

## CHAPTER-III

### Compliance Audit Observations

Important Audit findings, noticed as a result of test check of transactions of the State Government companies are included in this Chapter.

### Tamil Nadu Industrial Development Corporation Limited

#### 3.1 Loss of revenue

#### The Company suffered a loss of ₹ 46.65 crore due to non-collection of service charges as per Joint Venture agreement

Tamil Nadu Industrial Development Corporation Limited (Company) entered (April 2008) into a Joint Venture (JV) agreement with Larsen & Toubro Limited to form a ship building company viz., L&T Ship Building Limited (LTSBL)<sup>45</sup>. As per Clause 17 (a) of the JV agreement, the Company would provide certain services to LTSBL against reasonable service charges. It was also agreed that the details of service and quantum of service charges would be determined by a separate service agreement.

As provided under Clause 17 (a) of the agreement, the Company rendered services (between June 2008 and September 2014) in the form of forwarding the applications for statutory clearances such as (i) clearances of Ministry of Environment and Forest, Government of India and Tamil Nadu Pollution Control Board, (ii) obtaining port status under Customs Act and (iii) approval for Special Economic Zone, etc.

However, as stipulated under Clause 17 (a) of the agreement, the Company did not execute the service agreement with LTSBL. Though the reason for not signing the agreement was not explicit in the files, audit scrutiny revealed that the Company after making its first request in September 2008, did not follow-up its request with LTSBL at all in the last seven years till date (November 2016). The Company claimed (April 2016) that its participation in the project was limited to declaring itself as the project promoter. But, the stance taken by the Company was contradictory to its earlier decision to offer these services only on chargeable basis. Consequently, the Company could not collect the entitled service charges for the various services rendered.

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The JV company was to establish and to maintain a ship yard-cum-minor port complex in an area of 1,196 acres in Kattupalli, Thiruvallur district, taken over from the Company.

In this connection, Audit noticed that the Company had been extending similar support services to many JV partners to enable them to obtain necessary statutory clearance/approvals. For rendering such services, the Company had been collecting service charges ranging from one to two *per cent* of the project cost (excluding the value of the land) by signing separate service agreement with JV partners. A comparative statement of services rendered to other JV companies on chargeable basis, *vis-a-vis* services rendered free of cost to LTSBL is detailed in **Annexure-12**. From the Annexure, it could be seen that the service charges actually collected from other JV companies ranged between ₹ 0.34 crore to ₹ 20 crore. However, the Company failed to collect reasonable service charge for the services provided to LTSBL, which resulted in loss of a minimum revenue of ₹ 46.65 crore (at the rate of one *per cent* of the total project cost of ₹ 4,665.38 crore excluding the land cost).

The Government endorsed (August 2016) the Company's views that the relevant applications on behalf of LTSBL were forwarded to declare that the applicant company *viz.*, LTSBL was the JV company of TIDCO. The reply is not convincing because the Company had been rendering similar services to all other JV partners only on this justification, but on chargeable basis. It is pertinent to note that the Board of Directors in the meeting held on 23 September 2016 had directed the Company to explore the possibility of recovering the service charges from LTSBL, which vindicated the audit stand that the service charges were to be collected from LTSBL.

#### **Tamil Nadu Civil Supplies Corporation**

### **3.2 Diversion of PDS paddy**

**Diversion of paddy, procured under Public Distribution System for State Level Scheme resulted in availing of subsidy of ₹ 14.55 crore from the Government of India without entitlement, besides incurring extra expenditure of ₹ 3.19 crore**

The Memorandum of Understanding (MOU) signed (November 2010) between the Government of India (GOI) and the Government of Tamil Nadu from the year 2009-10 onwards contained a clause that the State Government shall not utilise stocks procured for Central Pool under Public Distribution System (PDS) for any other State level schemes. Further, for extension of MOU for the year 2012-13, GOI circulated (August 2012) draft MOU, which also contained the above clause.

As a part of market intervention activities to control the price of rice, the Government of Tamil Nadu, vide G.O. (Ms) No.33 dated 19 March 2013, permitted Tamil Nadu Civil Supplies Corporation (Company) to float tender to purchase 10,000 MT of Fine Rice and sanctioned a sum of ₹ 25 crore from the Price Stabilisation Fund<sup>46</sup>. The procured rice would be sold by the Company

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<sup>46</sup> Price Stabilisation Fund was constituted with the corpus of ₹ 50 crore by the Government of Tamil Nadu on 1 November 2011 as a measure of market intervention, for procuring select commodities that are prone to abnormal price fluctuations from season to season and selling them through co-operative outlets at cost price to the public.

through its dedicated Amudham Departmental Stores and co-operative retail outlets at a sale price of ₹ 20 per Kg. The Company floated (20 March 2013) a short tender for the purchase of 10,000 MT of Fine Rice Grade 'A' (Single Boiled) instead of Fine Rice, as decided earlier, by fixing the date of opening of tender as 27 March 2013. Subsequently, Government of Tamil Nadu directed (22 March 2013) to strictly adhere to the instructions contained in the Government Order dated 19 March 2013 and a corrigendum was issued by the Company on 23 March 2013 by changing the variety to Boiled Rice Fine (Double Boiled Rice)<sup>47</sup>. In response, seven tenderers had participated and three tenders were rejected due to non-fulfillment of the eligibility criteria prescribed in the tender. As per the approval of the Board Sub-Committee, the price bids of the remaining four tenderers were opened on 05 April 2013. M/s Manikanta Agro Tech, Warrangal was found to be L-1 with the quoted negotiated price of ₹ 25.74 per Kg of Double Boiled Rice and the validity of the price offer was up to 30 June 2013. The tenderers had also quoted for Single Boiled Rice, for which also M/s Manikanta Agro Tech was L-1 with a negotiated price of ₹ 28.89 per Kg.

Subsequently, during the meeting held on 23 April 2013, the Government decided to issue good quality of Single Boiled Rice by producing Rice through the Company's Modern Rice Mills (MRMs) from the paddy procured under Kharif Marketing Season (KMS) 2012-13, after cleaning and removing black rice by using sortex machine.

The Company intimated (4 June 2013) the Government that the evaluated landed purchase cost of Single Boiled Rice, based on the tender rate fetched, was ₹ 31.65 per Kg as against the selling price of ₹ 20 per Kg and there would be a loss of ₹ 11.65 per Kg. As an another alternative, the Company proposed for using the paddy procured from the Government of India (GOI) under the PDS and mill the same in its MRMs, which would cost ₹ 34.93 per Kg, stating that there would be no loss/gain considering the subsidy receivable from the GOI and it was concluded that the purchase of rice through tender might not be profitable. Meanwhile, the validity of the tender was over on 30 June 2013 and as such, the Company requested (31 July 2013) the Government for orders for dropping the purchase proposal. However, copy of approval, if any, received in this regard from the Government was not available on record.

Audit noticed that during the period 2012-13 and 2013-14, 15,444.327 MT of paddy procured under PDS was used for obtaining rice of 9,727.071 MT and this was sold in the open market at a sale price of ₹ 20 per Kg, for which subsidy amounting to ₹ 14.55 crore had been availed from the GOI. Subsequently, in April 2015, the Government had asked the Company to get clarification from the Food Corporation of India (FCI) as to whether the paddy procured by the Company could be utilised for the purpose of a State scheme *i.e.*, open market intervention sale. FCI clarified (April 2015) that paddy procured under Central Pool cannot be utilised for State schemes and if utilised, the State Government cannot claim subsidy. Therefore, the Company had now become liable to refund the subsidy amount of ₹ 14.55 crore to GOI, which was wrongfully availed.

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Double Boiled Rice is the superior quality of boiled rice with more refinement.

Audit observed that despite being aware that the paddy procured under Central Pool for PDS cannot be diverted for State schemes as per the clause contained in the MOU entered into with the GOI, the Company diverted (June 2013) the PDS paddy for the State scheme resulting in wrongful availing of subsidy of ₹ 14.55 crore. The Company requested (July 2015 and August 2016) the Government of Tamil Nadu to take up the issue with the GOI to accord permission for repayment of the subsidy claimed and the same was pending (September 2016).

Audit observed that the Company would have incurred an expenditure of only ₹ 31.65 per Kg by procuring the rice directly from the supplier whereas the Company had actually incurred an expenditure of ₹ 34.93 per Kg by using the paddy procured under PDS and processing the same in its MRMs, which incidentally resulted in extra expenditure of ₹ 3.19 crore (₹ 34.93- ₹ 31.65 X 9,727.071 MT). Further, the purpose of creation of Price Stabilisation Fund was also not achieved and the poor people were deprived of PDS rice in the Fair Price Shops to the extent of Rice made out of diverted quantity of paddy.

The matter was referred to the Company and the Government in July 2016; their reply was awaited (November 2016).

### **Tamil Nadu State Transport Corporation (Coimbatore) Limited**

#### **3.3 Avoidable loss of revenue**

#### **Incorrect rejection of a valid tender resulted in loss of potential revenue of ₹ 9.58 crore**

Procurement of materials and services by the State Public Sector Undertakings (PSUs) in Tamil Nadu are regulated by the Transparency in Tender Act, 1998 (Act) and Tender Rules, 2000 (Rules). As per Section 10.3 of the Act, tender accepting authority may negotiate with the lowest/highest tenderer (in case of revenue contracts), if the L-1/H-1 price was more/lower than the market price. In respect of two parts tender, the Rules provide for evaluation of the financial bids only when the bidder was technically qualified. Audit analysis of the management of the advertisement contract by Tamil Nadu State Transport Corporation (Coimbatore) Limited (Company), revealed the following:

In response to the Company's invitation (August 2013) for tenders for display of advertisements on buses for 33 months, two bids (valid for 90 days from the opening of the bids) were received (August 2013). The tender committee opened the technical bids on 11 September 2013 and noted that both the bidders were technically qualified<sup>48</sup> as they had furnished the required certificates for technical qualification. Therefore, the tender committee opened the financial bids on 1 October 2013. The analysis of the financial bids revealed that the rates of M/s. Uni Ads Limited, Thirupathy (Uni Ads), which quoted a rate of ₹ 1,010 per bus per month, was more than the second bidder's

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<sup>48</sup> The technical qualification stipulated that the bidder should be a registered firm and have at least one year experience in advertisement field at the time of participation in the bid.

rate of ₹ 885 as well as the existing contract rate of ₹ 770. However, the committee recommended negotiating with Uni Ads for further increase in the rates. But, Uni Ads expressed (24 December 2013) its inability to increase the rates as it had already quoted the highest bid. However, the Company cancelled (February 2014) the tender attributing that the authenticity of their registration and experience certificates could not be verified during its spot visit to the office of Uni Ads on 17 January 2014.

In this connection Audit observed that:

- Uni Ads had forwarded necessary proofs of their performance in the field of advertisement since 1982 certified by Andhra Pradesh State Road Transport Corporation and by South Western Railways from 2011. Since the Company had recorded that both the bidders were technically qualified, based on the verification of certificates produced for technical qualification, rejection of the bids of Uni Ads citing that their credentials were not verifiable was unjustified. Moreover, the Company attempted verification of the credentials only on 17 January 2014 after expiry of validity of tender by December 2013, which was in violation of the tender conditions.
- An independent verification of the annual financial reports of Uni Ads by Audit revealed that it was an advertisement company with an income of more than ₹ 40 crore in two years up to 2013-14 and net worth of ₹ 12.98 crore as on March 2014. Therefore, reputation of Uni Ads in the field of advertisement was beyond any doubt.
- Though negotiation with the H-1 was to be held only when the rates offered were lower than the market rate, the Company attempted negotiation with Uni Ads despite quoting rates at 31 *per cent* more than the existing contract rate which was un- warranted.

Subsequent contracts finalised during the period from October 2013 to June 2016 could fetch revenue from advertisement ranging only from ₹ 550 to ₹ 825 against the offer of ₹ 1,010 per bus per month submitted by Uni Ads. Thus, the injudicious rejection of valid tender led to loss of potential revenue of ₹ 9.58 crore (**Annexure-13**).

The Company replied (August 2016) that rejection of the offer of Uni Ads was due to its failure to provide proof of credentials. The reply was not convincing because the Company had concluded that the bidder was technically qualified based on the verification of the certificates submitted by the bidder. Even if the Company had any doubt on the credentials during technical evaluation of the bid, it could have done the same before opening of price bids. Therefore, the action of the company to verify the credentials of H-1 after the validity period was not only unwarranted but also arbitrary when the firm had already been declared technically qualified. In the circumstances, accountability for the loss of revenue needs to be fixed.

The matter was referred to the Government in July 2016; their reply was awaited (November 2016).

## IT Expressway Limited

### 3.4 Avoidable expenditure

#### Delay of two years in drawal of the loan sanctioned by the Government at lower rate of interest resulted in additional interest cost of ₹ 5.89 crore

IT Expressway Limited (Company) was formed in April 2003 as the subsidiary company of Tamil Nadu Road Development Corporation Limited (TNRDC) and is engaged in constructing and maintaining the express way between Madhya Kailash and Siruseri within Chennai.

The express way project was taken up for execution in 2004. For its execution, the Company availed (between 2004 and 2011) a total term loan of ₹ 210 crore from two banks<sup>49</sup> and three<sup>50</sup> sister Public Sector Undertakings (PSUs), which carried interest of 11.5/12<sup>51</sup> *per cent per annum* for part funding of the project cost of ₹ 413 crore. To wipe out these high cost loans, the Company requested (November 2011) the Government for sanction of a loan of ₹ 160 crore.

In the meantime, TNRDC also separately approached (November 2011) the Government for a loan of ₹ 17 crore for carrying out its own development works. Based on these requests, the Government issued an order sanctioning (February 2013) loan of ₹ 177 crore (₹ 160 crore to the Company and another ₹ 17 crore to TNRDC) at an interest rate of 8 *per cent per annum* subject to the additional condition that TNRDC should forego its claim from the Government for compensation<sup>52</sup> for shortfall in toll collection for the period upto March 2014. The loan was to be drawn by these companies in the financial year 2012-13.

TNRDC agreed (July 2014) for all the conditions put forth by the Government in its sanction order of February 2013 and requested to release the entire loan of ₹ 177 crore. Based on this request, the Government revalidated (3 September 2014) the earlier sanction of the loan and the Company drew this amount in two tranches in January (₹ 150 crore) and March 2015 (₹ 10 crore) and repaid the loans of banks and PSUs in February/March 2015.

In this connection, Audit observed that the Company made (March 2013) request for sanction of loan exclusively to itself, but did not follow it up with the Government. This failure resulted in the Government sanctioning loan both to the Company and TNRDC by way of a single order. Moreover, there was a delay of more than a year on the part of the Company and TNRDC in accepting the conditions stipulated by the Government in its Order of June 2014 and further delay of five/six months in drawal of loan after its revalidation in September 2014, which resulted in additional interest cost of

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<sup>49</sup> Indian Bank (₹ 50 crore), Vijaya Bank (₹ 65 crore).

<sup>50</sup> Tamil Nadu Industrial Development Corporation Limited (₹ 25 crore), Tidel Park Limited (₹ 5 crore) and Tamil Nadu Urban Finance and Infrastructure Development Corporation Limited (₹ 65 crore).

<sup>51</sup> Excepting a loan of ₹ 65 crore from Tamil Nadu Urban Finance and Infrastructure Development Corporation Limited, a sister PSU, which carried an interest of 6 *per cent per annum*.

<sup>52</sup> Estimated to be at ₹ 102.68 crore and recoverable in terms of the concession agreement entered into in December 2000 between Government and TNRDC.

₹ 5.89 crore (**Annexure-14**).

The Government replied (October 2016) that it was the considered decision of its BOD not to withdraw claim for toll loss by TNRDC, as the same would affect the image of TNRDC for private funding of future projects. The reply was not convincing because TNRDC was aware (July 2012) that their claim was doubtful of recovery from the Government. Therefore, delaying the drawal of the loan under the pretext of withdrawal of the unrealisable claim was not a prudent financial decision.

### **Tamil Nadu Minerals Limited**

#### **3.5 Infertuous expenditure**

**Venturing into the new variety of quarry, without assessing the marketability, rendered the expenditure of ₹ 1.22 crore incurred for quarrying operation infertuous**

Tamil Nadu Minerals Limited (Company) is engaged in production and marketing multi colour granite blocks. The granite blocks are extracted by the Company from the mines belonging to the Government by obtaining prospecting license and submitting the mining plan for extraction during the lease period. For commercial viability of a mining plan, it is essential that marketability and likely price be ascertained, especially when the product is new.

With a view to operate a new quarry at Vattamalai village in Tiruppur district, the Company conducted (June 2002) a geological study, which revealed that the mining area contains large reserve of pink granite, but the marketability of this granite was to be studied based on the polished sample. Following the grant (December 2011) of licence for operation of quarry for 30 years, the Company conducted (August 2013) a review meeting, in which it was decided to obtain samples from the quarry to examine its marketability before commencement of the quarrying operation. The Divisional Office also opined (September 2013) that the operation of the quarry could be undertaken only after analysing the price for the granite, as this was a new material in the granite market. However, without conducting such a market study, the Managing Director (MD) directed (September 2013) the Divisional Office to commence the quarrying work. Between February and April 2014, 96.80 cubic metre of granite was extracted by incurring a total expenditure of ₹ 1.22 crore towards operation of the quarry.

In the meantime, the Company invited tenders (between October 2013 and August 2014) for sale of granite of this quarry, against which there was no response from any buyer. The Divisional Office reported (July 2014) that the prospective buyers had opined that this variety contained certain round spots, which may not sustain the polishing process and hence, the operation of the quarry may not be economical. Based on this report, head office ordered (August 2014) to close the quarry from 14 August 2014. The efforts to tender the granite even after closure of the quarry on two occasions (July and October 2015) also turned futile.



In this connection, Audit observed that right from the stage of first geological report of June 2002 upto the stage of operating this quarry departmentally, there were opinions to operate the quarry after ascertaining the price for polished sample in the market to ensure commercial viability of the quarry. But, in contravention of these opinions, MD ordered operation of the quarry without ascertaining the marketability of the polished sample of the new type of granite. Failure of successive tenders between October 2013 and October 2015, to create interest for purchase of the granite blocks of this quarry proved that there was no market for this type of granite. Thus, the MD's direction to start quarrying operations in haste without assessing the marketability of its granite resulted in infructuous expenditure of ₹ 1.22 crore for quarrying operation.

The Government replied (November 2016) that in granite industry, huge development expenditure are bound to be incurred for any new quarry and the said quarry would become profitable once the market for this kind of granite improved. The reply was not convincing because the new quarry was operated setting aside the opinions to conduct market study before venturing into this quarry. Further, after stoppage of quarrying work in August 2014, the Company could neither sell the granite extracted nor had any plan till date (November 2016), to reopen the quarry, which indicated that there was no possibility of recovering the amount spent already.

### **Tamil Nadu Small Industries Development Corporation Limited**

#### **3.6 Loss of revenue**

#### **The Company's failure to adopt the price for sale of industrial plots as per the Government directives led to revenue loss of ₹ 1.21 crore**

Tamil Nadu Small Industries Development Corporation Limited (Company) allots industrial plots within its estate to entrepreneurs on outright sale basis. Upto the year 2010-11, the Company sold the industrial plots at the prices fixed on case to case basis<sup>53</sup>. From the year 2010-11 onwards, the Government directed (June 2013) the Company to adopt the selling price as the highest of either the guideline value for the relevant year or increase<sup>54</sup> over the price fixed for the same industrial estate in the previous year.

Audit noticed (August 2015) that the Company sold (November/December 2014) 2.772 acres of land in Thirumudivakkam Industrial Estate at a price of ₹ 12.07 crore (at ₹ 4.36 crore per acre)<sup>55</sup>. Audit analysis revealed that the price was fixed by the Company based on the guideline value for the year 2013-14 instead of 2014-15 as detailed below:

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<sup>53</sup> The method included notional increase over the previous year price, price based on the guideline value published by the Registration Department, Government of Tamil Nadu for the respective areas and the relevant years, price fixed through tender, etc.

<sup>54</sup> The increase was to be at 25 per cent for well developed industrial area, 15 per cent for lesser developed industrial area and 10 per cent for least developed industrial area, which have been classified as such by the Company itself.

<sup>55</sup> The guideline value of ₹ 1,000 per sq.ft. is equivalent to ₹ 4.36 crore per acre for 43,560 sq.ft.



Table 3.1 Details of guideline value and selling price of land

Sl. No.	Particulars	Guideline value for		Selling price to be fixed for 2014-15 based on guideline value of 2014-15	Selling price fixed for 2014-15	Difference
		2013-14 (fixed in January 2013)	2014-15 (fixed in November 2014)			
1.	Guideline value per sq.ft. (in ₹)	1,000	1,100	1,100	1,000	100
2.	Guideline value per acre of 43,560 sq.ft. (₹ in crore)	4.356	4.792	4.792	4.356	0.436
3.	For 2.772 acres (₹ in crore)	---	---	13.28	12.07	1.21*

(\* Difference of ₹ 43,56,000 per acre X 2.772 acres)

In this connection, Audit observed that though the Government directives of June 2013 mandated the Company to adopt highest of the guideline value for the relevant year or a notional increase over the previous year, the Company failed to fix the price for the year 2014-15, taking into account the guideline value for the year 2014-15. Consequently, the Company lost revenue of ₹ 1.21 crore.

The Government replied (August 2016) that since the selling price for the year 2014-15 was fixed by the Company in May 2014, the guideline value of ₹ 1,000 per sq.ft. prevailing at that time was adopted by it. The reply was not convincing because the sale of plots during 2014-15 was made only in December 2014, *i.e.*, after revision of the guideline value in November 2014. Therefore, the Company should have adopted the latest guideline value of ₹ 1,100 per sq.ft instead of ₹ 1,000 per sq.ft.

### Electronics Corporation of Tamil Nadu Limited

#### 3.7 Unproductive investment

**The Company lost potential revenue of ₹ 1.07 crore and also incurred wasteful expenditure of ₹ 13.95 lakh due to its failure to maintain the building in a rentable condition**

The Electronics Corporation of Tamil Nadu Limited (Company) purchased (September 2007) land and building<sup>56</sup> in Thiruvananthapuram at Chennai at a total cost of ₹ 2.84 crore for future construction of building in the premises. Pending construction of office building, the Company leased out (March 2008) the premises for a monthly rent of ₹ 3.54 lakh. After vacation of the premises by the lessee in June 2010, the premises were not leased out till June 2016.

The audit scrutiny of the records revealed that the Company's advertisements

<sup>56</sup>

Land measuring 12,893 sq.ft. and building measuring 6,750 sq.ft.

in June 2010 and September 2011 did not evoke adequate response from the prospective occupants. A single offer for a monthly rent of ₹ 2.02 lakh per month received in October 2011 was not accepted by the Company citing that it was lesser than the previous rent. Subsequent to this, the Company stopped advertising for renting of the premises without any recorded reasons.

It was further observed that though the premises is located in a prime locality in Chennai and surrounded by commercial and IT companies, the Company failed to maintain the premises required for commercial usage, as it was evident from the fact that (i) the Company did not pay electricity charges on due dates and the supply remained disconnected as of May 2012 and (ii) kept the building surrounded by bushes and thorns. The State Public Works Department officials, who visited (April 2014) the premises, reported that the building was poorly maintained preventing even the entry into the premises (illustrative photos of poor maintenance are given in **Annexure-15**). Audit scrutiny revealed that there were no recorded reasons for non-maintenance of building, which was indicative of Company's failure resulting in loss of potential revenue.

Audit had already pointed out (April 2013) the Company's failure to utilise the building commercially on rental basis and the Company assured (October 2014) to explore possibilities of renting of the premises. However, continued poor maintenance led to property remaining idle for more than six years resulting in potential loss of rental income of ₹ 1.07 crore (calculated at the rate of ₹ 30 per sq.ft. per month offered in October 2011 by a tenant). Besides the loss of potential revenue, the Company had also incurred ₹ 13.95 lakh towards security arrangements of the premises from July 2010 to May 2016, which could have been avoided had the premises been rented out.

The Government replied (August 2016) that the Company had issued (July 2016) a letter of acceptance to a private tenant for occupation of the premises on "as is where is condition" for a rent of ₹ 1.63 lakh per month.

Thus, the Company had acquired the premises for its future use, but it could not use the same by putting in place any plan for its use. Moreover, due to its neglect of premises, the building could not be rented out for the past six years leading to loss of revenue of ₹ 1.07 crore. Finally, the Company could only rent out the premises for a lesser amount of ₹ 1.63 lakh per month (in July 2016) against the fair rent of ₹ 3.58 lakh per month as calculated by PWD after market survey, due to poor maintenance of the building, which was not beyond its control.

### **Tamil Nadu Transmission Corporation Limited**

#### **3.8 Avoidable extra expenditure**

**TANTRANSCO cancelled a valid tender due to inclusion of a faulty tender condition, which resulted in its becoming liable for avoidable extra expenditure of ₹ 10.29 crore**

Tamil Nadu Transmission Corporation Limited (TANTRANSCO) decided (September 2010) to float a tender for civil and electrical works relating to

establishment of 230/33 KV Sub-station (SS) along with six storey office complex within the TNEB headquarters at an estimated cost of ₹ 14.14 crore. In response to the above tender (September 2010), the price bids received from three technically qualified bidders were opened in December 2010 and the L-1 was decided (February 2011) in favour of M/s RPP Selvam Infrastructure Private Limited (RPP) for a quoted price of ₹ 16.11 crore.

When the Letter of Acceptance (LOA) was issued (February 2011) for a contract price of ₹ 16.11 crore including service tax, RPP did not accept the LOA stating (March 2011) that as per the clauses of tender, the service tax (which is estimated to be ₹ 54.75 lakh) was to be reimbursed separately. As TANTRANSCO did not accept the plea of RPP stating that the quoted price was inclusive of all statutory levies as per Clause 2.14.0 of the tender condition, it decided (June 2011) to cancel the tender and also modify the tender conditions making service tax exclusive of the contract price.

After enhancement (December 2011)<sup>57</sup> of the scope of work, TANTRANSCO awarded (November 2013) the contract for a value of ₹ 46.70 crore. Against the scheduled completion of the work in 24 months from the date of handing over of the site (June 2014), the contractor was able to complete the work only to the extent of ₹ 7.34 crore (15.72 *per cent*) by the end of June 2016. The slow progress of the work was mainly attributable to not handing over the entire portion of the work site to the contractor by TANTRANSCO till date (November 2016).

The audit analysis of the tender floated in September 2010 revealed that the Clause 2.14.0 of the first tender stipulated that the bid prices should include all taxes and duties. But, Clause 3.36.0 of Section-3 of the same tender stipulated that the service tax as applicable would be admitted upon production of documentary evidence. Thus, the tender Clause stipulating separate reimbursement of service tax based on documentary evidence was faulty, which enabled RPP to claim separate reimbursement of service tax. Considering this faulty Clause, TANTRANSCO modified (June 2011) its tender conditions in subsequent tenders for making the payment of service tax over and above the contract price as per the statutory requirements.

Thus, due to faulty terms and conditions of the contract floated in September 2010, the tender was cancelled and the same work was awarded after a delay of two-and-half years (from June 2011 to November 2013) at the escalated prices. The Audit compared the rates obtained in the tender of September 2010 and the tender of November 2012 in respect of the similar items, which revealed that TANTRANSCO was liable for avoidable extra expenditure of ₹ 10.29 crore.

The Government replied (November 2016) that the decision to cancel the first tender was taken to safeguard the financial interest of TANTRANSCO and the same was approved by its Board Level Tender Committee (BLTC). The reply was factually incorrect because the decision to cancel the first tender was taken by BLTC, mainly because of faulty tender conditions of the first tender, which was unwarranted.

<sup>57</sup> This includes providing centralised air-conditioned system in the office premises, glass cladding work, etc.

### **3.9 Infertuous expenditure due to ill planning**

**The Company abandoned the civil works worth ₹ 7.35 crore carried out at the original alignment and realigned the transmission lines, which resulted in the expenditure becoming infertuous**

Tamil Nadu Transmission Corporation Limited (TANTRANSCO) is engaged in erection of transmission lines of 110 KV and above for evacuation of power. At the time of planning of transmission routes, TANTRANSCO was required to conduct route survey in detail for selection of most suitable and least expensive route after considering various alternative routes.

TANTRANSCO accorded (February 2013) sanction for establishment of 400 KV Sub-station (SS) at Thiruvallam village in Vellore district along with 400 KV Double Circuit (DC) (two way transmission lines) transmission lines for a distance of 273 KMs between the above SS and the Mettur Thermal Power Station-III (MTPS-III)<sup>58</sup>. The transmission line work relating to phase-I was awarded (August and October 2013) on turnkey basis to Larsen and Toubro Limited (L&T) at a lumpsum price of ₹ 291.97 crore.

While the sub-setting<sup>59</sup> work of the Phase-I in 97 locations was under way with financial progress of ₹ 7.35 crore (January 2014), TANTRANSCO decided (March 2014) to stop the work and realign transmission work closer to the proposed 400 KV SS at Palavadi in Dharmapuri district. TANTRANSCO estimated that the envisaged realignment would result in reduction in route length of 35 KMs with cost of savings of ₹ 77.15 crore. Accordingly, L&T stopped the work and completed the same in the realigned area in May 2015.

In this connection, Audit observed that prior to the commencement of the above works, TANTRANSCO was pursuing its proposal (April 2012) to construct a new 400 KV SS at Palavadi. For identification of required land for construction of SS, the Electricity Distribution Circle, Dharmapuri carried joint inspection along with the revenue authorities and requested (April 2012) the District Collector, Dharmapuri to alienate about 22.23 hectares of land. Based on the recommendations (January 2013) of revenue officials of the Dharmapuri district, Government issued (December 2013) alienation order for 22.23 hectares of land in Palavadi in favour of TANTRANSCO. As these facts were well known to TANTRANSCO prior to issue of LOA to L&T in August 2013, it could have planned to route 400 KV DC line closer to Palavadi SS at the first instance itself. Instead, TANTRANSCO had instructed L&T to re-route the work only in January 2014, which resulted in abandoning of the civil works worth ₹ 7.35 crore and rendering the expenditure infertuous.

Thus, the belated action of the TANTRANSCO in giving necessary directions to L&T about realignment of the transmission lines along with the proposed location of the Palavadi SS, which was already known to it at the time of the award of work in August 2013, resulted in infertuous expenditure of ₹ 7.35 crore.

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<sup>58</sup> This thermal station is owned by Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO).

<sup>59</sup> Laying RCC base for erection of towers carrying transmission lines.

The Government replied (November 2016) that the direction to L&T was given in January 2014 after TANTRANSCO had accorded administrative approval for establishment of SS at Palavadi. The reply was not convincing because TANTRANSCO, based on its field inspection in April 2012 was aware of the proposed location of the Palavadi SS and the revenue authorities had also recommended alienation of land required for erection of SS in January 2013 itself. Hence, the realignment could have been made at the time of planning of the transmission lines, *i.e.*, before issuing work order to L&T in August 2013.

### **Tamil Nadu Generation and Distribution Corporation Limited**

#### **3.10 Avoidable extra expenditure**

**Unwarranted delays in rectification of the rotor fault in hydro power station led to loss of generation of 80.04 MUs. The resultant purchase of the same from private sources led to additional extra expenditure of ₹ 44.74 crore**

Sholayar Hydro Electric Project (SHEP)<sup>60</sup> is an irrigation based power house, in which the power is generated only when the water is let out for irrigational needs of Coimbatore district. The peak period of irrigation is from June to December and hence, generation is high during this period. The Unit-II of PH-I (with generation capacity of 35 MW) of SHEP tripped on 12 January 2013, resulting in rotor earth fault in the unit. Based on the offer of ₹ 30.31 lakh received (February 2013) from a single tenderer for rectification of the fault, TANGEDCO issued Letter of Authority (LOA) to the contractor<sup>61</sup> on 14 May 2013. Against the scheduled completion of rectification work by 9 August 2013, the contractor completed the work and re-commissioned the unit on 30 November 2013. Thus, the work was completed in 173 days against the scheduled completion in 60 days. During the shutdown of Unit-II from July to November 2013, 10,438 Million Cubic feet of water was let out from the dam for irrigation without generation of electricity resulting in loss of generation of 80.04 Million Units (MUs). Audit analysis of the delays in rectification of the unit revealed the following:

- Though, TANGEDCO decided (February 2013) to carry out the rectification of rotor fault on priority to avoid surplusing of water during the monsoon period, *i.e.*, June to November and issued (10 February 2013) tender with short notice of only seven days, it took three months (upto May 2013) for finalisation of the single offer without any recorded reasons, which resulted in missing the opportunity of completing the rectification work before the start of monsoon in June.
- After issue of LOA in May 2013, TANGEDCO further delayed handing over of site by one month upto 11 June 2013 and during execution of work

<sup>60</sup> SHEP is situated in Coimbatore district and is under the control of Kadamparai Generation Circle of TANGEDCO.

<sup>61</sup> M/s Coral Rewinding India (Private) Limited, Erode.

took 37 days for approving the cost of additional works<sup>62</sup>. These unjustified delays further delayed completion of work by another two months.

- During execution of work, TANGEDCO recorded (September 2013) that the contractor was responsible for the unwarranted delay of three months even in reporting the unsuitability of the dismantled bearing for re-usage. But, it allowed (December 2013) extension of time of 144 days after completion of the work in November 2013. This indicated that TANGEDCO failed to efficiently manage the contract even after knowing the urgency of work.

Thus, unwarranted delays from the stages of finalisation of tender upto completion of the work led to avoidable loss of hydro generation of 80.04 MUs. As the average cost of generation of hydro power in PH-1 of SHEP was only ₹ 0.21 per unit, against the average purchase cost of ₹ 5.80 per unit sourced from private power producers during 2013-14, the above loss of generation with resultant purchase of equal quantity of power from private sources led to avoidable extra expenditure of ₹ 44.74 crore<sup>63</sup> to TANGEDCO.

The Government replied (November 2016) that utilisation of additional days was on account of time taken for assessment of the fault, deciding the process of rectification at the pre-tender stages, following due process for tender finalisation and deciding additional scope of work during execution, *etc.* The reply was not convincing because TANGEDCO had prescribed the maximum time limit of only 60 days for finalisation of all types of tenders including pre-tender activities. Therefore, consumption of additional days prior to and during tender stages was not justified. Thus, failure to execute the rectification work in time by TANGEDCO, which has rich experience in operation of hydro power stations for more than 40 years, without factoring the onset of monsoon resulted in additional expenditure of ₹ 44.74 crore.

### **3.11 Irregular payment**

**Two private producers supplied power in excess of the contracted quantity without any authorisations as required in the Power Purchase Agreements. However, TANGEDCO paid ₹ 11.45 crore for such excess quantity, which was violative of contractual terms**

TANGEDCO entered (June 2013) into two Power Purchase Agreements (PPA), one with Arkay Energy (Rameswaram) Limited (Arkay) for purchase of 110 MW<sup>64</sup> of power and another with Sai Regency Power Corporation Private Limited, Ramnad (Sai) for purchase of 5 MW<sup>65</sup> of power from 1 June

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<sup>62</sup> These include (i) rectification on pole number-8 and replacing top and bottom jumpers in this pole, (ii) removal of jammed pins and (iii) re-insulation of damaged coils.

<sup>63</sup> Being the difference of ₹ 5.59 per unit (average cost of purchase is ₹ 5.80 per unit and average cost of generation of hydro power at PH-1 is ₹ 0.21 per unit) X 80.04 MUs.

<sup>64</sup> The contracted quantity of power was increased to 120 MW with effect from 1 November 2013 and the PPA was also extended upto 31 July 2014.

<sup>65</sup> This quantum of procurement was increased 10 MW with effect from 20 July 2013.

2013 to 25 May 2014. Both the agreements included similar terms and conditions of purchase stipulating, *inter alia*, that TANGEDCO would accept power only upto 10 *per cent* over and above the contracted quantity. For any supply of power within 100 to 110 *per cent*, TANGEDCO will accept the quantum and make payment, provided the supply was made with the specific prior approval by its load despatch centres.

Audit scrutiny (July 2015) of the files relating to purchase of power from Arkay and Sai revealed that Arkay supplied 701.15 Million Units (MUs) of power, which was 102.76 *per cent* of the contracted quantum of 682.32 MUs for eight months from September 2013 to June 2014. Similarly, Sai supplied 22.54 MUs of power, which was 112.16 *per cent* of the contracted quantity of 19.80 MUs (equivalent to the contracted quantum of 5 MW/10 MW) during the three months from July to September 2013. TANGEDCO restricted the payment to 110 *per cent* of the contracted quantity to Sai during the above months. Thus, TANGEDCO had paid ₹10.36 crore to Arkay and ₹ 1.09 crore to Sai for the excess supply of power.

In this connection, Audit observed that:

- The excess supplies made by Arkay and Sai were without any specific authorisations from the Load Despatch centres of TANTRANSCO, as required in the PPA. Despite the failure of the suppliers to obtain specific prior authorisation for such excess supply of power, TANGEDCO paid the value for supply amounting to ₹ 11.45 crore, which was in violation of the terms and conditions of PPA.
- For similar supply of 10 *per cent* of power more than the contracted quantity of 30.9 MW by another private power supplier,<sup>66</sup> TANGEDCO had denied (September 2013) the payment of ₹ 12.68 lakh for the excess supply of 2.31 lakh units, stating that the same was made without approval by it.
- TNERC had already held (July 2015) that if the compensation is allowed for injection of additional power into the grid without any authorisation, it would become a bad precedent, which might seriously affect the grid discipline and the generators would tend to supply power without approval whenever such additional generation was available with them.

Thus, payment of compensation to Arkay for supply of excess power was in violation of terms of agreement and also against the TNERC's directions.

The Government endorsed (September 2016) TANGEDCO's reply that the suppliers had been provided an option in the PPA to supply power upto 10 *per cent* over and above the contracted quantum and hence, the payment was in order. The reply was not convincing because the conditions of PPA clearly stipulated that for any supply of power upto 10 *per cent* over and above the agreed quantum, the suppliers would get payment provided that the same was with specific authorisation by TANGEDCO. Hence, the payment for excess quantity of power without specific authorisations by TANGEDCO was against the provisions of terms and conditions and was irregular.

<sup>66</sup>

Kamachi Sponge and Power Corporation Limited, Chennai.



### **3.12 Avoidable expenditure**

#### **TANGEDCO made avoidable payment of ₹ 3.74 crore towards price variation due to delay in processing of tender for purchase of Aluminium Conductors**

TNEB Limited, directed (June 2012) its subsidiaries, viz., TANGEDCO and TANTRANSCO to finalise the tenders for all purchases and supplies invariably within 90 days to ensure timely completion of supplies and works and to avoid possible cost escalation. In the same order, it also stipulated the time frame for each activity involved in the tender process.

Audit, however, noticed (September 2015) that a tender floated by TANGEDCO on 8 March 2013 for purchase of 25,000 kilometres (Kms) of Aluminium conductors was actually finalised (January 2014) and Purchase Orders (PO) to 21 suppliers were issued between 4 March 2014 and 10 July 2014. Thus, TANGEDCO took an overall period of one year for finalisation of tender against the time limit of 90 days. As per the terms of the PO, the delivery of conductors was to be made within 6 ½ months from the date of its receipt by the suppliers. The suppliers were also entitled for price variation for change in the basic price of Aluminium rod assumed in the quotation. All the 21 suppliers completed the supplies of 32,301.614 Kms<sup>67</sup> of conductors between 4 April and 20 December 2014 and obtained a total price escalation of ₹ 6.16 crore.

Audit analysis of the tender revealed that:

- After floating the tender in March 2013, the technical and commercial bids of 27 bidders was first opened only on 17 August 2013. After protracted internal discussions on reconsideration of the offers of the new entrants, the price bids were finally opened on 9 December 2013. Thus, TANGEDCO took eight months for opening of the tender against the permitted time limit of 60 days as per the directions of TNEB issued in June 2012.
- There was a delay of 26 days in approval (30 January 2014) of the tender opened on 2 December 2013, involving a total period of 52 days for its approval against the permitted time limit of 26 days mentioned in the TNEB's directions.
- After approval (30 January 2014) of the tender and the draft POs by the Board of Directors of TANGEDCO, there were further delays ranging from 14 to 142 days in issuing (from 4 March 2014 to 10 July 2014) the POs to all 21 firms. This was far in excess of the time limit of only three days fixed in TNEB's proceedings for issuing the PO after its approval. Audit verification of the files revealed that there was no justification for this delay, which indicated that the same was avoidable.

In this connection, Audit observed that before floating the above tender, TANGEDCO decided (March 2013) to issue short tender notice of 15 days against the normal time of 30 days on the plea that the ground stock/pipeline

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<sup>67</sup> This is equal to tendered quantity of 25,000 Kms *plus 25 per cent* as per the approval of the tender committee.

stock (10,105 Kms) of Aluminium conductors would cater only to two months requirement. TANGEDCO, however, delayed in (i) opening of bids called for in March 2013 by eight months, (ii) according approval for finalisation of tender by 23 days and (iii) issuing POs upto 142 days. Though, short tender notice citing urgency was floated, the intended purchase could not be made in time.

The suppliers were entitled for price escalation from the due date for submission of bids. Had TANGEDCO adhered to the time limit of 90 days for finalisation of bids and issued the PO latest by 6 June 2013 by processing the tender issued on 8 March 2013, it could have procured the entire material by the end of December 2013 (after allowing 6 ½ months of supply period as stipulated in the PO) and allowed price escalation for overall period of 9 ½ months, *i.e.*, by 21 December 2013. However, the suppliers completed the supply between 4 April and 20 December 2014 and obtained a total price variation amounting to ₹ 6.16 crore in respect of 20<sup>68</sup> firms. Due to delay in processing the tender, TANGEDCO had to incur price escalation of ₹ 3.74 crore for the delayed period from January 2014 to December 2014, which was avoidable.

The Government endorsed (September 2016) TANGEDCO's reply that the delay in finalisation of tender was mainly on account of consideration of the offer by four new entrants, who participated in the tender. The reply was not convincing because there were unexplained delay upto August 2013 even in opening the tender and the delay upto 142 days in placing POs after its approval. Moreover, the apex entity had directed TANGEDCO to finalise all tenders invariably within 90 days without any exception.

### 3.13 Adherence to Pollution Control Norms in Thermal Power Plants of TANGEDCO

#### Introduction

**3.13.1** Pollution in all forms *viz.*, air, water and sound cause extensive damage to the environment and adversely affect ecological balance, which results in unquantifiable loss to the nature. The Government of India (GOI), with an aim to protect environment has enacted various Acts/Rules such as the Water (Prevention and Control of Pollution) Act, 1974 (Water Act), the Air (Prevention and Control of Pollution) Act, 1981 (Air Act), the Environment (Protection) Act, 1986, Noise Pollution (Regulations and Controls) Rules, 2000 and Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008.

The State<sup>69</sup> and Central Pollution Control Boards enforce the provisions of the pollution related Acts/Rules of the GOI and monitor the pollution levels in the State.

<sup>68</sup> One firm did not claim price variation.

<sup>69</sup> Tamil Nadu Pollution Control Board (TNPCB) is the designated State agency to deal with pollution related issues of the State.

The GOI committed (2002) to the United Nations Framework Convention on Climate Change to reduce carbon emission intensity by 20 to 25 *per cent* by the year 2020. Accordingly, the GOI announced (June 2008), a National Action Plan for Climate Change (NAPCC). The plan among others, suggested three ways for reducing emission levels in the thermal power plants, *viz.*, increasing efficiency of the plant, using clean coal technologies and switching to fuels other than coal.

The Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO), the power generating entity in the State had four<sup>70</sup> thermal power plants with a combined thermal generation capacity of 4,660 MW (as on 31 March 2016). As thermal plants have been classified under Red Category of highly polluting industries, requiring continuous monitoring, Audit examined the efforts made by the management of TANGEDCO to reduce the pollution levels and comply with the pollution control norms. Audit was conducted in three<sup>71</sup> thermal plants *viz.*, Tuticorin Thermal Power Station (TTPS), Mettur Thermal Power Station (MTPS) and North Chennai Thermal Power Station (NCTPS) and covered the period from April 2011 to March 2016.

Audit analysis revealed the following:

#### **Operation of plants without consent of TNPCB**

**3.13.2** Under Section 21 of the Air Act, 1981 and Section 25 of the Water Act, 1974 and Rules made thereunder, the Tamil Nadu Pollution Control Board (TNPCB) was empowered to issue Consent For Operation (CFO) of the thermal plants. Before expiry of CFOs granted, the plants were required to renew their CFOs. Section 22A of the Air Act and Section 33 of the Water Act provided that wherever it was apprehended that emission of any air/water pollutant was likely to be in excess of the standards laid down by the State Board, it may, through the Court of law, restrain such person operating the plant from emitting such pollutants. It was noticed that though the three plants, MTPS, TTPS and NCTPS had applied for renewal of consent as per schedule, CFO was given only for MTPS and the new 600 MW units in NCTPS Stage II. In respect of TTPS and the old 210 MW units of NCTPS Stage-I, the applications submitted (March 2015) for TNPCB's consent to operate the plants for the year 2015-16 was still pending (October 2016). TNPCB's consent was pending due to not revamping the existing pollution control systems like Electrostatic Precipitators (ESPs) and not installing and connecting online continuous effluent monitoring systems with the TNPCB's server. Thus, TANGEDCO was operating the plant without the consent of the TNPCB, which was against mandatory requirement as per Section 21 of the Air Act, 1981 and Section 25 of the Water Act, 1974. Due to these non-fulfillment of the mandatory requirement, TANGEDCO has made itself liable

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<sup>70</sup> Ennore Thermal Power Station (ETPS), Tuticorin Thermal Power Station (TTPS), Mettur Thermal Power Station (MTPS) and North Chennai Thermal Power Station (NCTPS).

<sup>71</sup> ETPS, which has already outlived its useful life and approved for scrapping, has not been considered for this audit.

for legal action by TNPCB as per Section 22A and Section 33 of Air Act and Water Act, respectively.

### Air pollution

**3.13.3** Thermal power plants which use coal as fuel are contributing to atmospheric pollution and greenhouse gases. Emissions that come from these plants include Gaseous emissions like Carbon Dioxide (CO<sub>2</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) which lead to global warming. Suspended



Figure 1: Stack emission from TTPS

Particulate Matter (SPM), the fine dust that is emanated from the stacks<sup>72</sup> of power plants is a health hazard. In addition, the thermal plants also generate considerable quantum of fly ash and bottom ash. These emissions are formed due to the combustion process when coal is burned to produce heat. As controlling the emission of SPM/SO<sub>2</sub>/NO<sub>x</sub> is an important responsibility of thermal plants, Ministry of Environment, Forest and Climate Change, (MoEFCC) GOI, had prescribed that SPM levels from stack should not exceed 150 mg/Nm<sup>3</sup> and the levels of SPM/SO<sub>2</sub>/NO<sub>x</sub> for Ambient Air (AA)<sup>73</sup> should not exceed 60/50/40 µg/NM<sup>3</sup> respectively.

The unit-wise yearly minimum, maximum and average SPM levels at stack as well as SPM/SO<sub>2</sub>/NO<sub>x</sub> in AA during the period 2011-12 to 2015-16 as reported by the plants are given in **Annexure-16** and **17**. It could be seen from the Annexures that the SPM level at stack as well as at AA continued to be above the permissible norms fixed by MoEFCC in all the five units at TTPS and similar units<sup>74</sup> at MTPS and NCTPS. In this connection, Audit further observed that:

- The Units I, II and III of TTPS were designed to burn coal with 19 *per cent* ash content and ESP installed for extraction of ash was also designed accordingly. The actual ash content of the coal consumed was, however, more than 43 *per cent*, which resulted in continued high SPM levels in TTPS. Audit observed that the SPM levels reached the maximum of 2,500 mg/Nm<sup>3</sup> during February 2010 and the same was reported in the Report of the Comptroller and Auditor General of India for the year ended 31 March 2010. After revamping of the ESPs during 2009-10 and 2011-12 respectively, the SPM levels came down in Unit-I. But, these levels continued to be above norms. Audit further observed that Unit-II continued to spew SPM much above the norms as revamping of ESP in that unit was still pending (October 2016).

<sup>72</sup> A stack is a chimney through which gas containing SPM, CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub> is emitted into atmosphere.

<sup>73</sup> Ambient Air refers to outdoor air in the surrounding environment of the thermal plant.

<sup>74</sup> The old units I to IV at MTPS and units I to III at NCTPS.

- TNPCB, while issuing consent orders for TTPS insisted (2007) that the plant in addition to revamping of the ESPs, needed to install flue gas conditioning system for controlling SPM levels at the stack. But, the ammonia injection system to improve the collection efficiency of the ESPs and to reduce the SPM levels had not been installed despite submission of proposal in this regard in November 2006 and obtaining Administrative approval in March 2014 due to delays on the part of the management. Consequently, the units of TTPS continued to discharge SPM at very high levels.

The Government replied (November 2016) that they would carry out revamping work of ESP in Unit II along with capital overhaul in 2016-17.

- The annual average stack emission levels in NCTPS were reported to be within norms. But, the online data available with the TNPCB CARE AIR Centre<sup>75</sup> revealed that in NCTPS, the SPM standard exceeded the norms 46,917 times during 2014-16. Based on the test check of data relating to 2014-16, Audit found that the maximum SPM level recorded at every 15 minutes interval in the three Units I, II and III never exceeded 200 mg/Nm<sup>3</sup>, which showed that the analyser at the plant was calibrated to record only upto the maximum level of 200 mg/Nm<sup>3</sup>. After taking up the matter with TNPCB (September 2016), Audit was informed (September 2016) that it was the responsibility of the industry to provide quality data to TNPCB as it was only a monitoring body.

The Government replied (November 2016) that the maximum limit of 200 mg/Nm<sup>3</sup> was set by the manufacturer of the equipment and not by TANGEDCO. Audit, however, observed that since the levels were reported with reference to set parameters, the stated interference in recording data led to reporting of misleading results and therefore TANGEDCO needed to look into this issue seriously for taking immediate corrective action.

- Average yearly stack emission of SPM in MTPS exceeded the TNPCB's norms in Units II and IV and Units I and III in 2011-12 and 2012-13 respectively. Individual instances as per recordings in the TNPCB's CARE AIR Centre, showed that the excess over norms totalled 1,796 times during 2013-16. Though approval was accorded (October 2014) for replacement of 24 ESP fields in Unit-I at a cost of ₹ 12.24 crore to bring down the SPM levels to below 100 mg/Nm<sup>3</sup>, the tender initiated for establishment of ESP fields was cancelled (June 2015) due to non-adherence to the technical specification by the bidders. Re-tender for the above work was still pending (October 2016).

The Government replied (November 2016) that technical consultancy for repairs and maintenance of all the units of MTPS would be taken up in a phased manner.

- The dust particles emitted while conveying coal include lead, mercury, nickel, tin, *etc.*, the long-term exposure to which causes health problems. Dust extraction systems are, therefore, installed in the coal handling plants for extracting coal dust emanating from the conveyor chutes to prevent air

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<sup>75</sup>

Centre for Accessing Real Time Air Quality.

pollution. Due to ageing of dust extraction equipment installed in various places of coal handling in Units-I and II of MTPS, the SPM at wagon tippler area was ranging from 7.076 mg/m<sup>3</sup> and 11.062 mg/m<sup>3</sup> and in secondary crusher house belt feeder floor, it was upto 45.534 mg/m<sup>3</sup> as against the AA norm of 2 mg/m<sup>3</sup>. A proposal to replace eight out of the 22 old dry cyclone system into the latest bag filter system<sup>76</sup> at a cost of ₹ 3.39 crore approved (September 2013) and included in the budget for 2013-14 was taken up only in 2015-16 and work was still in progress (October 2016). Consequently, the emission levels at the coal conveying area continued to be high without any remedy till date.

The Government replied (November 2016) that the work would be completed by the end of December 2016.

- Similarly at NCTPS, 24 dust extraction systems in the internal and external coal handling plants, which were installed prior to 2001 were already due for revamping. The renovation work taken up only in eight systems during 2014-15 was still incomplete (October 2016). The renovation of the balance 16 systems was yet to be taken up (October 2016), as a result of which, dust levels continued to be high in the coal handling area.

The Government replied (November 2016) that the proposal for renovation of the balance systems has been initiated and the work would be completed within a year.

- As per MoEFCC guidelines (November 2009), AA quality tests are to be conducted twice a week. The three thermal plants, however, did not comply with this requirement and conducted the AA quality tests only once a month. Thus, close monitoring of AA quality at the prescribed frequency had not been complied with by these plants.

The Government replied that the frequency of AA quality tests would be increased.

- The TNPCB stipulated (June 2014) installation of online continuous ambient air quality monitoring stations (CAAQMS) with uploading facility of data to TNPCB. It was observed that only in TTPS, continuous online AA quality monitoring system was installed and synchronised with TNPCB server (between June 2015 and June 2016). In MTPS and NCTPS, the CAAQMS, which were received in 2015, were yet to be erected and commissioned as of July 2016. Thus, the objective of installing CAAQMS, viz., self monitoring by the plants to ensure compliance with prescribed standards, had been achieved only in one out of three thermal plants.

It was replied (October 2016) that the work of commissioning of the CAAQMS was in progress in the remaining two plants.

### ***Generation of ash beyond permissible limits***

**3.13.4 TANGEDCO** procures indigenous coal from Mahanadi Coalfields Limited and Eastern Coalfields Limited and imported coal (mostly of

<sup>76</sup>

Cyclone system works by making use of centrifugal or gravitational force to separate dust from air stream. Once separated, the dust is removed to a hopper by gravity. Under bag filter system, filters are used to separate dust particles.

Indonesian origin) through tenders. The ash content of indigenous coal was upto 45 *per cent*, whereas in respect of imported coal it was only 4 to 12 *per cent*. The three thermal plants with a combined installed capacity of 4,320 MW consumed 82.71 million tonnes of coal (both indigenous and imported coal) and generated 25.81 million tonnes of ash during the period 2011-12 to 2015-16. In this connection, Audit observed that:

- During the above period, the plants emitted<sup>77</sup> 112.07 million tonnes of CO<sub>2</sub><sup>78</sup>, 1.12 million tonnes of SO<sub>2</sub> and 3.33 million tonnes of NO<sub>x</sub> into the atmosphere. Therefore, for generation of one unit of electricity, the plants had emitted approximately one Kg of CO<sub>2</sub>, 10 grams of SO<sub>2</sub> and 30 grams of NO<sub>x</sub>, thereby creating adverse impact on the atmosphere.
- To meet the requirement of NAPCC to reduce carbon emission, a cost-effective step would be to use clean beneficiated<sup>79</sup> coal. MoEFCC suggested (1997) that power plants located beyond 1,000 Kms from pitheads and those located in critically polluted areas/urban areas to use beneficiated/blended<sup>80</sup> coal with an ash content not exceeding 34 *per cent*. Use of blended/beneficiated coal was made mandatory with effect from January 2014<sup>81</sup>. As the three thermal plants were situated more than 1,000 Kms from the pit head, these were covered under this criteria. Audit noticed that these thermal plants neither used beneficiated coal nor installed facilities for blending of coal in the stock yards or conveyors, resulting in high quantum of carbon emission as also accumulation of un-burnt combustibles in bottom ash. During 2011-16, 1.45 lakh tonnes (valued at ₹ 55.72 crore) of un-burnt combustibles were accumulated as bottom ash in three plants.

The Government replied (November 2016) that feasibility for blending of coal was yet to be studied and that the indigenous and imported coal as received is either fed to the bunker or stacked separately. The fact, however, remains that the economies of using beneficiated/blended coal had not been worked out by TANGEDCO, due to its failure to comply with the mandatory directives of MoEFCC.

- Though Units I and II of TTPS were designed to handle coal with ash content of 19 *per cent*, the actual ash content of the coal consumed was upto 45 *per cent*. Consequently, the ash generated beyond the ESPs' maximum extraction capacity (equivalent to 4.59 lakh tonnes in these two units) was let out into atmosphere during the period 2011-12 to 2015-16 resulting in high SPM level in stack apart from the increased levels of SPM/SO<sub>2</sub> and NO<sub>x</sub> in the ambient air.

The Government replied (November 2016) that the original equipment

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<sup>77</sup> Emission estimates theoretically calculated using the basic principles of combustion and operational conditions and considering carbon/sulphur/nitrogen components in Indian coal as 41 *per cent*, 0.41 *per cent* and 1.12 *per cent* respectively.

<sup>78</sup> Central Electricity Authority CO<sub>2</sub> baseline database version 11.0 of April 2016.

<sup>79</sup> Clean beneficiated coal is obtained after reducing the extraneous matter from the mined coal and/or by reducing the associated ash.

<sup>80</sup> Blending of coal entailed mixing of low ash content imported coal with high ash content indigenous coal to ensure the required heat value and to generate lesser amount of ash in flue gas.

<sup>81</sup> As per MoEF notification dated 2 January 2014.



manufacturer, BHEL had been requested in November 2014 to study the feasibility for carrying out improvements work in the ESPs for reducing the SPM level below 100 mg/NM<sup>3</sup>.

### ***Ash Disposal***

**3.13.5** MoEFCC directed (September 1999) gradual phasing out of dumping of fly ash on land and 100 *per cent* disposal of the ash to be achieved by the year 2009. TANGEDCO disposed of the fly ash by giving the same to cement manufacturing industries, brick units and units engaged in construction of roads, embankment, *etc.* Audit scrutiny of the ash management by the thermal plants revealed the following:

### ***Decline in fly ash lifting***

**3.13.6** The three thermal plants annually generated four million tonnes of fly ash through ESPs and let out through Pressurised Dense Fly Ash Collection System (PDFACS) for lifting by the user agencies, mostly cement manufacturers. Analysis of quantum of fly ash lifted by the cement companies/others in the three plants during the period 2011-2016 (**Annexure-18**) revealed as under:

- TANGEDCO had signed Memorandum of Understanding (MoU) valid till 2011 with cement companies for lifting of 80 *per cent* of the dry fly ash collected in the PDFACS. The balance 20 *per cent* of the collected fly ash was reserved for small scale brick manufacturing units.
- While TTPS was able to dispose off 100 *per cent* of the fly ash generated, there was heavy decline in the quantum of fly ash lifted in NCTPS and MTPS. Against the quantum of 11.64 million tonnes of fly ash generated, the plants could dispose of only 8.21 million tonnes (70 *per cent*). The maximum decline was in NCTPS, as only 2.90 million tonnes out of 5.20 million tonnes (55 *per cent*) was lifted in the five years ending 2015-16. The balance quantity of fly ash (2.30 million tonnes) together with the quantum of unlifted bottom ash and wet ash was transported to the ash dyke<sup>82</sup>. From the information made available by NCTPS, the transportation of un-lifted quantity of fly ash and bottom ash/wet ash to the ash dyke led to additional expenditure of ₹ 10.32 crore during the period 2013-16.
- A quantum of 69.58 million tonnes of ash remained in the ash dykes in the three plants as on 31 March 2016. MoEFCC's guidelines for phasing out of such accumulation of ash on land by 2009 was not therefore adhered to by TANGEDCO.



Figure 2-Ash from NCTPS being dumped in marshy land

The Government replied (November 2016) that addition of number of coal

<sup>82</sup>

Ash dyke is an engineered structure created for disposal of bottom ash and fly ash generated from the thermal plants.

based thermal power plants in Chennai and other parts of Tamil Nadu also contributed for reduction in lifting of dry fly ash from TANGEDCO by the cement companies. It further stated that the thermal plants were instructed to make efforts for disposal of the unlifted dry fly ash.

### **High Station Heat Rate**

**3.13.7** As identified by the National Action Plan for Climate Change (NAPCC), improving efficiency of the thermal plant is one of the ways of mitigating greenhouse gas emission. Station Heat Rate<sup>83</sup> (SHR) is an important measure for assessing the efficiency of the thermal power plant. Excess heat rate results in excess consumption of coal thereby increasing air and water pollution due to generation of more ash from the excess coal consumed.

The actual SHR as worked out by Audit, *vis-a-vis* the norms<sup>84</sup> fixed by the Tamil Nadu Electricity Regulatory Commission (TNERC) in the three thermal plants are given in the table below:

**Table-3.2 Station heat rate generated by thermal plants**

(per Kilowatt Hour)

Name of the thermal plant	SHR Norm (in Kcal)	Actual SHR				
		2011-12	2012-13	2013-14	2014-15	2015-16
<b>TTPS –Units I to V</b>	2,453	2,647	2,740	2,594	2,560	2,559
<b>MTPS-Units I to IV</b>	2,500	2,549	2,620	2,716	2,541	2,472
<b>MTPS-Unit V</b>	2,500	---	---	2,302	2,483	2,499
<b>NCTPS – Units I to III</b>	2,466	2,478	---	---	---	---
	2,393	---	2,491	2,571	2,512	2,466
<b>NCTPS – Units IV &amp; V</b>	2,450	---	---	---	2,843	2,609

It was noticed that the actual SHR was more than the norm fixed by TNERC in respect of TTPS, MTPS and NCTPS resulting in excess consumption of coal. Due to excess SHR, the plants consumed 4.02 million tonnes of excess coal involving additional expenditure of ₹1,601.68 crore with resultant excess generation of 1.22 million tonnes of ash. Consequently, 4.91 million tonnes of CO<sub>2</sub>, 0.49 lakh tonnes of SO<sub>2</sub> and 1.34 lakh tonnes of NO<sub>x</sub> had been let into the atmosphere during 2011-16, which had an adverse effect on environment.

The Government attributed (November 2016) the excess SHR to ageing of plants, operating of the units at partial load and non-availability of coal as per design. In view of the fact that the TNERC fixed the normative station heat rate to the respective plant considering the ground realities and parameters relevant for the plant, the excess SHR and the consequent excessive generation of ash was attributable only to non-implementation of comprehensive repairs and maintenance schedule resulting in delayed capital/annual overhaul.

<sup>83</sup> Station Heat Rate is a measure to calculate the heat required to generate each unit of electricity.

<sup>84</sup> TNERC(Terms and Conditions for determination of tariff) Regulations, 2005 as amended upto 31-12-2010 and tariff orders on generation and distribution.

Audit further observed that since coal particles remain in combustion zone only for two to three seconds, complete combustion is possible, only if fineness of pulverised coal is above 70 *per cent* and completely mixed with combustion air. It was noticed that TTPS could not achieve the prescribed fineness in pulverised coal due to poor performance of the mills. During the period between 2013-14 and 2015-16, pulverised coal analysis tests conducted in this plant indicated that the pass through from 200 mesh<sup>85</sup> was only in 1,393 times out of 2,130 tests (*i.e.*, 65 *per cent*). The Government stated (November 2016) that the reasons for the poor mill performance was on account of the high ash and moisture content of coal resulting in more wear and tear of the rotating parts. The reply was not convincing because the high ash content of the coal was a known fact for which permanent solution like revamping of the mills, *etc.*, had to be carried out. But, TANGEDCO had not initiated any such measures till date (November 2016).

Audit further noticed 186 instances of heat loss on account of boiler tube punctures, which resulted in loss of generation (10,261 hours) in the three power plants during the period 2011-12 to 2015-16 equivalent to 1,503.92 MU.

The Government replied (November 2016) that excessive boiler tube punctures were due to ageing of boilers, frequent partial loading of boilers and variation in coal quality. Audit observed that the incidence of boiler tube punctures could have been reduced to a great extent by proper preventive maintenance and also through proper blending of coal and improved mill performance.

***Non-achievement of Perform, Achieve and Trade (PAT) target resulting in possible penalty***

**3.13.8** Perform, Achieve and Trade (PAT) is a market based trading scheme announced (2008) by the GOI under National Action Plan on Climate Change. Participation in the scheme and achieving the targeted energy consumption as administered by the Bureau of Energy Efficiency (BEE),<sup>86</sup> was mandatory for designated consumers including thermal plants.

The three thermal plants, *viz.*, TTPS, MTPS and NCTPS were marked as designated consumers and fixed targets for achievement and reduction of their SHR. The targets and the actual achievement of the three plants were as mentioned in the following table:

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<sup>85</sup> Fineness of coal is measured as a percentage of the coal sample that passes through a set of test sieves usually designated as 50, 100 and 200 mesh. The fineness specification of 200 mesh (*i.e.*, 75 micron) would achieve good combustion.

<sup>86</sup> A statutory body under the Ministry of Power (GOI).

**Table-3.3 Details of energy saving certificates to be purchased by thermal plants**

<b>Plant</b>	<b>BEE notified net heat rate (in Kcal)</b>	<b>Normalised Heat rate achieved during the PAT-1 scheme (in Kcal)</b>	<b>Deviation (in Kcal)</b>	<b>Number of certificates to be purchased as penalty</b>
TTPS Units I to V	2,738	2,747	9	6,289
NCTPS Units I to III	2,684	2,744	60	25,992
MTPS Units I to IV	2,715	2,729	14	8,225
<b>Total</b>				<b>40,506</b>

As the three plants were not able to meet SHR fixed by Bureau of Energy Efficiency (BEE), they became liable to purchase 40,506 numbers of Energy Saving certificates valued<sup>87</sup> at ₹ 41.12 crore as penalty during the first phase of the scheme. Audit observed that though TANGEDCO had brought (May 2016) these factors to notice of BEE, it did not relax the conditions for achieving the normalised heat rate and hence, the liability to purchase the certificates remained valid till date (October 2016).

The Government replied (November 2016) that excess SHR was due to ageing of the machines, partial load operation due to grid constraints, non availability of good quality coal *etc.*, and had these factors been considered, the normalised SHR would have been less. The fact, however, remained that had TANGEDCO initiated SHR improvement measures, the liability could have been reduced.

### **Water Pollution**

**3.13.9** The waste water of the thermal plants (containing toxic substances<sup>88</sup> and at a high temperature) is a source of water pollution, causing loss of aquatic species and polluting ground water.

The extent of pollution in the discharged water is measured mainly in terms of Total Suspended Solids (TSS)<sup>89</sup>, Total Dissolved Solids (TDS) and Chlorides (CL). As a result of examination of these parameters in the discharged water of TTPS, MTPS and NCTPS during the five year period ending 31 March 2016, Audit observed the following:

#### ***Absence of Effluent Treatment and Sewage Treatment Plants***

(i) At NCTPS (Units I to III) and TTPS (Units I to V), sea water (130 KL per MW per hour approximately) is drawn and passed through tunnels for condenser cooling and let back into the sea after consuming around 5 *per cent* for preparation of ash slurry. The effluents generated in the above process are

<sup>87</sup> The Energy Saving Certificate is sold by industries achieving greater reduction than their target, which has a value calculated on the basis of price and consumption mix of coal, oil, gas and electricity of all Designated Consumers. The value considered by audit for valuation purposes is ₹ 10,154.

<sup>88</sup> Toxic substances include sulphates, chloride, oil and grease *etc.*

<sup>89</sup> TDS/TSS are the combined content of all the effluents from floor washing, ash handling system, coal handling system, clarifier sludge, filter backwash *etc.*

discharged into sea without any treatment. Right from its first consent order, (December 1993), *i.e.*, CFO, the TNPCB had been instructing both NCTPS and TTPS to set up Effluent Treatment Plants (ETP) at the discharge points of sea water. In spite of these instructions, ETPs were yet to be set up and untreated water continued to be discharged into the sea.

Audit observed that during the five year period ending 31 March 2016, 6.58 billion m<sup>3</sup> of effluent water was discharged into the sea without treatment. Audit further observed that in both these plants, the inlet sea water was already having high range of pollutants, ranging upto 91,136 mg/litre for TDS and 52,484 mg/litre for Chloride. In the absence of an ETP, a maximum of 1,13,000 mg/litre for TDS and 62,480 mg/litre for Chloride aggravated the pollution level of sea near the plant area.

The Government replied (November 2016) that in respect of NCTPS, consultancy service for establishing the ETP with online effluent quality monitoring system had been completed but erection work was in progress. As regards TTPS, proposal for getting consultancy services for the work was under progress. The fact, however, remains that the plants continued to discharge effluent water without treatment.

(ii) As MTPS Units I to IV did not have an ETP, TNPCB insisted (January 2013) MTPS to commission an ETP and to install online Effluent Quality Monitoring Stations to monitor the untreated water discharged into nearby Perumpallam stream of Cauvery river. In the compliance report, MTPS assured to commission a common ETP for all the existing Units I to IV and the new 600 MW Unit V. The ETP was commissioned after a delay of three years, in October 2015 as Unit V had already been synchronised with the grid on 4 May 2012 without completion of the common ETP. Audit observed in this regard that as against the designed capacity of the common ETP (11,000 m<sup>3</sup> per day), the actual daily discharge of effluent from all the five units ranged between 46,712 m<sup>3</sup> and 64,459 m<sup>3</sup>. Consequently, the plant continued to let out untreated effluent from Units-I to IV into Cauvery river.

The Government replied (November 2016) that as per the work awarded to the contractors for Unit V, only 7,000 m<sup>3</sup> of effluent from Units I to IV was to be treated in the common ETP and action had since been taken to execute the construction of effluent sumps for the balance quantity from these units. The fact, however, remains that even before award of work for Unit-V, TANGEDCO was aware of the quantum of effluent let out by all the units and the insufficient capacity of common ETP. TANGEDCO also failed to take up the follow-up action on construction of the common ETP, despite TNPCB's repeated instructions.

### ***Insufficient Channel for Hot Water Discharge***

**3.13.10** NCTPS Units I to III were discharging 99,000 m<sup>3</sup>/hour and Units-IV and V were discharging 2,20,000 m<sup>3</sup>/hour of hot effluent water into the sea through a channel, which was constructed in the year 2003. TNPCB noticed (June 2013) that the culvert along with the compound wall in the channel had washed off for a length of about 60 metre due to heavy discharge of effluent water and the balance portion of culvert was also in a very bad condition due to corrosion. As a result, the effluent water was overflowing, causing

environmental hazard in the surrounding areas. In this connection, Audit observed that even after three years, necessary repair works for the channel had not been carried out causing flooding of the nearby areas.

The Government replied (November 2016) that a proposal to reconstruct the damaged culvert was under consideration and at present widening the channel upto 120 meters was under progress.

#### ***Non-operation of Recovery Water Pump House***

**3.13.11** At NCTPS, the effluent generated from the Neutralisation pit, boiler blow down area, etc., are discharged into ash pond. The plant is having a Recovery Water Pump House (RWPH) to reuse the water from the ash pond for making slurry of the unlifted fly ash. The TNPCB, on inspection, found that (April 2012) RWPH was working with frequent breakdowns resulting in discharge of



**Figure 3- Ash mixed water from NCTPS being led into the Ennore creek**

water from the ash pond into the Ennore creek. Though, TNPCB reiterated to stop discharge of water into Ennore creek in all its consent orders for the years 2012-13, 2013-14 and 2014-15, the plant continued to discharge the ash contained water into the creek whenever the RWPH was not in operation. After carrying out necessary rectification works, the RWPH started operation only from June 2014. Between April 2012 and June 2014, a quantum of 8.05 lakh m<sup>3</sup> of polluted water was discharged into the Ennore creek. Though, the Government stated (November 2016) that the RWPH was effectively in service now, the fact remains that the pollution was already caused to the sea water when RWPH was not in operation upto June 2014.

#### ***Non-installation of continuous effluent monitoring systems***

**3.13.12** As per the Central Pollution Control Board's (CPCB) directive (February 2014), the thermal power plants were required to install and connect with the TNPCB and CPCB servers, real time online continuous effluent quality monitoring systems at the discharge points of ETPs to monitor effluent parameters such as TSS and temperature. The installation of online monitoring systems was to be completed by 31 March 2015. Audit observed that TTPS and NCTPS Stage-I had not installed and connected online continuous effluent monitoring systems for monitoring of TSS and temperature till date (October 2016), which was one of the reasons for non renewal of consent for these plants by TNPCB for 2015-16.

#### **Noise Pollution**

**3.13.13** As increasing ambient noise level in public places from various sources have deleterious effects on human health and psychological well being of the people, it is necessary to regulate and control noise at generating sources. Schedule to Rules 3(1) and 4(1) of the Noise Pollution (Regulations and Controls) Rules, 2000 prescribed that ambient air quality levels in respect of noise in industrial area should not exceed 75 decibels (dbs) during day time and 70 dbs during night time respectively. Table below indicates noise levels

attained by the three plants during the five year period ending 2015-16 in three areas viz., Turbine, Generator and Mill Plant.

**Table-3.4 Noise generated by thermal plants in different areas**

Area	Plant	Day time Noise in the range of – (in decibels)
Turbine	TTPS	79.8 to 89.4
	MTPS	75.9 to 87.9
	NCTPS	83.5 to 91.0
Generator	TTPS	80.5 to 89.3
	MTPS	79.8 to 90.3
	NCTPS	93.2 to 97.1
Mills	TTPS	86.0 to 91.4
	MTPS	73.8 to 86.6
	NCTPS	79.6 to 91.6

(Source: Data obtained from Annual Environmental Monitoring Reports of TANGEDCO)

It was observed that the noise levels in all the three areas in the three plants were above the norms in the five year period from 2011-12 to 2015-16 and thus, the thermal plants were violating the provisions of the rules.

The Government replied (November 2016) that noise level in areas like boiler feed pump, turbine floor and cooling water pump house were slightly exceeding the standards level and it was inevitable. The reply was not justifiable as the increased noise level would have an adverse impact on the health and well being of the officials and had TANGEDCO provided acoustic barriers and sound absorbing materials at the transmission path, the noise level could have been reduced. But there were no provisions in TANGEDCO's budget for providing noise reduction equipment.

### ***Creation of Green Belt***

**3.13.14** As per stipulation of MoEFCC, Green belt including landscape area equivalent to 33 *per cent* of the plant area was to be provided all around the power plant boundary to control pollution levels. Despite repeated reminders from TNPCB upto 2014-15 and also from the Environmental Monitoring Cell of TANGEDCO, none of the three power plants had complied fully with these norms for green cover. Audit observed that as of July 2016, most of the ash dyke area was devoid of trees in TTPS. Similarly in NCTPS Stage II and MTPS Stage III, planting of trees was only at the early stages.

The Government replied (November 2016) that steps were being taken to enhance the existing Green belt area.

### **Disposal of Hazardous Waste**

**3.13.15** TNPCB, while giving consent to operate the thermal plants, stipulated that the plants should comply with the Hazardous Wastes (Management, Handling and Trans-boundary Movement) Rules, 2008 in handling hazardous wastes like spent oil, oil sludge, exhaust resin, *etc.* As per the consent orders issued by TNPCB, a maximum quantity of 10,000 Kgs or a truck load, whichever was less, should alone be stored in the site for a maximum period of 90 days. The details of used oil generated, sold and



closing stock for the period 2011-12 to 2015-16 are given in **Annexure-19**.

Audit observed that during the above period, TTPS exceeded the norm in all the five years, the maximum closing stock held during 2013-14 being 48,130 Kgs while NCTPS exceeded the norm during 2013-14 and 2014-15 (11,020 Kgs during 2013-14 and 14,760 Kgs during 2014-15). The plants disposed of the used oil by floating tender only once or twice a year and it took about four months to finalise the tender. Though the Rules stipulated that the used oil should be disposed of within ninety days, there were no running contracts for periodical disposal of the waste oil and the wastes remained in the plants for periods exceeding ninety days endangering environment and safety in the plants.

The Government in its reply (November 2016), assured that in future the waste oil would be disposed of periodically.

### ***Expenditure Management for Pollution Control***

**3.13.16** The MoEFCC notification of September 1999 stipulated that the revenue from sale of fly ash should be used only for development of infrastructure for reaching the level of 100 *per cent* usage of fly ash. Audit noticed that though TANGEDCO had realised ₹ 625.93 crore as service charges through disposal of fly ash during 2011-16, it spent only ₹ 61.91 crore on environment management of the three units. The balance amount of ₹ 564.02 crore was diverted and spent for meeting TANGEDCO's general expenditure in violation of MoEFCC's guidelines. Thus, the stipulation of MoEFCC was not complied with by TANGEDCO even though the TNPCB had been repeatedly directing TANGEDCO to provide ETPs, revamping of ESPs, *etc.*, to control pollution.

### **Monitoring the pollution control**

**3.13.17** TANGEDCO has an Environment Management Cell (EMC) at its Headquarters (Chennai) to deal with issues concerning environment. The EMC conducts annual inspection of the thermal plants, prepares detailed reports on the study with suggestions for mitigation of pollution, which are sent to the thermal plants for follow-up actions. Audit observed that the suggestions of EMC over the years for pollution control such as reduction in chloride content, provision of ETP at TTPS and MTPS, arresting leakage in one of the silos of NCTPS, *etc.*, were not complied with by the units, nor they recorded justifications for not carrying out the same. Further, the MoEFCC guidelines regarding AA tests twice a week were not complied with by the plants. Audit further noticed that the EMC reports particularly on the non-adherence to pollution control norms by the plants and action taken thereon were also not reported at the Board level by the EMC. Thus, the EMC's suggestions/observations were not taken cognizance by TANGEDCO's Headquarters.


### **Conclusion**

It was found that the thermal plants of TANGEDCO continued to be functioning without adhering to the norms for air, water and noise pollutions as was evident from the fact that:

- the SPM levels at stack and carbon emission remained high due to non usage of clean beneficiated coal, keeping the station heat rate higher than the prescribed level, *etc.*
- A quantum of 69.58 million tonnes of ash remained in the ash dyke in the three power plants, which was against the MoEFCC's guidelines for phasing out accumulation of ash in the land.
- the plants polluted the sea and river water due to absence of ETP and STP.
- the envisaged equipments and the green belt areas to be maintained for controlling the noise pollution was not being maintained.
- the management of hazardous waste was also not as per the requirement of TNPCB.
- Against the revenue of ₹ 625.93 crore earned by disposal of fly ash, TANGEDCO spent only ₹ 61.91 crore on environment management, which was against the MoEFCC guidelines for spending the revenue only for infrastructure creation for disposal of fly ash.

Thus, the pollution control measures carried out by TANGEDCO continued to be inadequate.

Chennai  
The 06 March 2017

  
(R. THIRUPATHI VENKATASAMY)  
Accountant General  
(Economic and Revenue Sector Audit),  
Tamil Nadu

Countersigned

New Delhi  
The 07 March 2017

  
(SHASHI KANT SHARMA)  
Comptroller and Auditor General of India

