. Further, there were increases in the cost of all the input components, *viz.*, fuel cost, employees cost, interest, finance charges *etc.*

Capacity addition programme of TANGEDCO

2.2 The National Electricity Plan released by the Central Electricity Authority (CEA) in April 2007 aimed to provide access to electricity for all households by 2012. As per the projections made by the CEA in the 17th Electric Power Survey of India (published in March 2007), the estimated peak demand of energy in Tamil Nadu by the end of 2011-12 was 14,224 MW. To meet this peak demand, a total installed capacity of atleast 17,780 MW¹⁹ was required. Against this requirement, the total generating capacity within the State including the sources of central and private generating stations at the beginning of 2007-08 was 10,098 MW. To meet the shortfall in power supply, capacity addition of 7,808 MW was planned in the State's XI Five Year Plan (2007-12). This included capacity addition of 3,270 MW by TANGEDCO of which 2,500 MW capacity was planned through thermal power stations. However, the actual capacity addition by the end of 2011-12 was a meagre 266 MW out of which TANGEDCO's share was only 112 MW which were from hydel and gas based power stations. The capacity addition of TANGEDCO increased to 712 MW after commissioning of 600 MW Mettur Thermal Power Project (MTPP) in October 2013. Thus, the actual capacity addition was far less than the requirement. A table indicating projects identified for capacity addition by TANGEDCO during the XI Plan Period and the actual addition is given in **Annexure-9**. As a consequence, the power deficit which was 1,826 MUs at the close of 2007-08 increased to 16,141 MUs in 2012-13. As estimated by CEA, the deficit would further increase to 26,442

¹⁸ The entity is referred to as TNEB upto 31 October 2010 and as TANGEDCO thereafter.

¹⁹ At 80 *per cent* Plant Load Factor (PLF) as per Tamil Nadu Electricity Regulatory Commission's (TNERC) norms.

MUs by the end of 2013-14.

Audit Framework

Scope and methodology of Audit

2.3 During the XI Plan period of 2007-12, TANGEDCO planned to take up four thermal projects of 2,500 MW capacity, but actually took up only two thermal projects viz., North Chennai Thermal Power Project Stage-II (2 X 600 MW) (NCTPP) and MTPP Stage-III (600 MW). The contract for Unit-I of NCTPP (600 MW) was awarded (January 2008) to the sole bidder viz., M/s BHEL selected through International Competitive Bidding (ICB) for Engineering, Procurement, Commissioning (EPC)-cum-Finance contract for a price of ₹2,475 crore. Subsequently, TANGEDCO also awarded (June 2008) the contract for Unit-II of NCTPP (600 MW) to BHEL on nomination basis for a price of ₹2,175 crore considering the savings in time in execution of the project and the benefits of common spares for both the projects. The contract for MTPP (600 MW) was awarded (June 2008) to M/s BGR Energy Systems (BGR) selected through the ICB route for EPC contract for a price of ₹3,100.06 crore. All the three contracts had a duration of 39 months. The stages of implementation of the projects are given below:

Activity/Milestone	NCTPP Unit-I	NCTPP Unit-II	MTPP
Date of approval by BOD	December 2005	June 2008	June 2006
Date of award of the contract	January 2008	June 2008	June 2008
Scheduled date of completion	May 2011	November 2011	September 2011
Stages of completion by the end of December 2013	On trial run from July 2013	On trial run from December 2012	Commercial operation achieved in October 2013
Anticipated date of completion	January 2014	January 2014	---
Time overrun with reference to the actual/anticipated date of completion	31 months	25 months	24 months
Approved cost of the project (₹ in crore)	3,095.29	2,718.75	3,550.04

Activity/Milestone	NCTPP Unit-I	NCTPP Unit-II	MTPP
Latest revised cost (₹ in crore)	3,552.38	2,813.58	3,550.04
Increase in cost excluding Interest During Construction (₹ in crore)	457.09	94.83	Nil ²⁰

From the above table, it could be seen that MTPP achieved the commercial operation in October 2013 and the two units of NCTPP were under trial run from December 2012 (Unit-II) and July 2013 (Unit-I). The projects have already suffered time over run of more than two years and the cost of the project increased by ₹551.92 crore. In addition, the Interest During Construction (IDC) borne by TANGEDCO increased from the estimated level of ₹1,110.22 crore to ₹1,690.81 crore as of March 2013.

Apart from the above, TANGEDCO planned capacity addition of 1,500 MW through two thermal projects at Ennore Thermal Power Station (ETPS) expansion and Tuticorin Thermal Power Station (TTPS) Expansion. TANGEDCO also entered into a Joint-Venture Agreement (JVA) with BHEL and formed (December 2008) a JV company “Udangudi Power Corporation Limited”. However, these thermal projects did not materialise and the JVA with BHEL was terminated (March 2013). As the planned increase in own generation of TANGEDCO was mainly from the thermal projects at NCTPP and MTPP, audit took up the Performance Audit of three units of these two thermal power projects from April to August 2013.

The Performance Audit covered the areas of Planning and Financial arrangement, Award of contracts, Project Implementation and Monitoring by TANGEDCO. The audit methodology involved scrutiny of planning files and policy decisions at the Government level and the Headquarters office of TANGEDCO and scrutiny of records at the project offices at NCTPP and MTPP. The audit methodology consisted of explaining the audit objectives, criteria, scope *etc.*, to the Management in an Entry Conference held on 3 April 2013, interaction with the personnel of audited entity and analysis of data with reference to audit criteria and issue of draft Performance Audit report to the Management.

Audit Objectives

2.4 The objectives of Performance Audit were to assess whether:

- plans for capacity addition were formulated considering demand forecast of power and were in line with National/State Policy;
- contractors for executing the projects were selected as per laid down policies and were awarded at the best competitive rates;
- projects/contracts were managed efficiently and effectively at all stages;

²⁰ Revised cost does not include the following pending additional claims totalling ₹120.03 crore, *viz.*, site grading – ₹17.46 crore, auxiliary steam works – ₹2.73 crore, Foreign exchange variation – ₹80 crore, additional cost of generation for extended trial run period – ₹5.19 crore and railway siding work – ₹14.65 crore.

- adequate monitoring mechanism and Management Information System existed to monitor activities at all levels.

Audit Criteria

2.5 Audit criteria were sourced from the following:

- National Electricity Policy, National Electricity Plan, CEA guidelines;
- Regulations/Orders of Central Electricity Regulatory Commission (CERC) and Tamil Nadu Electricity Regulatory Commission (TNERC);
- Acts relating to Environmental laws;
- Standard procedure for award of contracts;
- Minutes of Meetings of BOD and committees of TANGEDCO.

Audit Findings

2.6 The audit findings were reported to TANGEDCO and the Government in October 2013 and discussed in the Exit Conference held on 3 December 2013. The Exit Conference was attended by the CMD, Director (Projects) and Director (Finance) of TANGEDCO. The Government replied to the Audit findings on 2 December 2013. The views expressed by TANGEDCO in the Exit Conference and the reply of the Government were considered while finalising the Performance Audit Report. Audit findings are discussed under four headings *viz.*, Planning and financial tie-up, Award of contracts, Project implementation and Project monitoring.

Planning and financial tie-ups

Delay in Pre-order activities

2.7 Timely completion of pre-order activities, *i.e.*, from project conceptualisation upto issue of work orders ensures that the projects are completed as scheduled. Audit noticed that TANGEDCO did not formulate any pre-order criteria, laying down activity wise schedules for each pre-order activity and took 28 months for finalising investment approval after getting administrative approval for the ongoing projects (**Annexure-10**). Audit analysis of the time overrun revealed the following:

Non-adherence of Central Electricity Authority's guidelines

2.8 As per the existing guidelines (March 2005) of the CEA, generating companies may invite bids under International Competitive Bidding (ICB) specifying a range of the unit size such as (500 *plus 20 per cent*) MW instead of specifying the unit size as 500 MW to get competitive bids from large number of manufacturers. The CEA's guidelines further stipulated that inputs like coal and water needs to be tied up and environmental clearance obtained for the maximum size of the project specified in the range.

Audit noticed that TANGEDCO was not aware of CEA's guidelines when it approved the proposal (December 2005/June 2006) to execute the 1 X 500 MW NCTPP (Stage-II) and MTPP Stage-III under EPC contract. It became aware of the CEA's guidelines only in February 2007 and adopted the same for enhancement of the plant capacity of both the projects to (500 MW

plus 20 per cent) in February/October 2007. Thereafter, the contracts for 600 MW projects were finalised during January/June 2008. Thus, failure to adhere to CEA's guidelines on size of the thermal projects led to an avoidable delay of more than one year to decide the capacity and mode of execution of the projects. Further, TANGEDCO did not arrange coal linkage and finance for the maximum enhanced capacity of 600 MW initially as per the guidelines of CEA which led to short fall in arrangement of indigenous coal and additional financial commitment for MTPP which are discussed in the subsequent paragraphs.

The Government replied (December 2013) that considering the major issues like environmental clearance, coal linkage, commitment for water supply, *etc.*, time taken for these pre-order activities was found reasonable. The fact, however, remained that after the project was approved by TANGEDCO in December 2005 and June 2006, the size of the project was firmed up only in February/October 2007. The delay was attributable to TANGEDCO's indecision about the size of the project and hence was unreasonable. Moreover, as per the guidelines of CEA, TANGEDCO was required to arrange infrastructure facilities required for the maximum size of the project.

Non-synchronisation of water facility

2.9 TANGEDCO had permission from Public Works Department (PWD) for drawal of 76 cusecs of water from river Cauvery for the existing Mettur Thermal Power Station (MTPS). Out of this permitted quantity, MTPS had been drawing water to the extent of 43 cusecs from September 1981 onwards. Subsequently, the Government accorded permission (November 2006) to TANGEDCO to utilise the balance quantity of 33 cusecs for the proposed MTPP. Even though permission of PWD was to be obtained by TANGEDCO for construction of a leading channel for drawal of water exclusively for MTPP, TANGEDCO included the work of construction of leading channel in the scope of BGR without obtaining the required permission from PWD. As per schedule, the work was to be completed by BGR by January 2010.

In the meantime, TANGEDCO became liable to pay arrears of ₹14.46 crore to PWD from May 1991 to March 2008 due to revision of royalty charges for drawal of water from ₹60 to ₹500 per 1,000 m³ from May 1991. Non-payment of arrears of royalty charges became a bottleneck as PWD authorities refused (July 2011) permission to BGR to carry out the leading channel work in the PWD's permitted area near river Cauvery. Consequently, the work was stopped between July 2011 and May 2012 by BGR and was resumed thereafter after an amicable settlement for payment of the arrears in instalments was reached (April 2012). Though the commercial operation of MTPP commenced by October 2013, the construction of leading channel work was completed only upto 30 *per cent* by that time which implied that the dedicated water supply for the plant has not been arranged till date (December 2013).

The Government replied (December 2013) that though the site for construction of raw water intake was handed over to BGR in June 2008, the methodology and drawings for water channel was submitted by them only in May 2011, *i.e.*, after a delay of 35 months. During the exit conference, the CMD of TANGEDCO stated that the above work was not a critical activity. These

replies were not convincing because the dispute on settlement of water dues with PWD was pending from June 2008 onwards. Without resolving the dispute with PWD independently, TANGEDCO shifted the responsibility of obtaining permission for drawal of water to BGR which led to over all delay of four years.

Detailed Project Report (DPR)

2.10 Preparation of accurate DPR is a critical activity in planning new projects. Audit noticed that TANGEDCO awarded (September 2006) preparation of DPR of both the projects with capacity of 500 MW each. After enhancement of the project size from 500 to 600 MW and after issue of Letter of Acceptance for both the projects between January and June 2008, TANGEDCO prepared the revised DPRs (between March and July 2008) to suit the requirements of 600 MW power projects.

As per the guidelines (April 1992) of Planning Commission, GOI for preparation of feasibility reports for power projects, the DPR was to be prepared before tendering/contracting of projects. However, Audit noticed that in respect of MTPP, the DPR was prepared (May 2008) after receipt of bids (March 2008) and that specifications given in the DPR were matching a bidder's quotation. To illustrate, the technical parameters for the major equipments, mentioned in the revised DPRs, was the same as quoted by a bidder and the make and model of steam generator, steam turbine mentioned by a bidder were also tallying with the make and model mentioned in the DPR. This indicated that the DPR did not assess independently the technical requirements for the project before tendering as envisaged by the Planning Commission.

Due to delay in preparation of revised DPR for the 600 MW MTPP, finance for the project was arranged from Power Finance Corporation (PFC) in two instalments instead of in one instalment as discussed in detail *vide* Paragraph 2.14.

Coal linkage

2.11 Coal requirement for the thermal projects is allotted by the Ministry of Coal (MOC), GOI through the Letter of Assurance (LOA) for coal linkage based on the implementing agency's applications. As per the conditions of LOA, the implementing agency should achieve the critical milestones mentioned in the LOA within 24 months of its issue, failure of which would attract furnishing of additional commitment guarantee. This LOA was to be followed by a Fuel Supply Agreement (FSA) between the implementing agency and MOC after achievement of all the milestones mentioned in the LOA or based on an assurance by the implementing agency to achieve the Commercial Operation Date (COD) within the stipulated time. Failure to achieve COD would attract imposition of penalty by MOC.

Based on the approval of MOC (December 2006) for coal linkage for both the projects from Mahanadi Coalfields Limited (MCL) at the rate of 2.31 million MT *per annum*, MCL issued LOA (October 2010)²¹.

²¹ MCL issued LOA in March 2007 and modified the same in October 2010 consequent on enhancement of plant capacity to 600 MW for both the projects.

Audit observed that:

(i) As per commitment given in FSA in respect of MTPP, COD should be achieved by the end of December 2012. Similarly in respect of NCTPP Units I & II, COD should be achieved by the end of June 2013 and August 2013 respectively. As COD for MTPP was not achieved till September 2013 and for NCTPP Unit-I & II till December 2013, the liability towards penalty as per the conditions of LOA has already accrued to the tune of ₹2.78 crore²².

The Government replied (December 2013) that since the COD of MTPP was achieved on 12 October 2013 and was expected for NCTPP in January 2014, the penalty may not be finally levied. The fact was that the accrual of penalty for non-achieving the COD was as per the terms of FSA, whereas the waiver is at the discretion of MOC which is yet to be made (December 2013).

(ii) The FSA between TANGEDCO and MCL was signed in December 2012. As per CEA's guidelines of March 2005, the implementing agency had to arrange the coal linkage required for the maximum plant capacity, even before tender finalisation. However, TANGEDCO had initially obtained (March 2007) coal linkage of 2.31 million MT *per annum* for 500 MW project and sought (July 2008) for additional linkage for 100 MW only in July 2008 consequent on revision of plant size to 600 MW.

Audit observed that the modified LOAs received (July/October 2010) from MCL indicated the revised capacity of the units as 600 MW, but there was no corresponding increase in allotment of coal and the linkage of 2.31 million MT *per annum* given for a 500 MW project remained unchanged. Thus, TANGEDCO failed to initially apply for coal linkage for maximum plant capacity of 600 MW as per the guidelines of CEA, which resulted in linkage of coal obtained from MOC for 500 MW capacity. This implied that TANGEDCO would be dependent on imported coal for additional capacity of 100 MW each for both the projects.

During the exit conference, the CMD of TANGEDCO stated that the additional coal linkage was the prerogative of MOC. The fact, however, remained that TANGEDCO did not obtain coal linkage for the maximum plant capacity at the initial stage itself, which resulted in shortfall in coal linkage mentioned above.

Cost estimation, Investment approval and Project financing

Cost Estimation

2.12 As per the estimate (2009) of CERC, the normative cost of construction of a coal based thermal project was ₹4.39 crore per MW. Compared to this estimate, the approved cost of two thermal projects (excluding IDC) by TANGEDCO ranged between ₹5.33 crore (NCTPP-Unit I)²³ and ₹5.23 crore per MW (MTPP). Thus, the excess cost above the normative cost of CERC worked out to ₹1,068 crore for both the projects (**Annexure-11**).

²² NCTPP Unit-I ₹0.20 crore, NCTPP Unit-II ₹0.51 crore and MTPP – ₹2.07 crore.

²³ Unit II of NCTPS not considered as it was taken up on the basis of *suo motu* offer from BHEL.

Financing of the projects

2.13 The guidelines of National Electricity Plan (NEP), 2007 stated that competitive bids for supplies and services may not include financing packages from manufacturers/suppliers as it is likely to reduce competition among the bidders and that financing arrangement for project could be separately done through financial institutions. However, TANGEDCO deviated from the guidelines of NEP and decided (June 2007) to invite global tenders for NCTPP on EPC-cum-Finance basis. In this connection, Audit observed that:

- As per the Memorandum of Understanding (MOU) entered into (April 2007) between Rural Electrification Corporation (REC) and TANGEDCO, REC would extend financial assistance of ₹16,000 crore for investment in various projects. By the end of June 2008, though there was unavailed portion of REC finance to the extent of ₹5,151.97 crore, TANGEDCO instead of availing the above funds, decided to invite global tenders on EPC-cum-finance basis.
- The decision to implement the project under EPC-cum-finance mode through BHEL resulted in TANGEDCO losing competitive bids from other bidders capable of executing the project without financial arrangement by themselves.
- As per the offer of BHEL (November 2007), the finance for the project was to be arranged by BHEL at an interest rate of 11 *per cent per annum* fixed for the first five years. However, the project finance arranged by BHEL attracted an interest rate ranging from 11.25 to 12.75 *per cent per annum*. Though BHEL later agreed (December 2009) to bear the additional interest over and above 11 *per cent* as per the terms and conditions of Letter of Acceptance, TANGEDCO did not claim the differential interest which worked out to ₹58.68 crore for the period upto September 2013.

Additional interest burden of ₹58.68 crore was not passed on to BHEL as per the contractual terms.

The Government replied (December 2013) that the tender under EPC-cum-finance was resorted to in order to obtain long term finance for the project. It also stated that the additional interest would be recovered from BHEL after commissioning of the project. The fact remained that the expectation of TANGEDCO to have international competitive terms was belied as only one domestic bidder *viz.*, BHEL had eventually participated in the tender.

2.14 The DPR for MTPP of 500 MW, prepared (September 2006) indicated the estimated cost as ₹2,777.25 crore (excluding IDC). Though TANGEDCO subsequently enhanced the capacity to 600 MW and floated (November 2007) the tender, in line with the CEA's guidelines of 2005, it applied (February 2008) for finance from PFC, indicating the estimated cost as per DPR for 500 MW. After PFC sanctioned (March 2008) project finance of ₹2,221.80 crore at an interest rate of 11 *per cent per annum*, TANGEDCO once again sought (July 2008) additional finance considering the revised cost of ₹3,719.64 crore for the 600 MW capacity project. PFC sanctioned (December 2008) an additional loan of ₹442.20 crore at an interest rate of 13.5 *per cent per annum*.

Obtaining the project finance in two instalments instead of in one led to increase in interest burden by ₹33.16 crore due to revision of interest rate.

As the enhancement of the plant capacity to 600 MW was known to TANGEDCO in October 2007 itself, it should have arranged for finance considering the maximum plant capacity at the time of first application in February 2008 itself and got the interest firmed up at 11 *per cent per annum*. This failure led to sanction of project finance of ₹442.20 crore at an enhanced interest rate of 13.5 *per cent per annum* with commitment towards avoidable additional interest burden of ₹33.16 crore²⁴ for the first three years in which the interest rate would remain constant.

During the exit conference, the CMD of TANGEDCO stated that the size of MTPP was not finalised at the time of applying for finance and hence finance was sought for 500 MW project. The reply was not convincing because the size of the project was actually firmed by the Board of TANGEDCO in October 2007 itself. Moreover, CEA guidelines clearly stipulate that all inputs should be tied up for the maximum size of the project and not for the minimum as was done by TANGEDCO.

2.15 As per conditions of sanctions of project finance both by PFC and REC in respect of NCTPP and MTPP, there would be an interest rebate of 0.25 *per cent* for maintaining commissioning schedule of these units. As there was delay in COD of all the three units, interest rebate of 0.25 *per cent* could not be availed to the extent of ₹36.14 crore from the scheduled date of COD (May 2011 for NCTPP Unit-I, November 2011 for NCTPP Unit-II and September 2011 for MTPP) upto December 2013.

Award of contracts

2.16 As stated in Paragraph 2.3, BHEL was selected through ICB route for Unit-I of NCTPP and was given the contract for Unit-II of NCTPP on nomination basis, considering the savings in time in execution of the project and the benefits of common spares for both the projects. The EPC contract for MTPP was awarded (June 2008) to M/s BGR Energy Systems (BGR) selected through ICB route for a price of ₹3,100.06 crore. Analysis of the tender files of these contracts revealed the following:

Award of contract to BHEL

2.17 As early as in November 2005, TANGEDCO was aware that 180 acres of vacant land along with coal handling, raw water, ash disposal systems were already existing in NCTPP complex for development of a plant capacity of 2,150 MW. Moreover, a private promoter had already obtained environmental clearance for setting up of two units of 525 MW capacity each in this complex. The GOI introduced (November 1995) Mega Power Policy for providing impetus to large sized power projects in the country which envisaged various incentives such as exemption from Customs and Excise Duties. These benefits would accrue only if the additional capacity of the power project was more than 1,000 MW. Considering all these aspects and the anticipated deficit of 1,464 MW of power by 2010-11, TANGEDCO could have planned for capacity addition of two units at NCTPP. However, it decided (December 2005) to implement the project as a single unit of 500 MW

²⁴ Calculated at the differential rate of interest of 2.5 *per cent per annum* on ₹442.20 crore for three years.

capacity. Subsequently, the size of the unit was increased to 500 MW *plus 20 per cent* in line with the CEA guidelines of 2005. After finalisation of tender for Unit-I of 600 MW in favour of BHEL in January 2008, TANGEDCO received (March 2008) *suo motu* offer from BHEL for implementation of an additional unit of 600 MW by it. Accordingly, TANGEDCO decided (June 2008) to hand over Unit-II to BHEL on nomination basis.

Audit further observed that:

- In a span of few years, TANGEDCO changed its planning from two units of 525 MW each to one of 600 MW and again to two of 600 MW each indicating indecisiveness of TANGEDCO about the size of the project to be executed.
- Though GOI, Ministry of Power accorded (February 2010) the Mega Power Project status to NCTPP, TANGEDCO could not avail the envisaged benefits of exemption from Customs and Excise Duty as GOI rejected (July 2010) the claim of TANGEDCO for these exemptions citing that the Unit-II of NCTPP was not awarded through ICB route.

Both the CMD of TANGEDCO and the Government in their reply stated (December 2013) that the condition *viz.*, award of contract on ICB route for exemption from Customs and Central Excise Duty was introduced only at a later date after award of contract for this project, which could not be foreseen. These replies were not convincing because the possibility of finalising the tender for both the units through ICB routes was pre existing, considering the common infrastructural facilities and environmental clearances, *etc.* If only, TANGEDCO followed the competitive tender process through ICB route for both the units, it could have reaped the benefits of mega size power project.

Project implementation

Time Overrun

2.18 As per Letter of Acceptance of the contract for both the projects, BHEL and BGR were required to commence the project works in February 2008 (Unit-I of NCTPP), August 2008 (Unit-II of NCTPP) and June 2008 (MTPP) respectively and hand over the thermal plants to TANGEDCO in 39 months. Against this schedule, the projects had already suffered time overrun of more than two years as indicated in the **Annexure-12**. Delay in major activities of the projects were due to:

Delay in approval of Drawings

2.19 As per the tender specifications, TANGEDCO had to offer its remarks on the drawings and design documents furnished by the EPC contractors within two weeks from the date of receipt of the drawings. Out of 3,116 drawings for civil, electrical, mechanical and instrumentations works received in respect of NCTPP, there was delay in approval of 282 drawings by TANGEDCO (which constituted 9.05 *per cent* of the total) ranging from 5 to 718 days. The delays were mainly due to multiplicity of decision making agencies within TANGEDCO and joint decision with the consultant.

Similarly, in respect of MTPP, BGR claimed that the project suffered time over run of 6 to 12 months due to the above delays.

The Government replied (December 2013) that the delays were committed by BGR for submission and resubmission of drawings after attending to queries of TANGEDCO. The fact, however, remained that monitoring by TANGEDCO for demanding submission/resubmission of the drawings by the EPC contractors in a time bound manner was not effective.

Delay in furnishing Project Authority Certificate and Essentiality Certificate

2.20 The Export Import (EXIM) Policy 2007-12 of the GOI envisaged levy of 'NIL'/concessional Customs Duty for imported items used by the EPC contractors in the infrastructure projects after registration of the project with the Customs Authorities based on Project Authority Certificate (PAC)/Essentiality Certificate (EC)²⁵ issued by the implementing agency. Though the Letter of Acceptance for Units-I & II provided for issue of the PAC and EC by TANGEDCO, it did not specify the time limit for issue of the said certificates. Audit noticed that TANGEDCO delayed furnishing the above certificates by 12 and 22 months respectively from the date of Letter of Acceptance. As a result, BHEL could not register the project with the Customs Authorities for claiming the exemptions in time, which resulted in delayed supply of equipment like boiler, turbine, *etc* and consequent delay in erection of these equipment as stated in **Annexure-12**.

The Government replied (December 2013) that the PAC/EC was furnished by TANGEDCO as and when such request was made by BHEL. The fact, however, remained that TANGEDCO was not pro-active in getting the PAC/EC in time.

Ambiguity in tender specification

2.21 The tender for EPC Contract of MTPP stipulated that the project facilities for coal handling should include "suitable augmentation of the existing railway siding and marshalling yard facilities at Mettur Thermal Power Station". During the pre-bid meeting (January 2008), TANGEDCO clarified that the augmentation of railway siding facilities was required to accommodate 20 coal wagons on the inhaul side²⁶ of the proposed wagon tippers²⁷. However during July 2009, the Railway authorities advised that both inhaul and outhaul lines of tippler lines should be able to hold 30 box wagons *plus* a diesel loco to ensure guaranteed receipt of raw material and capacity improvement on a long term basis. The Railway authorities further advised TANGEDCO to have discussions with them on this issue before finalisation of the proposals. Despite the above instructions from Railways, TANGEDCO decided (December 2009) on its own that the track's handling capacity would be restricted to accommodate only 20 wagons due to space constraints. Later on, however, based on the insistence of Railway authorities for a handling capacity of 30 wagons, TANGEDCO issued (June 2012)

²⁵ Essentiality Certificate is issued to EPC contractors, who were not selected through ICB routes.

²⁶ The receiving point of the coal wagon.

²⁷ The mechanical device which would unload coal from the coal wagons.

change of scope order to BGR for accommodating 30 wagons at a cost of ₹14.65 crore with time extensions upto September 2012. As of December 2013, the work remained incomplete.

Audit observed that TANGEDCO failed to ascertain the actual requirement of wagons from the Railway authorities before finalisation of the tender specifications. Even after knowing (July 2009) from Railways the actual requirement of facilities for handling 30 wagons, it went ahead with facilities for 20 wagons only resulting in forced stoppage of work from April 2010 to June 2012. In the meantime, the estimated cost of work increased from ₹10.94 crore to ₹14.65 crore, which led to an avoidable cost escalation of ₹3.71 crore.

The Government replied (December 2013) that the change of scope order issued in the interest of TANGEDCO was an unavoidable one. The reply was not convincing because TANGEDCO had direct information about the requirement for 30 wagon capacity in July 2009 from Railways itself, but it ignored the same till June 2012 which resulted in avoidable delay and cost escalation as discussed in the above paragraph. Moreover for a project of this size, co-ordination with all the stake holders is imperative.

Non-adherence to the conditions regarding environmental clearance

2.22 As per the conditions (September 2007) governing environmental clearance for MTPP issued by Ministry of Environment and Forests (MOEF), GOI, there shall be zero discharge outside the plant boundary and the treated effluents shall be re-circulated within the plant boundary. The tender specifications, however, stipulated (November 2007) that waste water from all the sources in the power plant area would be collected and as far as possible used for green belt development within the plant area and the excess water, if any, would be discharged into the nearby stream. The tender also stated that all the MOEF stipulations should be complied with by the contractor. Thus, there were inherent contradictions between the MOEF requirement and the ambiguous tender specification.

The tender specification for effluent treatment deviated from pollution control norms of MOEF.

When BGR demanded (February 2013) extra time of six months and cost (without mentioning the amount) for execution of the Effluent Treatment Plant as stipulated by MOEF, TANGEDCO refused (February 2013) the change of scope and directed BGR to proceed with installation of effluent treatment facilities as per the terms of contract. Audit observed that TANGEDCO failed to incorporate the requirement of MOEF in exact terms in the tender specification. The present decision to proceed with effluent treatment as per the tender specification would imply that TANGEDCO would be deviating from the pollution control norms of MOEF.

The Government replied (December 2013) that the non-compliance with statutory requirements was due to mis-interpretation of the contract clause by BGR, who insisted on change of scope for adhering to the statutory requirements. The fact, however, remained that such mis-interpretation was only due to ambiguity in the tender specification and contract clauses.

Incorrect choice for bottom ash handling system

2.23 Combustion of coal in thermal generation plants generates ash. The finest particle of ash which is known as 'top ash' is in dry form and the ash containing sediments of coal is known as 'bottom ash' which needs further combustion for conversion into dry form. As disposal of ash in dry form is easy and environmentally friendly, the MOEF stipulated (1999) that every coal or lignite based thermal power plant should draw an action plan to phase out dumping and disposal of fly ash on land. In line with this policy, both the DPR and tender specifications for NCTPP Units I & II envisaged establishment of ash handling system for extraction of ash only in dry form. As per notings (June 2010) of TANGEDCO, the extraction of fly ash including bottom ash in dry form not only conforms to the Pollution Control norms but also reduce coal consumption due to heat recovery from the bottom ash, generates additional income by disposal of the dry ash to the cement companies and saves usage of raw water for disposal of ash in semi-wet conditions.

TANGEDCO lost opportunity of earning revenue of ₹14.15 crore per annum due to installation of bottom ash handling system in semi wet form instead of in dry form.

Despite the above advantages, the work for bottom ash handling system given (January/June 2008) to BHEL for Units I and II provided for semi-wet system of extraction as proposed by BHEL instead of dry system.

Audit observed that as per TANGEDCO's own estimation, the extraction of bottom fly ash in dry form would fetch additional revenue of ₹14.15 crore per annum on account of disposal of fly ash to cement companies, lesser usage of coal etc. Due to its acceptance of semi-wet system instead of dry system for bottom ash handling, TANGEDCO lost an opportunity of earning this additional income.

Delay in installation of ash handling system

2.24 As per the contract entered into with BHEL, the ash handling system for NCTPP was to be completed by December 2010. However, the completion was delayed due to the delay in award of contract, subsequent delay in submission of drawings and slow progress of works by the sub-contractor, etc. Consequently, the work was completed only partially²⁸ in February 2013. The Unit-II of NCTPP which was synchronised in December 2012 was operated with the partial load of 200 to 400 MW during the summer period to tide over the power deficit. During this period, the unit could not use coal as main fuel due to non-readiness of the ash handling system and had to be dependent on High Speed Diesel (HSD) and Heavy Furnace Oil (HFO) to generate steam. The additional cost of using HSD and HFO during March to May 2013 worked out to ₹63.71 crore.

Due to non-readiness of the ash handling system, the excessive usage of oil to generate steam led to additional expenditure of ₹63.71 crore.

The Government replied (December 2013) that sustained operation in NCTPP was possible only when heavy oil was used as a support fuel and hence additional expenditure was inevitable. Audit has already considered the usage of heavy oil as support fuel and has commented only on the extra usage of oil which was due to non readiness of the ash handling system.

²⁸ Against six silos (temporary storage facility) required for ash collection, only four silos have been completed.

Delay in award of contract for ash disposal

2.25 TANGEDCO called for (August 2012) tenders from cement companies for lifting the dry fly ash of NCTPP Unit-II and finalised the tender in January 2013. However, it actually awarded the work order to two cement companies in April/May 2013. In the meantime, the 26,750 MT of dry fly ash generated during the trial run operation was dumped in an ash dyke located seven KMs away from the main plant and TANGEDCO incurred an expenditure of ₹0.73 crore for such disposal. Audit observed that had TANGEDCO awarded the contract for lifting of fly ash immediately after finalisation of the tender, it could have not only avoided the expenditure of ₹0.73 crore but also earned a possible revenue of ₹1.67 crore by selling the dry ash to cement companies.

The Government replied (December 2013) that the disposal of ash during the pre-commissioning period in the ash dyke was necessary as it would contain traces of unburnt carbon and oil which would not be usable by the cement companies. The reply was not convincing because the unit continued to be under trial run till date (December 2013) whereas the cement companies started lifting the dry fly ash after they received the work order in April/May 2013. Had TANGEDCO issued the work orders for lifting of fly ash immediately after the synchronisation of the unit, it could have avoided the additional expenditure and earned the possible revenue.

Support services

Coal handling arrangements

2.26 Coal requirements for the existing units of North Chennai Thermal Power Station (NCTPS), Ennore Thermal Power Station (ETPS) and MTPS are met through indigenous and imported coal, which are transported from various sources to the Ennore Port. The Ennore Port has two dedicated coal berths for TANGEDCO. The coal discharged from the coal berths is transported to the existing thermal stations of NCTPS, ETPS and MTPS.

Deficient port infrastructure

2.27 To meet the additional requirement of 8.16 million MT of coal *per annum* for both NCTPP/MTPP, TANGEDCO proposed (March 2007) construction of third dedicated coal berth of nine million MT capacity *per annum* (in addition to the existing two coal berths of 12 million MT capacity *per annum*). The work which was proposed to be taken up during 2013-14 by Ennore Port Limited (EPL) on "Build Own Operate Transfer" basis has not commenced till date (December 2013). In addition, TANGEDCO assigned (September 2010) installation of shore unloaders for the existing two coal berths to one of its joint venture company *viz.*, NTEC Limited and the work is expected to be completed only by 2015-16. Pending installation of the third coal berth and shore unloaders, TANGEDCO entered into (January 2013) an agreement with Chettinad International Coal Terminal Private Limited (Chettinad) for usage of their coal terminal for one year from the COD of NCTPP and MTPP with annual financial commitment of ₹6.55 crore *per annum* as a contingency measure.

Audit observed that the availability of a dedicated third coal berth would have ensured uninterrupted supply of coal to thermal stations besides lesser turnaround time for ships for unloading of coal resulting in considerable

savings to TANGEDCO. Though the need for third coal berth along with two shore unloaders was anticipated as early as in March 2007, these works are only in initial stages of implementation till date (December 2013) resulting in the proposed contingency plan with additional commitment of ₹6.55 crore *per annum*. It is pertinent to mention that TANGEDCO had already paid ₹1.05 crore for handling 3.21 lakh MT of coal to Chettinad between September and November 2013.

The Government replied (December 2013) that installation of additional coal berth was delayed due to an interim injunction imposed by the High Court of Madras in July 2010, which was vacated in September 2011. The fact, however, remained that even after the lapse of two years from the vacation of stay, the work was at the initial levels of implementation.

Delay in completion of additional coal conveying arrangement

2.28 TANGEDCO earmarked (June 2008) ₹50 crore for installation of conveying arrangement for an additional quantity of 16 million MT of coal *per annum* for the upcoming NCTPP and MTPP. The arrangement was scheduled to be completed in February 2011 *i.e.*, well before the anticipated completion of these thermal projects. However, the tender for this work was initiated only in September 2010 and contract awarded in February 2011 at a lumpsum price of ₹71.50 crore. Though the work was scheduled to be completed in February 2012, the work remained incomplete till date (December 2013). In the meantime, four extensions of time were given to the contractor, the latest one upto December 2013. Audit observed that:

- Delay of 26 months upto September 2010 for initiating the tender was attributable to the inaction on the part of TANGEDCO as the study on the capacity of the coal conveying arrangement was undertaken by it only in March 2010. In the meantime, there was an avoidable cost escalation of ₹21.50 crore.
- The contractor who was expected to complete the project in February 2012 has been given continuous extensions of time upto December 2013 with probable completion by January 2014. Thus, the coal handling system which was considered as one of the critical milestones of the project remained incomplete till date (December 2013).

The Government replied (December 2013) that TANGEDCO was taking all possible steps to commission the additional coal conveying arrangements before operation of NCTPP at full load.

Non adherence to environmental and pollution control requirements

2.29 As per the consent letter (March 2013) of the Tamil Nadu Pollution Control Board (TNPCB), the NCTPP should utilize only the existing sea water intake and disposal structures already provided for the NCTPS-Stage-I. In case of a need for erection of any new sea water intake or disposal structure, the same shall be established only after getting clearance under the Coastal Regulatory Zone (CRZ) Notification, 2011.

It was, however, seen that

- The work of construction of intake sea water channel for NCTPP was completed (February 2013) without obtaining permission from CRZ/Pollution Control authorities.
- The construction of sea water intake channel was completed in February 2013 with a delay of 25 months from the scheduled date of completion. In the meantime, TANGEDCO allowed six extensions of time to the contractor. Though the contract envisaged levy of LD at the rate of half *per cent* for every week of delay subject to a maximum of 10 *per cent* (₹9.81 crore) of the contract price (₹98.10 crore), the Chief Engineer (Projects) imposed (February 2013) only ₹1.19 crore towards LD and proposed waiver of the balance amount of ₹8.62 crore on the grounds that there was no loss on account of the delay committed by the contractor. Audit observed that the waiver proposal was not approved by the BOD till date (December 2013) as required under the delegation of financial powers.
- TNPCB issued consent order (19 March 2013) with a condition to discharge effluents partly on land and partly into sea through Ennore creek. The condition also required that the effluent discharge should not contain constituents in excess of the tolerance limits of pollution control. Though Unit-II was on trial run in December 2012 and Unit-I in July 2013, the civil works of the effluent treatment plant was completed upto 60 *per cent* only by the end of November 2013, though it was considered essential for segregation of oil waste.
- An Environment Management Cell and Disaster Management Plan which is mandatory as per the conditions of TNPCB has not yet been put in place in NCTPP till date (December 2013).

Project monitoring

2.30 While taking up the two projects for execution, TANGEDCO decided (June 2008) that a dedicated project monitoring team would be formed to avoid delays on its part. The monitoring team would also report the delays on the part of the EPC contractors and disputes for amicable solutions since timely execution of the projects was TANGEDCO's immediate requirement.

Audit noticed that:

- A dedicated Project Monitoring Team was not constituted as envisaged both for MTPP and NCTPP.
- Common problems in execution of the projects like obtaining clearances from various authorities such as environment, PWD, railways *etc.*, were not addressed in time leading to avoidable delays.
- Adequate staff to monitor the projects at the Headquarters and site were not deployed at the initial stages of project execution.
- Drawings and specifications returned to the EPC contractors for revisions were not monitored leading to delays in completion of detailed engineering/drawings.
- The Project Monitoring Information System for managerial planning though included in the scope of work of the EPC contractors was not implemented by the contractors till date (December 2013).
- Analysis of six important activities in execution of the main plant of both the projects revealed that the monitoring mechanism did not ensure timely completion of these activities and there were delays ranging from two to five months in commencement of boiler erection, three to nine months for boiler drum lifting, 6 to 30 months for boiler hydraulic test and 10 to 24 months for boiler light up. Similarly, there were delays ranging from 9 to 30 months in turbine bearing gear completion and 9 to 30 months for synchronisation of the units with the grid as detailed in **Annexure-12**.

The Government claimed (December 2013) that the project construction activities were monitored by the respective site Chief Engineers and for speeding up the project implementation, regular review meetings at Government and CMD level were held. The fact, however, remained that despite the above arrangements, the project implementation was delayed due to avoidable reasons as discussed in the earlier paragraphs. A dedicated project monitoring team would have been more effective as envisaged.

Impact analysis

2.31 Analysis in audit to assess the impact of delayed project execution are discussed below:

- As per the projections made in the DPR, these projects would generate 11,731 MU of energy *per annum*. However, the projects were delayed for a period upto 25 months from the scheduled completion due to various reasons as discussed in the previous paragraphs. The delays in completion of these thermal units of a capacity of 1,800 MW had deprived the State of TANGEDCO's own generation to the extent of 22,557 MUs which led to purchase of power from other sources (**Annexure-13**).

The delays in completion of the thermal units deprived the State of own generation to the extent of 22,557 MUs.

TNERC rejected return on investment of ₹74.56 crore due to diversion of capital for revenue expenditure by TANGEDCO.

- As per Regulation 17(5) of the Tariff Regulations 2005, the licensee company has to get the capital investment plan approved by TNERC before filing an application for determination of the tariff. Though TANGEDCO had invested ₹6,365.96 crore on NCTPP Units I & II till date (December 2013), it had not got approval of TNERC for such investments before filing the tariff application nor had apportioned the investments into equity and borrowings. It however, submitted (March 2013) tariff petition to TNERC claiming an amount of ₹1,065.09 crore as equity investment in MTPP and return on equity of ₹74.56 crore during 2012-13. But TNERC observed that there was a mix up between capital and revenue accounts and capital borrowings have been diverted to meet the revenue expenses and disallowed (June 2013) the return on equity. Thus, TANGEDCO had been deprived of the recovery of return on capital employed in respect of MTPP through tariff from the consumers.

The Government replied (December 2013) that TANGEDCO would once again claim return on equity in its revised Tariff Petition for the year 2012-13.

- As per the contractual terms of MTPP, maximum LD of 10 *per cent* of the contract price and penalty at ₹107 crore per month of delay was to be levied. In respect of NCTPP, the penalty was to be at the rate of 0.5 *per cent* for each week of delay from 40th to 43rd month and at 0.75 *per cent* during 44th and 45th month and one *per cent* beyond the 45th month without any ceiling provided these delays were attributable to the EPC Contractors. However, TANGEDCO allowed several Extensions of Time (EOT) for both the projects without fixing responsibility for the delays either on itself or on the EPC contractor and without deciding the impact of such EOTs on time and cost over runs of the project. While BHEL was allowed blanket EOT without any time limit, BGR was given the latest EOT upto December 2013. Though an amount of ₹7,418.07 crore was leviable as LD and penalty as per the contractual provisions till September 2013 in respect of MTPP and upto December 2013 in respect of NCTPP (as indicated in **Annexure-14**), TANGEDCO had already released 82 *per cent* of the total amount due to the contractors and the balance amount retained was only ₹2,188.67 crore (September 2013). Under the circumstances, recovery of the LD/penalty as per the contractual terms as and when decided is uncertain.

The Government replied (December 2013) that the extensions of time were given without prejudice to the levy of penalty. The fact, however, remained that TANGEDCO was yet (December 2013) to initiate action for levy of LD even after noticing delay of more than two years in respect of NCTPP project and after commissioning of MTPP in October 2013.

Acknowledgement

Audit acknowledges the co-operation and assistance extended by the staff and the management of the Company in conducting this Performance Audit.

Conclusion

- TANGEDCO, with the main aim of overcoming the critical power deficit situation in the State, planned addition of 3,270 MW of power by 2012. Accordingly, it took up two thermal projects with a capacity of 1,800 MW at NCTPP Units I and II and MTPP. Though these projects were slated for completion before the end of 2011, only MTPP has been completed by October 2013 and the other two units of NCTPP in which TANGEDCO had already invested more than ₹6,300 crore are under trial run till date (December 2013).
- Delay of more than two years in completion of these projects was due to (i) planning deficiencies such as not firming up the size of the projects and mode of execution, non-synchronisation of water facility, etc., and (ii) delays in implementation of projects on account of delay in approval of drawings, issue of Project Authority Certificate/Essentiality Certificate and stoppage of work for more than two years due to incorrect tender specifications for railway siding. Delays in coal handling and ash handling systems were also noticed.
- The project monitoring was deficient as dedicated project monitoring team was not constituted as envisaged for both the projects and the project monitoring information system for managerial planning included in the scope of work of EPC contractors was not implemented till date.
- Despite delays in project execution, TANGEDCO did not fix the responsibility for the delays either at its end or on the EPC contractors and allowed periodical extensions to the contractors.
- The delays in completion of the thermal units of 1,800 MW capacity deprived the State of TANGEDCO's own generation to the extent of 22,557 MUs which led to purchase of power from other costlier sources.

Thus, TANGEDCO's efforts to augment its own generation even during power critical situation was inadequate.

Recommendations

TANGEDCO should:

- **Have a plan for pre-order activities to avoid delays in project implementation.**
- **Ensure that the tender specifications are accurate and realistic to avoid post-tender modifications.**
- **Avoid delays in approval of drawings and designs to expedite project implementation.**
- **Comply with the environmental norms in disposal of the effluents discharge from the thermal units.**
- **Expedite implementation of supporting facilities such as coal handling, port infrastructure, water arrangement, *etc.*, to attain the maximum generation of power from thermal plants.**
- **Regularly monitor the progress of the project to ensure implementation as per schedule.**
- **Analyse the reasons for the delays to fix responsibility.**