

# **CHAPTER - 2**

## CHAPTER-2

### 2. Performance Audit relating to Government companies

#### 2.1 Performance Audit on construction of extra high tension (EHT) sub-stations and transmission lines by Madhya Pradesh Power Transmission Company Limited

##### Introduction

**2.1.1** The Madhya Pradesh Power Transmission Company Limited (Company), Jabalpur was incorporated in November 2001 as a wholly owned government company under the administrative control of the Energy Department (Department), Government of Madhya Pradesh (GoMP) on unbundling of the erstwhile Madhya Pradesh State Electricity Board (MPSEB). The Company is entrusted with construction and maintenance of extra high tension<sup>1</sup> (EHT) sub-stations and transmission lines of 132, 220 and 400 kilo volts<sup>2</sup> (KV) in the State of Madhya Pradesh.

The main functions of the Company are (i) development and maintenance of an efficient, coordinated and economical intra-state transmission system; (ii) providing open access<sup>3</sup> to licensees, generating companies and consumers through an intra-state transmission system; and (iii) planning related to the intra-state transmission system in co-ordination with Central Electricity Authority (CEA), Central Transmission Utility (CTU)<sup>4</sup>, Generating companies and licensees.

During the period 2012-17, the Company awarded works contracts for ₹ 3,563.45 crore for improving and widening its transmission system.

##### Organisational Setup

**2.1.2** The Company is under the overall administrative control of the Energy Department of GoMP headed by the Principal Secretary. The management of the Company is vested in a Board of Directors (BoD) comprising eight Directors. The Managing Director (MD) is the Chief Executive Officer who looks after the day-to-day activities of the Company. The Chief Engineer (Planning and Design) takes care of the long term and annual plans, project proposals, survey of the projects, preparation of Detailed Project Reports (DPRs) and getting them approved from the concerned funding agencies. Chief Engineer (Procurement) looks after the tendering process and award of contract to the successful bidder. The Chief Engineer (EHT-Construction) looks

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<sup>1</sup> EHT transmission systems are used to transmit electric power over relatively long distances, usually from a central generating station to main substations

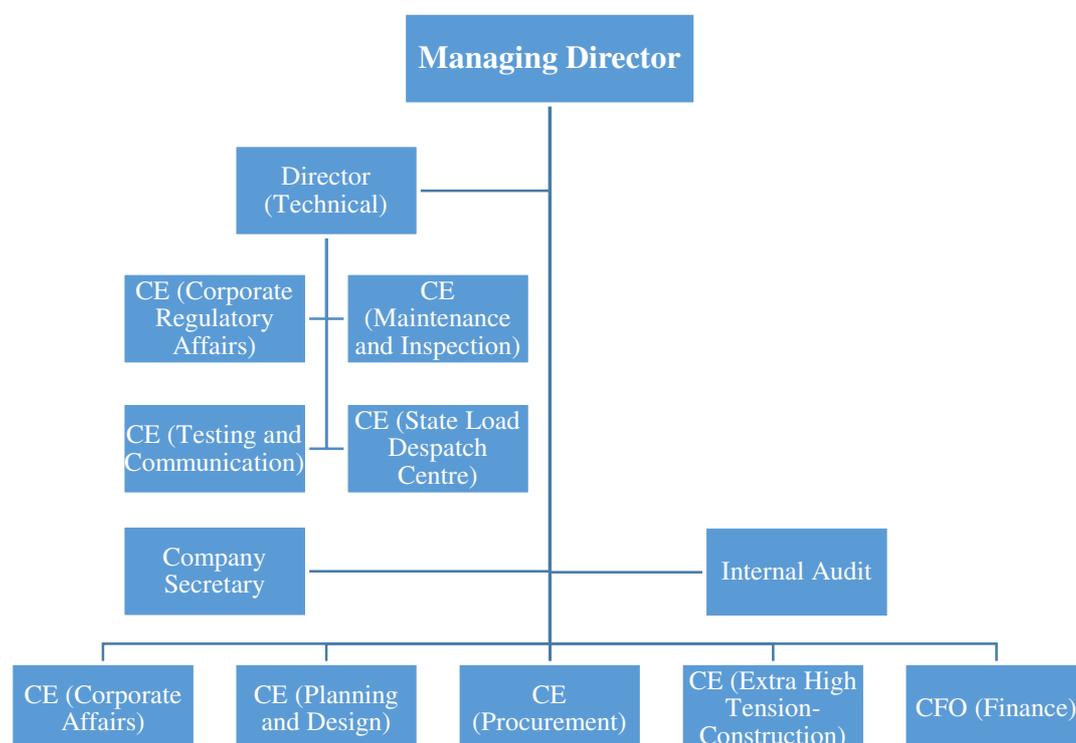
<sup>2</sup> Unit of power equal to 1,000 volts

<sup>3</sup> “Open access” means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation, in accordance with regulations specified by the appropriate commission.

<sup>4</sup> Power Grid Corporation of India Limited is the Central Transmission Utility (CTU) of India and has been designated as Nodal Agency for grant of connectivity, long-term access and medium-term open access to the inter-state transmission system.

after execution of projects/ works of EHT sub-stations and transmission lines. The organisational structure of the Company is given below in Chart 2.1.1.

**Chart 2.1.1 Organisational Structure of the Company**



The status of sanctioned strength *vis-à-vis* actual manpower of the Company in respect of technical and non-technical cadres is given in table no. 2.1.1:

Category of staff	Sanctioned strength	Actual manpower		
		Regular	Contract	Total
Technical staff	3,800	3,079	-	<b>3,079</b>
Non-technical staff	2,062	1,012	303	<b>1,315</b>
<b>Total</b>	<b>5,862</b>	<b>4,091</b>	<b>303</b>	<b>4,394</b>

### **Audit Objectives**

**2.1.3** The Performance Audit was conducted to assess whether:

- the construction projects of transmission systems were conceptualised and identified on need basis and planning for execution of works/ projects was adequate;
- the projects were awarded transparently and executed effectively, in timely manner and as per the applicable guidelines;
- funds for the projects were assessed realistically, arranged and utilised efficiently, economically and effectively;
- an adequate monitoring and internal control system was in place to review the implementation of projects and benefits derived from the projects/works; and whether corrective actions were taken to overcome deficiencies.

## Audit Criteria

**2.1.4** The audit criteria adopted for the Performance Audit were derived from:

- Long term plan, annual plan, project DPRs and Guidelines for Capital Expenditure (CAPEX);
- The CEA's Manual of Transmission Planning Criteria, CEA (Grid Standard) Regulations, 2010 and Grid Connectivity Standards, 2007;
- Recommendations of Task Force on transmission projects constituted (February 2005) by Government of India (GoI) and circulars issued by Company/ State Government/ Central Government;
- Norms/guidelines issued by Madhya Pradesh Electricity Regulatory Commission (MPERC)/ Central Electricity Authority (CEA) and Funding Agencies;
- Agenda/ minutes of BoD Meetings.

## Scope and methodology of Audit

**2.1.5** A Performance Audit Report on the working of the Company was last included in the Audit Report (Commercial) of the Comptroller and Auditor General of India for the year 2011-12, Government of Madhya Pradesh. The Committee on Public Undertakings (COPU) discussed the Report in June 2015 and its recommendations are awaited (May 2018).

The present Performance Audit covers the issues relating to construction of EHT sub-stations and transmission lines (132 KV, 220 KV and 400 KV) which, *inter alia*, included formulation and planning of projects, procurement, construction and commissioning of sub-stations and transmission lines during the years 2012-13 to 2016-17. The Head office of the Company and four<sup>5</sup> (out of five) Circle Offices along with their eight<sup>6</sup> (out of 11) EHT Construction Divisions were selected for detailed scrutiny of records. Audit also conducted joint physical verification with Company officials at 12 EHT sub-stations.

Audit test checked 25 turnkey work contracts (54 *per cent* out of total 46 turnkey work contracts) valued at ₹ 2,443.89 crore (69 *per cent* of the total money value of ₹ 3,544.94 crore of 46 turnkey work contracts) and 13 other work contracts (50 *per cent* out of total 26 other work contracts) valued at ₹ 14.62 crore (79 *per cent* of total money value of ₹ 18.51 crore of 26 other work contracts) awarded by the Company during the review period (2012-17).

There are 13 audit observations on the test checked work contracts and most of them are of a nature that may reflect similar errors/omissions in other works being executed by the Company, but not covered in the test audit. The Company therefore may, like to internally examine all the other works being executed by them with a view to ensure that these are being carried out as per requirement and rules.

Audit objectives, audit criteria, scope and methodology of audit etc., were explained to the Energy Department, GoMP and the Company during the entry conference (March 2017). The draft report was issued to the Company on

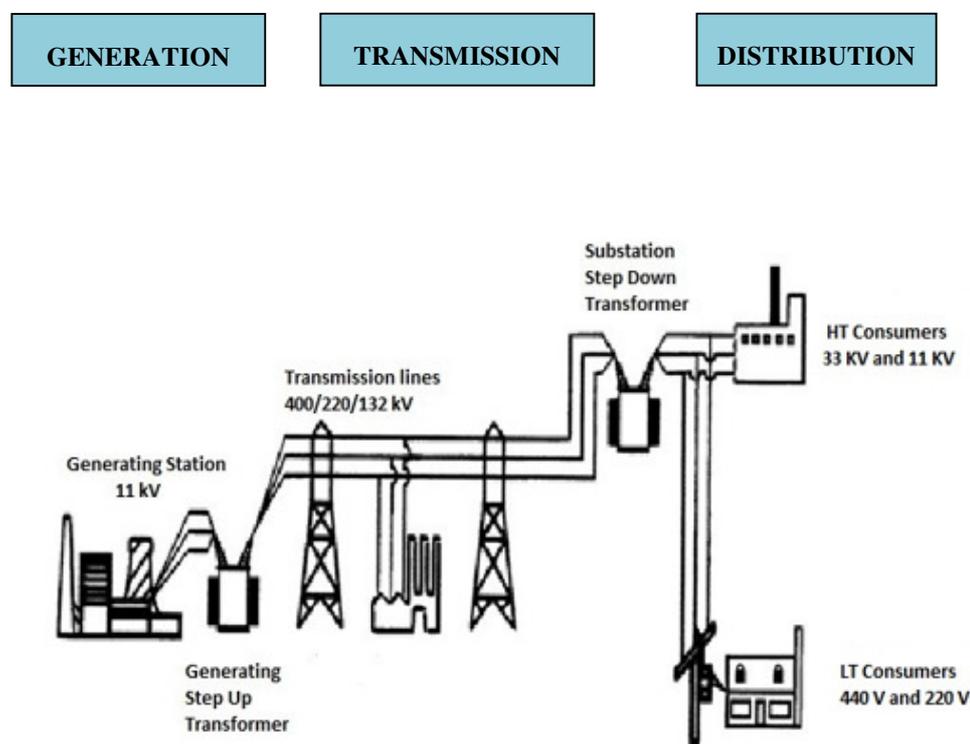
<sup>5</sup> Jabalpur, Bhopal, Indore and Gwalior

<sup>6</sup> Jabalpur I, Jabalpur II, Bhopal I, Bhopal II, Indore, Gwalior I, Gwalior II and Itarsi

30 August 2017 and the audit findings were discussed in the exit conference held on 13 December 2017, with the Principal Secretary, Energy Department, GoMP and the MD of the Company.

### Brief description of Transmission Process

**2.1.6** Transmission of electricity is defined as the bulk transfer of power over long distances at high voltages, generally at 132 KV and above. EHT sub-stations are facilities for stepping up and stepping down voltages from one level to another, connecting electric systems and switching equipment in and out of the system. Electric power generated at relatively low voltages in power plants is stepped up to high voltage before transmission to reduce the transmission loss and to increase efficiency of the grid. Voltages are again stepped down to low voltage for distribution to consumers. The distribution system includes lines, poles, transformers and other equipment required to deliver electricity at specific voltages. A pictorial representation of the transmission process is given below:



### Transmission system and capacity

**2.1.7** The major elements of transmission systems are transmission lines and sub-stations, which cater to the power and energy demand of downstream networks of distribution licensees. Increased demand for power necessitates strengthening of the transmission system by constructing new sub-stations, adding capacity at existing sub-stations and laying new transmission lines to the load centres. The system expansion is planned gradually as per the load growth scenarios projected on the basis of historical data. The growth of transmission

capacity<sup>7</sup>, increase in the number of sub-stations, and the expansion of transmission network are correlated.

The status of the transmission network of the Company as on 31 March 2017 is detailed in table no. 2.1.2.

Sl. No.	Voltage	Number of sub-stations and capacity		EHT lines (in circuit kms)
		Number	Capacity in mega volt ampere (MVA)	
1	400 KV	9	7,350	3,075
2	220 KV	71	21,990	12,324
3	132 KV	250	24,056	16,910
4	66 KV <sup>8</sup>	1	20	61
<b>Total</b>		<b>331</b>	<b>53,416</b>	<b>32,370</b>

During the period covered under Audit (2012-13 to 2016-17), the Company constructed 5,251 circuit kms<sup>9</sup> of EHT transmission lines and 83 new sub-stations, adding transmission capacity of 17,852 MVA.

### **Acknowledgement**

Audit acknowledges the cooperation and assistance extended by the Company and its officials during conduct of the Performance Audit.

### **Audit findings**

**2.1.8** Audit observations noticed during the performance audit are discussed in the following paragraphs.

### **Monitoring and Internal Control in execution of construction works**

**2.1.9** Internal controls and monitoring are essential to management activity. An efficient and effective internal control and monitoring system helps the management in timely achievement of objectives and ensures compliance to procedures and financial discipline.

While reviewing the transactions and records related to construction of EHT sub-stations and transmission lines by the Company, Audit noticed that internal control system and monitoring mechanism in the Company were inadequate to the following extent.

- There is no system in the Company of submitting progress reports of works to its BoD resulting in lack of monitoring of projects by BoD. Further, important issues arising during execution of works such as land acquisition, material supply to contractor, right of way (RoW), and poor performance of the contractors etc, had also not been apprised to BoD. Thus, BoD failed to exercise its role in monitoring the projects.

The Department stated (December 2017) that major issues are brought to the notice of BoD and termination of contracts is done with the approval of BoD.

**Progress reports and important issues relating to execution of the works were not submitted to BoD resulting in lack of monitoring of projects by the BoD.**

<sup>7</sup> Transmission capacity refers to the amount of electric power that can be passed through a transmission network from one place to another.

<sup>8</sup> One 66 KV old line of 61 kms.

<sup>9</sup> The route length of transmission lines are measured in circuit kms.

The reply is not acceptable as important issues arising during execution of works as commented above have not been apprised to the BoD. Submitting termination cases alone was not adequate for monitoring of projects by higher management.

- The Company did not work out sub-station wise transmission losses. Due to this, there was no system to assess reduction in transmission losses by commissioning of new sub-stations as envisaged in their DPRs.
- Competent authorities were not following the system of recording specific reasons or justification while taking important decisions and/or while according approval for deviating from procedures and terms and conditions of contracts as discussed under *paragraphs 2.1.11, 2.1.13, 2.1.22, 2.1.25, 2.1.26 and 2.1.28.*
- The Company did not have an internal audit wing and this activity was outsourced to practicing Chartered Accountants (CAs). Audit observed from the review of internal audit reports that the scope of work assigned to outsourced CAs was not comprehensive and the Company did not critically analyse the internal audit requirements for ensuring its effectiveness. Further, the observations of CAs were mainly related to vouching, non-deduction of statutory deductions like Provident Fund, establishment related issues etc., and the internal audit reports were not submitted to BoD.

Audit further observed the following deficiencies in the monitoring mechanism for construction works:

#### ***Delay in implementation of Enterprise Resource Planning Project***

**2.1.10** The BoD of the Company resolved (November 2012) to implement an enterprise resource planning (ERP) project in the Company with the envisaged objective of integrating all operational functions including Project Planning and Monitoring so as to strengthen its Business Intelligence Reporting and to have improved workflow and increased efficiency. Accordingly, M/s Price Waterhouse Coopers Pvt. Ltd. (PwC) was appointed (August 2013) as Program Management Consultant (PMC) through competitive bidding. The Consultant had been paid ₹ 1.34 crore upto December 2017.

For selection of System Integrator (SI) for supply, installation, commissioning, implementation and support of ERP, tender was invited in November 2014 with the due date of opening in December 2014. However in view of request made by the prospective bidders and to increase participation, the due date was extended thrice. In response, only two firms had submitted their proposals and techno-commercial bid was opened in July 2015.

The evaluation of bids includes evaluation of pre-qualification criteria/mandatory requirements and further, technical evaluation of all bidders who qualify in pre-qualification criteria. However, there was no timeline fixed for evaluation of bids. The bid evaluation committee<sup>10</sup> took 12 months for the evaluation and the validity (June 2016) of offer elapsed. Though the Company requested (August 2016) the bidders to extend the validity of their offer till October 2016, one bidder refused the same and the Company decided (October 2016) not to open the price bid of single bidder. Hence, the work was retendered (November 2016), and after evaluating the technical and price bids,

**Delay in implementation of ERP project led to non-fulfilment of objectives to integrate all operational functions and strengthening of monitoring system in the Company.**

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<sup>10</sup> Comprising of CE (Planning and Design), CE (Procurement) and Chief Financial Officer.

the work was awarded (May 2017) at a cost of ₹ 55.95 crore with a scheduled completion of 24 months and the execution of the project is in progress (December 2017).

The Department stated (December 2017) that due to involvement of complexity in tender finalisation, the ERP project has been delayed. However, this has not affected the monitoring of operational functions.

The reply is not acceptable as the Company was aware of the processes involved in tender finalisation. However, it failed to finalise the tender within its own fixed validity period. Further, due to delay in implementation of ERP, its envisaged objective of integrating all operational functions and thereby strengthening of reporting and monitoring system could not be achieved.

**Recommendation: The Company should take steps to complete the ERP project without further delay so as to obtain the benefits of improved workflow and effective monitoring of operations.**

### Planning and project conceptualisation

Deficiencies noticed in the planning process are as follows:

#### *Deficiencies in preparation and approval of plans*

**2.1.11** In accordance with the Guidelines for Capital Expenditure (CAPEX) issued (July 2005) by the Madhya Pradesh Electricity Regulation Commission (MPERC), the Company was required to develop ten-year perspective plan and submit five year plans and annual CAPEX plans to MPERC containing the details of all the projects to be executed. In this connection, the following was observed:

- The Company had not developed a ten-year perspective plan for the State Transmission System, for reasons not on record. Thus, the Planning wing headed by Chief Engineer (Planning and Design) failed to adhere to the regulatory requirements prescribed in CAPEX guidelines.
- The Planning wing of the Company secured the approval (July 2012) of MPERC to the five year CAPEX Plan of ₹ 7,370.22 crore for the 12<sup>th</sup> Plan period (2012-17), without obtaining approval of BoD.
- The Planning wing prepared annual capital expenditure plans (planned expenditure: ₹ 4,750.17 crore<sup>11</sup>) for 2012-13 to 2016-17, but for reasons not on record they failed to submit the same to BoD and MPERC for approval as required under the CAPEX guidelines. Further, CAPEX guidelines also stipulate that the capital investments stated in the annual capital expenditure plan will be in accordance with the five year plan. Where circumstances cause a modification of the five year plan, such circumstances as well as their effect to the investment plans must be stated. However, the Planning wing had not adhered to the same. MPERC also failed to monitor and did not insist that the Company submit the annual capital expenditure plan in accordance with the CAPEX guidelines.

**Five year Capital expenditure plan was submitted to MPERC without BoD approval and annual plans were not submitted to BoD and MPERC.**

<sup>11</sup> For 2012-13- ₹ 342.20 crore, 2013-14 ₹ 387.84 crore, 2014-15 ₹ 629.85 crore, 2015-16 ₹ 1,496.83 crore and 2016-17 ₹ 1,893.45 crore

In their reply to Audit, the Department informed (December 2017) that the transmission works required for next ten years were identified. However on being further queried by Audit in this regard, the Company confirmed that there was no such practice of preparing ten year perspective plan. It was also stated that the capital expenditure required for the 12<sup>th</sup> Plan period was approved by MPERC.

The reply is not acceptable as the Company did not develop any perspective plans. Further, the five year CAPEX plan was not approved by BoD before submitting to MPERC. The reply is silent about failure to submit annual capital expenditure plan to BoD and MPERC.

**Recommendation: The Company should adhere to the CAPEX guidelines of MPERC on preparation of ten year perspective plan, five year plan and annual plans.**

*Shortfall in achievement of physical and financial targets*

**2.1.12** As discussed in *paragraph 2.1.11*, the annual capital expenditure plans prepared by the Planning wing of the Company were not consistent with the five year plan. As a result, many works envisaged in the five year plan were excluded, and other works were included in the annual plans as detailed in *Annexure-2.1.1(a)* and *Annexure-2.1.1(b)*. This has resulted in major variations and non-achievement of physical and financial targets as summarised in table no. 2.1.3.

Table No. 2.1.3				
Particulars	Transmission lines	No. of sub-stations	Capacity of sub-stations	Total
<b>Physical target and actuals (2012-17)</b>				
Physical target as per five year plan	10,667.30 circuit km	94	19,698 MVA	
Physical target as programmed in annual plans <sup>12</sup>	5,842 circuit km	82	17,470 MVA	
Decrease in annual plans from five year plan (in per cent)	45.23	12.77	11.31	
Actual achievement	5,250.11 circuit km	83 <sup>13</sup>	17,852 <sup>14</sup> MVA	
Decrease in actual achievement from five year plan (in per cent)	50.78	11.70	9.37	
<b>Financial target and actuals (2012-17)</b>				<b>(₹ in crore)</b>
Financial target as per five year plan	4,032.99	3,337.23		<b>7,370.22</b>
Financial target as per annual plans		4,750.17		<b>4,750.17</b>
Actual financial achievement	2,231.33	2,941.08		<b>5,172.41</b>
Decrease in actual achievement from five year plan (in per cent)	44.67	11.87		<b>29.82</b>

<sup>12</sup> For the years 2012-13 to 2016-17

<sup>13</sup> Out of 83 sub-stations, 24 sub-stations were planned prior to 2012-13, but completed in the plan period (2012-17).

<sup>14</sup> Out of 17852 MVA, 2854 MVA capacity was in respect of 17 sub-stations, which were planned prior to 2012-13 but completed in the plan period (2012-17).

The reasons for non-achievement of targets under the five year plan were non-execution of projected works of approved DPRs<sup>15</sup> and delay in execution of works (discussed in *paragraph 2.1.17*). Further, there was shortfall in achievement of targets set in annual plans due to poor performance of the contractor (*paragraph 2.1.21*) etc. The shortfall in achievement of targets resulted in overloading on lines (discussed in *paragraph 2.1.13*).

Regarding exclusion of works envisaged in the five year/annual plan and execution of other works, the Department stated (December 2017) that the same was done due to urgency and as per actual requirements. Further, some works were rescheduled depending upon the completion of associated generating works and load requirements of different areas.

The reply is not acceptable as there were substantial shortfalls in achievement against five year plan targets as evident from the table 2.1.3. While the above factors stated by the Department also contributed to the shortfall in achievement, the primary reason was poor planning by the Planning wing, since annual plans prepared by the Company were not consistent with the approved five year plan.

### ***Overloading on lines***

**2.1.13** As per MPERC (Transmission Performance Standards) Regulations, 2004, loading of all single 132 KV and 220 KV lines should be limited to surge impedance loading<sup>16</sup> (SIL) of 50 MW and 132 MW respectively. Audit noticed that during the period 2012-17, SIL crossed the limit frequently in nine transmission lines<sup>17</sup> and it ranged from 32 to 90 *per cent* above permissible SIL. Audit observed that the Planning wing included nine works in five year plan (2012-17) to overcome the overloading problem, but only three<sup>18</sup> of these works were included in annual plans. The reasons for non-inclusion of remaining six works in the annual plans were not on record. Further, the three works included in the annual plans were also delayed due to non-finalisation of land for 220 KV Gorabazar sub-station as discussed in *paragraph 2.1.19* and non-completion of lines due to failure in supply of material by the Company to the contractors.

Thus, due to non-execution of six works envisaged in the five year plan (2012-17) and delay in completion of three works which were included in the five year plan as well as annual plans, the lines remained overloaded. As a result, safety and reliability<sup>19</sup> of the transmission system remained at stake. Thus, the Planning wing failed to take concrete action while preparing annual capital expenditure plans and procurement wing failed to timely execute planned works to overcome overloading on lines.

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<sup>15</sup> Two DPRs (aggregate project cost: ₹ 3,300 crore) approved by funding agencies (JICA and KfW Development Bank) in March 2016 and June 2016, were included in five year plan but the projects could not be taken up during the plan period.

<sup>16</sup> Surge Impedance Loading (SIL) is the loading of a transmission line (in megawatt) at which a natural reactive power balance occurs. If SIL crosses the permissible limit, transmission lines may trip and voltage fluctuations may occur.

<sup>17</sup> 132 KV South Zone –Satya Sai line, 220 KV Indore-Jaitpura-I line, 220 KV Indore-Jaitpura-II line, 132 KV Electronic Complex – South Zone line, 132 KV Bhopal-Amravad Khurd line, 132 KV Rewa-Mangawa line, 132 Nagda-Khachrod line, 132 KV Jabalpur-VFJ I line and 132 KV Guna-Bhaora line.

<sup>18</sup> 220 KV substation Gorabazar, 132 KV Nagda-Khachrod-Jawra line and 2<sup>nd</sup> circuiting of 132 KV Rewa-Mangawa line

<sup>19</sup> If the SIL crosses limit, it creates tripping of lines, voltage fluctuation due to more load than the capability of the lines.

The Department agreed (December 2017) that transmission lines were overloaded due to non-completion of planned works within the time frame.

The reply is silent about failure to include the six works envisaged in the five year plan in annual plans to overcome overloading.

### ***Non-formation of apex level and state level committees***

**2.1.14** Construction of EHT sub-stations, transmission lines and feeder bays requires statutory clearance and working permission of other departments like Revenue, Forest, Defence, Railways etc. However, the Company has not formed any apex level or state level committee for ensuring adequate coordination with these departments involved in the implementation of various projects. As a result, there were delays in obtaining permission/ clearance from these departments which in turn delayed the completion of various projects as discussed under *paragraph 2.1.19*.

The Department stated (December 2017) that the statutory clearances and permission are obtained by the field units of the Company. The reply is not acceptable as there were delays in obtaining statutory clearances from various departments and the same could have been avoided by pursuing through an apex level or state level committee.

### ***Non-preparation of Procurement/ Works Manual***

**2.1.15** The Company had taken up huge expansion, modernisation and maintenance of sub-stations, transmission lines under Asian Development Bank (ADB), Japan International Cooperation Agency (JICA) and Power Finance Corporation (PFC) loans. The Company, however, had not prepared any separate codified procurement/ works manual containing the detailed purchase/projects execution procedures, guidelines to ensure systematic and uniform approach for smooth and faster decision making even after 16 years of its formation.

The Company stated (December 2017) that its procurement/ works activities are carried out based on the procedure of the erstwhile Madhya Pradesh Electricity Board. However, Audit observed that there was no such documented procedure.

In the absence of Procurement/ Works manual, there were deficiencies in execution of works, as discussed in *paragraphs 2.1.18 and 2.1.19*. Further, the Company followed different terms and conditions for the payment of mobilisation advance<sup>20</sup> to contractors with varying rates of interest.

The Department stated (December 2017) that manual is under preparation and is expected to be finalised shortly. Progress would be watched in audit.

## **Project implementation and execution**

**2.1.16** Project implementation comprises construction activities for creation of new infrastructure, augmentation of existing transmission system and modernisation of existing infrastructure.

Construction activities included: (i) Planning and selection of projects for execution through turnkey or semi-turnkey basis, (ii) Selection of contractors

<sup>20</sup> 15 per cent of awarded cost in case of works under loan no. I of JICA, 10 per cent in case of works under loan no. III of ADB and 10/15 per cent in case of works under PFC loan

**The Company did not prepare procurement/ works manual. As a result, there were deficiencies in execution of works.**

and suppliers for execution of projects as per approved DPRs; and (iii) Monitoring of works to ensure achievement of cost and time deadlines. For execution of the transmission works and projects, the Company has been borrowing funds from international funding agencies (JICA and ADB), PFC, Rural Electrification Corporation Limited (REC) and KfW Development Bank (KfW).

### *Delay in execution of works*

**2.1.17** During 2012-17, the Procurement wing headed by CE (Procurement) issued orders for 46 turnkey work contracts (including 465 works for construction of transmission lines, feeder bays<sup>21</sup> and sub-stations) valued at ₹ 3,563.45 crore. The status, as on 31 March 2017, of these 465 works is given in table no. 2.1.4:

Table No. 2.1.4						
Particulars/works	Works taken up	Works completed within time	Works completed with delays	Works in progress	Works commenced but stopped	Works still to be commenced
<b>Lines</b>						
400 KV lines	3	0	0	1	0	2
220KV lines	31	0	13	10	6	2
132 KV lines	139	15	56	37	21	10
<b>Total</b>	<b>173</b>	<b>15</b>	<b>69</b>	<b>48</b>	<b>27</b>	<b>14</b>
<b>Sub-stations</b>						
400 KV sub-stations	2	0	0	2	0	0
220KV sub-stations	22	0	13	4	4	1
132 KV sub-stations	82	7	39	15	18	3
<b>Total</b>	<b>106</b>	<b>7</b>	<b>52</b>	<b>21</b>	<b>22</b>	<b>4</b>
<b>Feeder bays</b>						
400 KV feeder bays	1	0	0	0	0	0
220KV feeder bays	24	0	7	12	4	0
132 KV feeder bays	161	16	87	35	16	7
<b>Total</b>	<b>186<sup>22</sup></b>	<b>16</b>	<b>94</b>	<b>47</b>	<b>20</b>	<b>7</b>
<b>Grand Total</b>	<b>465</b>	<b>38</b>	<b>215</b>	<b>116</b>	<b>69</b>	<b>25</b>

**Delay in completion/ non-completion of works deprived the Company of the envisaged reduction of transmission losses amounting to ₹ 71.61 crore.**

The delay in completion/non-completion of sub-station and transmission line works had deprived the Company of the envisaged reduction of transmission losses by ₹ 71.61 crore during the audit period. The main reasons for poor progress were commencement of works without conducting detailed survey (*paragraph 2.1.18*), awarding of works without ensuring land availability (*paragraph 2.1.19*), deficiencies in finalising layout and drawings (*paragraph 2.1.20*), awarding of multiple contracts simultaneously to single contractor (*paragraph 2.1.21*), poor progress in execution of turnkey work contracts by the contractor (*paragraph 2.1.22*) etc. Specific deficiencies noticed in implementation of projects are discussed below.

<sup>21</sup> The feeder bay routes power from the sub-station to the transmission and distribution lines.

<sup>22</sup> Work of two feeder bays abandoned after awarding of work orders.

### ***Commencement of works without conducting detailed survey***

**2.1.18** The Task Force<sup>23</sup> on transmission projects constituted by GoI had recommended (August 2005) that various preparatory activities such as route alignment, detailed survey before notice inviting tender (NIT) and soil investigations, statutory clearances, identification of land, formalities for land acquisition etc., are to be undertaken on time for ensuring reduction in project implementation schedule. The Madhya Pradesh Works Department Manual<sup>24</sup> (WDM) also provided that DPR should be prepared only after completion of survey and investigation.

Audit observed that the CE (Planning and Design) prepared and got DPRs approved by BoD without conducting detailed survey and accordingly, CE (Procurement) issued NIT for execution of works. The detailed survey was conducted after award of the works. In respect of 57 out of 116 transmission line construction works<sup>25</sup> (49.14 per cent), it was noticed that during detailed surveys the route length was reduced up to 97.10 per cent (49 works) and increased up to 20 per cent (eight works) of preliminary estimates. As the contract amounts were finalised and turnkey contracts were awarded based on these preliminary survey and estimates, there was reduction in quantity and consequent reduction in the actual value of contracts by ₹ 161.80 crore. However, the Company had paid mobilisation advances based on the awarded amount of contracts. As a result, there was excess release of ₹ 20.07 crore as mobilisation advance to the contractors.

The Department replied (December 2017) that awarding of work and activity of detailed survey were taken up parallelly to save time and achieve more economy in transmission works. In the exit conference (December 2017), however, the Principal Secretary expressed concern on this issue and instructed the Company officials to ensure completion of all preparatory activities before award of work.

It is therefore evident that the Company had not followed the recommendations of the Task Force as well as provisions of WDM by not taking up various preparatory activities i.e., survey, route alignment and preparation of detailed estimates before issuing the work order to ensure reduction in project implementation schedule. Further, no time and cost saving was achieved by awarding the works before detailed survey as most of the works were delayed.

**Recommendation: The Company should award works only after completion of detailed survey, route alignment and preparation of detailed estimates as stipulated in the Works Department Manual.**

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<sup>23</sup> Task Force comprises of members from Central Electricity Authority, Central transmission utility, State transmission utilities and Ministry of Power with the objective to recommend ways to curtail delays in transmission project implementation from the best practices of Central and State transmission utilities.

<sup>24</sup> In the absence of Company's own procurement/works manual, GoMP Works Department's Manual has been taken as bench mark/good practice.

<sup>25</sup> Audit scrutinised 25 turnkey work contracts out of the total 46 turnkey work contracts taken up by the Company during the review period (2012-17). The sample was selected on the basis of stratified sampling method through Interactive Data Extraction and Analysis (IDEA) software. There were 116 line works taken up under selected sample.

***Awarding of works without ensuring land availability***

**2.1.19** As recommended by the Task Force on Transmission Projects of GoI, timely completion of preparatory activities such as identification of land for sub-station and initiation of land acquisition process, were essential for speedy implementation of projects. The WDM also stipulated that formalities for the acquisition of land required for any particular work must be completed before the work is taken up. As per appendix 6 of the standard work order, the Company (Planning Wing) was required to provide possession of land/ site to the contractor.

Audit noticed that:

➤ The Company had not framed guidelines and procedures to be followed in acquiring of land for sub-stations. CE (Procurement) issued works orders for construction of 11<sup>26</sup> sub-stations without ensuring prior acquisition of land. Meanwhile, in accordance with the terms of work order, contractors were paid interest free mobilisation advance of ₹ 15.80 crore. As land was handed over to the contractors with delays ranging from seven to 20 months from the date of work order, the payment of mobilisation advance far ahead of possible implementation resulted in undue advantage to the contractors. Further, because of the delay in providing land, time extension was granted to contractors, resulting in delay in construction of sub-stations, associated transmission lines and feeders bays.

The Department replied (December 2017) that awarding of work and activity of land acquisition were taken up parallelly to save time and achieve more economy in transmission works.

The reply is not acceptable as the Company had not followed recommendations of the Task Force and provisions of WDM. Further, no time and cost saving was achieved by awarding the works before acquisition of land as most of the works were delayed. The Principal Secretary in the exit conference (December 2017) also expressed concern on this issue and instructed the Company to ensure completion of all preparatory activities before award of work.

➤ The land proposed for 220 KV sub-station at Gorabazar, Jabalpur was under defence cantonment area. The WDM stipulated that defence land should not be used without sanction of the Ministry of Defence (MoD). However, CE (Procurement) issued (September 2012) work order for construction of sub-station without permission of defence authorities. Subsequently, the defence authorities granted (July 2014) permission to the Company for use of defence land for construction of towers for transmission lines only. However, the Executive Engineer (EHT-Construction, Division-I), Jabalpur considered the same as permission for construction of sub-station also and instructed (November 2014) the contractor to start the work of construction of sub-station. Consequently, after the contractor started the work and supplied various materials at site, the defence authorities stopped the work execution.

Subsequently, the defence authorities demanded (August 2016) rent of ₹ 23.90 lakh per month from the Company for using land for construction of sub-station. Though, the Company contested (September 2016) this, the matter

<sup>26</sup> 132 KV sub-station-Kailaras, Chinour, Narsingharh, Intkhedi, Morwan, Katangi, Bada Malehra, 220 KV sub-station-Adampur, Gorabazar, Mugaliachhap and Mangalia taken up under loan no. 3 of ADB and loan no. 1 of JICA

**Company awarded works of sub-stations without ensuring availability of land resulting in delay in commencement of works and blocking up mobilisation advance of ₹ 16.82 crore.**

has not been resolved and the work of construction of sub-station has not commenced so far (December 2017). Thus, the objective of meeting the load growth of Jabalpur city remained unachieved. Further, mobilisation advance of ₹ 2.06 crore paid (November 2012) to the contractor as well as the expenditure of ₹ 2.35 crore incurred for materials brought to site remained blocked. As the sub-station was not constructed, the associated lines<sup>27</sup> (Jabalpur-Amarkantak and Jabalpur-Maneri) also could not be constructed and thus, the interest free mobilisation advance of ₹ 1.02 crore paid (January 2013) to the contractor of line work also remained blocked. The planning wing has not identified an alternative site for the sub-station so far (December 2017).

While accepting the audit observation, the Department stated (December 2017) that the matter is under consideration at MoD and the work will be completed after receipt of No Objection Certificate (NOC) from MoD. The reply is not relevant because the work should not have been started, and interest free mobilisation advance should not have been released to the contractor without settling the issue of the use of defence land.

**Recommendation: The Company should ensure completion of preparatory activities such as identification of land, seeking approvals and clearances in advance for speedy implementation of projects.**

#### *Deficiencies in finalising layout and drawings*

**2.1.20** As per standard terms of Company's contracts, the Planning wing shall provide structural and foundation drawings along with the work order. Audit observed that:

➤ The work of construction of 132 KV sub-station at Shyamgarh<sup>28</sup> was awarded (March 2014) to M/s BS Limited. The layout and drawings for sub-station were prepared (May 2014) without proper demarcation of allotted land. The same was revised (October 2015) after 17 months due to delay in arranging revised land survey and demarcation of land by the Company officials<sup>29</sup>. Subsequently, the contractor (M/s BS Limited) also failed to initiate the work as he did not deploy man power and machinery and supply material at site. Consequently the contract was terminated (February 2017) on account of unsatisfactory performance of the contractor as discussed under *paragraph 2.1.21*. As a result, the work scheduled to be completed by January 2016, could not be started so far (December 2017) and the objective of meeting the load demand of Shyamgarh area, could not be achieved.

➤ Finished Ground Level (FGL)<sup>30</sup> of land was required to be finalised by the Planning wing before issue of work order and provided to the contractor along with work order. However, FGL for construction of 400 KV sub-station at Badnawar<sup>31</sup> was fixed (March 2015) after 12 months from the issue of work order on account of delay in finalisation of layout drawing of the proposed land

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<sup>27</sup> Taken up under loan no. 1 of JICA

<sup>28</sup> Taken up under loan no. 3 of ADB

<sup>29</sup> CE (Planning and Design), Superintending Engineer (EHT-Construction), Ujjain and Executive Engineer (EHT-Construction), Ujjain

<sup>30</sup> Finished Ground Level refers to clear demarcation and levelling of land for construction of sub-stations.

<sup>31</sup> Taken up under loan no. 3 of ADB

by the Company officials<sup>32</sup>. As a result, the work could not be commenced till March 2015. Further, the work is under turnkey contract of M/s BHEL whose performance was not satisfactory and they had failed in timely supply of materials and execution of works. As a result, as against the scheduled completion by October 2016, the work had reached only up to 25 per cent of civil foundation and structure (December 2017).

➤ The layout drawing was required to be handed over along with the work order. However, for up-gradation work of sub-station of Chapda<sup>33</sup> from 132 KV to 220 KV, layout drawing was prepared and handed over in July 2015 after a delay of 16 months from the issue of work order (March 2014). The layout drawing were prepared belatedly because of delay in finalisation of layout of the proposed land by the Company officials<sup>34</sup>. As a result, the work could not be commenced till July 2015. Further, even after handing over of layout drawing the progress of the work was slow due to poor performance of the contractor and the scheduled date for completion (March 2016) was not achieved. The contract was terminated (February 2017) on account of unsatisfactory performance of the contractor (M/s BS Limited) as discussed under *paragraph 2.1.21*. Till the date of termination, 12 per cent of civil foundation work alone was completed and the work has not been re-awarded so far (December 2017).

The Department stated (December 2017) that delays in completion of works were because of the poor performance of the contractor.

The reply is not acceptable as the primary reason for delay was the failure of Company officials to finalise the layout and drawings on time, which led to delay even in commencement of works. Subsequently, poor performance of the contractors also contributed to the delay. In the exit conference (December 2017) the Company accepted that there were delays in finalisation of layout and drawings on the part of the Company and assured to take corrective action in future.

**Recommendation: The Company should ensure timely finalisation of drawings and layout of works and monitor the performance of the contractors to ensure timely execution of works.**

#### *Awarding of multiple contracts simultaneously to single contractor*

**2.1.21** The Report of the Task Force on transmission projects stipulated that contractors engaged for construction should have adequate resources and experience to undertake the job and complete the same in stipulated time. Further, the standard bidding document (SBD) for turnkey contracts of the Water Resources Department<sup>35</sup>, (WRD) GoMP stipulated that the bidder should meet minimum criteria of average annual turnover and past experience to undertake the projects.

The Company invited tenders (August 2013) simultaneously for selection of contractors for execution of six turnkey works contracts under loan no. 3 of ADB assisted project. Though, the Procurement wing headed by

<sup>32</sup> CE (Planning and Design), Superintending Engineer (EHT-Construction), Indore, Executive Engineer (EHT-Construction), Indore

<sup>33</sup> Taken up under loan no. 3 of ADB

<sup>34</sup> CE (Planning and Design), Superintending Engineer (EHT-Construction), Indore, Executive Engineer (EHT-Construction), Indore

<sup>35</sup> In the absence of Company's own procurement/works manual, SBD of WRD has been taken as bench mark/good practice.

CE (Procurement) fixed eligibility criteria (average annual turnover, working capital etc.) for each turnkey contract, no criteria was fixed for cumulative evaluation of tenders, in case bids for more than one turnkey contract were submitted by single bidder. Thus, the capacity of the contractor to carry out multiple turnkey contracts simultaneously at different geographical locations of the State was not assessed.

The tenderer, M/s BS Limited submitted bids for all six turnkey contracts and the Company awarded (March 2014) four contracts to the firm valued at ₹ 710.27 crore, out of total six contracts valued at ₹ 1,058.51 crore. The aggregate eligibility criteria<sup>36</sup> of average annual turnover and minimum working capital in respect of four awarded contracts was worked out by Audit to ₹ 1,324.00 crore and ₹ 265 crore respectively in the absence of criteria for cumulative evaluation in the tender documents. Against this, as per the document submitted by M/s BS Limited, their average annual turnover and working capital was ₹ 1,180.63 crore and ₹ 208.70 crore respectively. Had the cumulative eligibility criteria been applied, the firm would not have been eligible to obtain four turnkey contracts. However, the Company awarded contracts without cumulative evaluation of bids.

Here, it is pertinent to note that at the time of evaluation of bids the funding agency (ADB) had also expressed (February 2014) concern on the fact that the average annual turnover of M/s BS Limited was less than the aggregate average annual turnover requirement of the four turnkey contracts which may cause non-performance by the contractor. In response, Additional CE (Procurement) had intimated ADB that as per the bid document the requirement of average annual turnover was 1.5 times of the total estimated value of the contract. This worked out to ₹ 1,065 crore for the four contracts awarded to M/s BS Limited. However, as Audit estimated, the aggregate average annual turnover requirement of the four turnkey contracts was ₹ 1,324 crore, as per the bid document. Thus, Additional CE (Procurement) misrepresented the figure of average annual turnover requirement to ADB.

**Four turkey contracts were awarded to a single contractor without assessing his capacity which resulted in termination of all contracts due to his poor performance and blocking up of ₹ 129.44 crore on incomplete works.**

The progress of all works was very slow and unsatisfactory from the beginning, as the contractor failed to deploy sufficient man power and provide material at site. Consequently, six works of feeder bays and two transmission lines costing ₹ 15.32 crore only could be completed as per the scheduled date of completion (October 2016). Though the contracts were terminated (February 2017) by the Company, all the left over works have not been re-awarded so far (December 2017). This has resulted in non-achievement of desired objectives of catering to the additional load and improving the reliability of transmission system in the Bhopal, Jabalpur and Indore regions, even after investment of ₹ 129.44 crore.

The Department stated (December 2017) that in addition to financial evaluation for each tender separately, cumulative evaluation of the contractor was also done and intimated to ADB in response to their query in this regard.

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<sup>36</sup> Aggregate eligibility of the tenderer has been worked out by adding up the eligibility criteria of average annual turnover and minimum working capital requirement for each turnkey contract.

The reply is not acceptable as M/s BS Limited would not have been eligible for four turnkey contracts had cumulative evaluation been done. Further, the Company had misrepresented the average annual turnover requirement to ADB.

***Poor progress in execution of turnkey work contract***

**2.1.22** The turnkey work contract awarded (May 2013) to M/s Isolux Ingenieria Limited at a value of ₹ 192.20 crore was to be completed by April 2015. As per clause 25.1(v) of the contract, the Company may terminate the contract, if the contractor is unable to achieve a minimum 50 per cent cumulative progress at the end of any quarter compared to the agreed quantity. The performance of the contractor was persistently poor as detailed in **Annexure 2.1.2**. Out of 23 works<sup>37</sup> in the turnkey contract, the contractor completed only six works with delays ranging from 11 to 14 months and the remaining works were yet to be completed (November 2017). The main reasons for delay were failure of the contractor to provide materials and manpower for the works, and non-payment to the sub-contractors. However, CE (Procurement) did not take timely action against the contractor as per the contract terms, as the contractor had assured to accelerate the pace of work. The progress of the work remained consistently slow and the contract was finally terminated in November 2017.

Further, as per clause 15.2, the performance bank guarantee (PBG) submitted by the contractor was to be encashed, in case of breach of conditions of the contract. However, CE (Procurement) encashed (November 2016) the contractor's PBG of ₹ 19.22 crore after a delay of 19 months from the date of scheduled completion (April 2015). No reasons were found recorded for delay in encashment of PBG. Further, Additional CE (Procurement) also failed to encash Bank Guarantee of ₹ 25.27 crore, against mobilisation advance, as discussed in *paragraph 2.1.31*.

As a result of the above, the investment of ₹ 40.26 crore on these works remained idle and the Company was deprived of achieving envisaged benefits of works catering to the additional load requirement of Gwalior and Jabalpur region.

**Recommendation: The Company should take prompt action against defaulting contractors as per terms of the contract to ensure timely completion of the works.**

***Non recovery of material supplied to contractor***

**2.1.23** In respect of four works<sup>38</sup>, out of 23 works, as discussed in *paragraph 2.1.22*, the Procurement wing headed by CE (Procurement) provided (August 2014 to September 2016) various materials<sup>39</sup> valued at ₹ 7.19 crore to the contractor, on loan basis for use in the works in order to complete the balance works expeditiously. Against the above, an amount of ₹ 64.47 lakh was recovered and remaining materials worth ₹ 6.55 crore have not been returned /adjusted so far (December 2017). However, the CE (Procurement) failed to initiate any action for the recovery/adjustment of value of materials.

<sup>37</sup> For the construction of 10 transmission lines, seven Sub-stations and six feeder bays

<sup>38</sup> 132 KV sub-stations at Badagaon-Dimni and Lateri, 220 KV sub-station at Sirmour and LILO of 132 KV Sironj-Maksudangarh line

<sup>39</sup> Circuit barker, isolator, C&R panel, coaxial cable, bus bar, earthing material etc.

The Department stated (December 2017) that materials were supplied in view of urgency of work and action is being taken for recovery of dues.

The reply is not acceptable as the CE (procurement) failed to fix any timeline for return of materials issued on loan basis. Further, recovery of value of materials is still pending even after termination of contract.

***Newly constructed 132 KV sub-stations remained unutilised***

**2.1.24** Power required by consumers are drawn from 132 KV sub-station of transmission system and then fed to 33 KV feeders of Discoms (User agencies). The Company constructed 65 sub-stations of 132 KV during the period 2012-17. Of this, nine sub-stations commissioned during July 2015 to September 2016 had not been connected to 33 KV feeders by the Discoms till December 2017. Further, six sub-stations commissioned during March 2015 to June 2016 were connected to 33 KV feeders by the Discoms with delays ranging from four to 18 months due to non-construction of connecting lines by the Discoms. The Executive Engineers of the concerned divisions of the Discoms failed to connect the 33 KV feeders with the sub-stations of the transmission company due to lack of their initiative in resolving the issues related to RoW and railway crossing. Consequently, the objectives to meet additional load demand and to improve voltage profile of the area had not been fulfilled.

The Department stated (December 2017) that the matter of not connecting 33 KV feeders with 132 KV sub-stations is concerned with Discom authorities (User department). Principal Secretary assured in the exit conference (December 2017) that the matter would be taken up with the Discoms.

The reply is not acceptable as both category of power sector companies (the Company and Discoms) owned/controlled by the same State government failed to co-ordinate with each other.

**Recommendation: The State government should initiate a mechanism, like constituting a high-level committee of officials of GoMP, the Company and Discom to resolve such issues.**

***Newly constructed 220 KV sub-stations remained underutilised***

**2.1.25** Scheduled completion date of sub-station and its associated line should be same for their synchronisation and optimum utilisation. The Planning wing envisaged construction of 220 KV sub-stations at Mugaliachhap, Gwalior-II and Sirmour to provide power supply, reduce overloading on existing sub-stations and improve voltage profile and power delivery capacity. For evacuation of power from sub-stations, four 132 KV transmission lines from Mugaliachhap sub-station, three 132 KV transmission lines from Gwalior- II sub-station and one 132 KV from Sirmour sub-station were proposed (November 2011 to March 2013). However, Company officials<sup>40</sup> failed to synchronise the construction of these transmission lines with the construction of related sub-stations due to non-construction of outgoing transmission lines for evacuation of power from the commissioned sub-stations for the reasons given in the ***Annexure 2.1.3***. As a result, the load on sub-stations was meagre and the sub-stations remained underutilised.

**132 KV completed sub-stations of the Company remained unutilised due to non-construction of connecting lines by the Discoms.**

**Company failed to synchronise construction of transmission lines with the construction of 220 KV sub-stations leading to underutilisation of the sub-stations.**

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<sup>40</sup> CE (Planning and design), CE (Procurement), CE (EHT-Construction)

Thus, the investment of ₹ 58.34 crore on three sub-stations remained idle, ranging from 18 to 32 months (December 2017) and the objectives to provide additional load demand and to improve voltage profile of the area had not been fulfilled.

**Recommendation:** The Company should ensure synchronization of construction of sub-stations and associated transmission lines so as to avoid under-utilisation of commissioned sub-stations.

***Change of feeder line resulted in idle investment***

**2.1.26** In order to improve voltage profile and meet the load growth of Eshagarh area, CE (Planning and Design) proposed (June 2010) the work for construction of 132 KV DCSS line<sup>41</sup> between Guna and Eshagarh sub-stations (route length 72 kms). Accordingly, CE (Procurement) awarded (June 2013) the work at a contract amount of ₹ 26.77 crore.

Subsequently, CE (EHT-Construction) observed (July 2013) that instead of Guna-Eshagarh line, construction of Ashoknagar-Eshagarh line would be more viable as the route length would be decreased by 43 kms. However, CE (Planning and Design) had not initiated any action on the proposal till receipt of reminder (February 2015) from CE (EHT-Construction). Accordingly, the proposal was approved (February 2015) and the work order was awarded (July 2015) by CE (Procurement) and the work was completed in September 2016 at a cost of ₹ 10.28 crore. At the same time, the Company also continued with the construction of Guna-Eshagarh line, for which reasons were not on record. The work was not completed after incurring expenditure of ₹ 6.16 crore so far (December 2017). Thus, failure of the CE (Planning and Design) to identify the more viable Ashoknagar-Eshagarh line in the first place and subsequent continuance of construction of Guna-Eshagarh line even after CE (EHT)'s proposal (July 2013) for construction of Ashoknagar-Eshagarh line resulted in incurring (June 2013 to October 2017) unfruitful expenditure of ₹ 6.16 crore.

The Department stated (December 2017) that in view of the urgent load demand of Ashoknagar area and also due to the expected delay in completion of Guna-Eshagarh line, the Company constructed a separate short length line from Ashoknagar to Eshagarh. The Department also stated that expenditure on Guna-Eshagarh line is not idle as this will provide alternate power supply to 132 KV Eshagarh sub-station for system strengthening.

The reply is not acceptable as Eshagarh is a small Tehsil, which does not require alternate power supply from two sides. Further, this justification for construction of Guna-Eshagarh line was not found recorded in the files produced to audit and is clearly an afterthought. As a result, after construction of the Ashoknagar- Eshagarh line the purpose of construction of Guna-Eshagarh line has been defeated and expenditure incurred on the same remains idle.

***Avoidable expenditure on transmission Line***

**2.1.27** The construction of 132 KV Panagar-Katangi line (route length: 29.47 km) was initially proposed and awarded (March 2014) at a cost of ₹ 10.73 crore with DCSS. However, citing future requirement and RoW issues,

<sup>41</sup> DCSS line refers to double circuit towers in which a total of 3 conductors are provided to make single transmission circuit.

**Expenditure of ₹ 6.16 crore on Guna-Eshagarh line was unfruitful due to construction of alternate Ashoknagar-Eshagarh line.**

CE (Planning and Design) proposed execution of line work as Multi circuit towers<sup>42</sup> with stringing of all the circuits at both end of line i.e., 19 towers at Katangi end (5.34 km) and seven towers at Panagar end (1.21 km), for which post facto approval was granted (April 2017) by Managing Director. As there were only four 33 KV outgoing feeders connected to Katangi sub-station having transformer capacity of 40 MVA and only one string is connected from multi circuit towers, stringing of all circuits was not required. Thus, the additional cost of ₹ 1.25 crore incurred in stringing of multi circuit towers, remained unfruitful from the date of its commissioning (July 2016). Difference between DCSS Tower and Multi Circuit Tower is depicted in the diagram given below.

### Difference between DCSS Tower and Multi Circuit Tower



**Double Circuit Single String Tower**

**Multi Circuit Tower**

The Department stated (December 2017) that it was essential to construct said part of the line on multi circuit towers with all circuit stringing to overcome future issues related to right of way (RoW)<sup>43</sup> and it was the part of future planning.

The reply is not acceptable as future RoW problems are not going to arise as towers have already been erected in this route. Further, in similar cases, the Company had completed second stringing works<sup>44</sup> without facing RoW problems. Also, there was no involvement of railway crossing, air strip, mining and forest land in the route of Panagar–Katangi warranting future RoW problem at this stage.

<sup>42</sup> Multi circuit towers refers to the arrangement in which a total of 12 conductors are provided to make four different transmission circuits.

<sup>43</sup> Involvement of railway crossing, agriculture land, air strip, mining and forest land in the route of line.

<sup>44</sup> Stringing of second circuit of 132 KV Gairatganj-Vidisha line, 132 KV Betul-Gurgaon line, 132 KV Neemuch-Ratangarh line, 132 KV Sagar-Gujarmahar line, third circuit of 132 KV Bina-Mungawli line.

### ***Installation of Supervisory Control and Data Acquisition (SCADA) System for monitoring of sub-stations***

**2.1.28** With a view to overcome issues related to security, reliability and load management of transmission system, the BoD of the Company approved (March 2013) the proposal to implement SCADA system, which enables proper and effective monitoring and control of all EHT sub-stations. Accordingly, the work for installation of SCADA system at 330 EHT sub-stations was awarded (September 2013) to M/s Dongfang Electronics Co. Ltd., China through competitive bidding at a cost of ₹ 48.31 crore with scheduled date of completion as September 2015.

Audit observed that out of 330 sub-stations planned for installation, works of six sub-stations were still pending completion (December 2017) and thus six incomplete sub-stations were not linked to SCADA even after lapse of two years from the scheduled completion date. Further, State Load Dispatch Centre (SLDC) informed that, in 25 sub-stations, where SCADA systems were installed, the Remote Terminal Units<sup>45</sup> (RTUs) needed up-gradation (December 2017), as they were providing wrong telemetry<sup>46</sup>. Company officials<sup>47</sup> had failed to resolve the issue, even after this was repeatedly pointed out by SLDC, for which reasons were not recorded. Thus, the Planning wing failed to complete and integrate all sub-stations with SCADA system and the objective of installation of SCADA was not fully met.

The Department stated (December 2017) that SCADA system has been integrated with respective SCADA Control Centre at most of the sub-stations.

The reply is not acceptable as six incomplete sub-stations are still to be integrated with SCADA (December 2017). Further, the RTUs installed at 25 sub-stations were providing wrong telemetry. Thus, the objective of SCADA system was not fully met in the above sub-stations.

**Recommendation: The Company should ensure interlinking of all sub-stations with SCADA system and ensure its proper functioning for effective monitoring and control of sub-stations.**

### **Project Funding and Financial Management**

**2.1.29** For execution of the transmission works and projects, the Company has been borrowing funds from International funding agencies namely JICA, ADB, PFC, Rural Electrification Corporation Limited (REC) and KfW Development Bank (KfW). The details of borrowings during review period are given in table no. 2.1.5.

<sup>45</sup> A remote terminal unit (RTU) is a microprocessor-controlled electronic device that interfaces with SCADA (supervisory control and data acquisition) system by transmitting telemetry data to a master system.

<sup>46</sup> The process of recording and transmitting the readings of an instrument.

<sup>47</sup> Executive Engineers (Communication), Assistant Engineers (Communication), Superintending Engineer (SCADA), Executive Engineers (SCADA)

<b>(₹ in crore)</b>									
Sl. No.	Funding agency	Amount sanctioned	Date of sanction by funding agency	Amount disbursed					
				2012-13	2013-14	2014-15	2015-16	2016-17	Total
1	Loan No. 1 of JICA	1,038.00	June 2011	123.35	146.19	158.16	132.42	73.70	<b>633.82</b>
2	Loan No. 3 of ADB	1,250.00	February 2014	53.40	24.29	104.35	73.21	115.91	<b>371.16</b>
3	PFC	492.00	September 2013	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
4	REC	410.70	May 2016	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
5	KfW	840.00	June 2016	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
6	Loan No. 2 of JICA	840.00	March 2016	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
<b>Total</b>		<b>4,870.70</b>		<b>176.75</b>	<b>170.48</b>	<b>262.51</b>	<b>205.63</b>	<b>189.61</b>	<b>1,004.98</b>

Deficiencies noticed in Project Funding and Financial Management are discussed below.

#### ***Avoidable payment of commitment charges and interest***

**2.1.30** Commitment charges are payable on undisbursed amount of loans availed from JICA, ADB and KfW. Drawal of loan no. 1 of JICA and loan no. 3 of ADB loan was delayed due to delay in execution of works due to various reasons (as discussed in *paragraphs 2.1.19, 2.1.20 and 2.1.21*). On account of delayed drawal of loans the Company has liability to pay commitment charges of ₹ 8.29 crore (ADB- ₹ 4.37 crore and JICA - ₹ 3.92 crore), which could have been avoided if the works had been executed as per schedule.

In respect of agreements executed (March 2016 to June 2016) for availing loan under loan no. 2 of JICA and KfW, no fund has been drawn so far (December 2017) as the proposed projects are in preliminary stages. This would also attract liability for commitment charges.

Further, the Company has liability to pay interest of ₹ 1.90 crore, on funds drawn from the funding agencies<sup>48</sup> for payment of mobilisation advance to contractors in respect 33 works of 12 turnkey contracts, where no progress were recorded.

The Department stated (December 2017) that no commitment charges have been paid and only liabilities had been created in the accounts.

The reply is not acceptable as the funding agencies has not waived off the commitment charges and liability created in the accounts will ultimately be required to be paid.

#### ***Failure in encashment of Bank Guarantee against advance***

**2.1.31** In respect of turnkey work contract awarded (May 2013) to M/s Isolux Ingeneria, the contractor was given (May 2013) mobilisation advance of ₹ 25.27 crore against the Bank guarantee (BG) of equivalent amount issued by Central Bank of India. As per condition of the BG the mobilisation advance

<sup>48</sup> Loan no. 1 of JICA and Loan no. 3 of ADB.

**Delay in execution of works resulted in avoidable liability of commitment charges of ₹ 8.29 crore on undisbursed loan amount.**

amount must be received by the contractor in their account with Central Bank of India.

Due to poor performance of the contractor (*as discussed in paragraph 2.1.22*) the Procurement wing lodged (October 2016) claim with bankers for the encashment of BG. However, the bank authorities denied (October 2016) the claim as the Additional CE (Procurement) had failed to route the advance through contractor's account with Central Bank of India as per condition of BG. Thus, due to negligence of the Additional CE (Procurement) the Company failed to encash the BG.

The Department stated (December 2017) that matter of encashment of BG is pending with Consumer Education and Protection Cell (CEPC), New Delhi.

The fact remains that due to negligence of the Additional CE (Procurement), the Company could not encash the BG.

### ***Non recovery of risk and cost amount from the contractor***

**2.1.32** The Contract awarded (March 2011) to M/s ECI-COMM, Hyderabad for construction of 400 KV sub-station at Julwania at a cost of ₹ 36.07 crore was terminated (May 2012) due to non-deployment of resources and lack of progress of work by the contractor. The work was re-awarded (February 2013) to M/s Techno Electric Co. Ltd, Kolkata for ₹ 42.05 crore at the risk and cost of original contractor. After deducting the PBG amount, the Company demanded ₹ 4.54 crore from the contractor towards the excess cost incurred for the left over work. However, M/s ECI-COMM disputed the claim stating that the contract re-awarded was not on identical terms and conditions. Thus, procurement wing headed by Chief Engineer (Procurement) failed to take any further action to appoint arbitrator for settling the disputes and to recover the balance amount, even after lapse of more than five years (December 2017).

The Department stated (December 2017) that the terms and conditions of both the contracts were the same except some minor modifications. The contractor, however, has rejected the risk and cost claim. However, the Company will initiate recovery from PBG (₹ 5.68 crore) of other contracts.

The reply is not acceptable as the Company re-awarded contract on un-identical terms<sup>49</sup>, resulting in non-recovery of ₹ 4.54 crore even after lapse of five years from the date of termination. Further, there was no clause in the contract for recovery of dues from PBGs of other contracts.

### **Conclusion**

- Implementation of ERP Project was pending and thus the objectives to have improved workflow and effective monitoring could not be achieved.
- The perspective plan for transmission system was not developed by the Company and the annual capital expenditure plans were not submitted to BoD and MPERC.

<sup>49</sup> Scope of work was different due to inclusion of additional items in re-awarded contract *i.e.*, 48V 300 AH battery, 48 V 30 AH Battery charger, supply of spares and additional civil work, valuing ₹ 7.95 crore.

- The Company could not achieve physical targets as envisaged in five year plan (2012-17) due to non-inclusion of the works in annual plans, not taking up planned works of approved DPRs, and delay in completion of works.
- Delay in completion/ non-completion of works had deprived the benefit of envisaged reduction in transmission losses. The main reasons for poor progress of works were commencement of works without conducting detailed survey, awarding of works without ensuring land availability, deficiencies in finalising layout and drawings and poor progress in execution of turnkey work contracts by the contractors.
- The completed sub-stations remained idle due to non-completion of connected transmission line works. There were delays and failure by Discoms to connect their feeders with commissioned sub-stations of the Transmission Company, thereby the objective of construction of sub-stations was not fulfilled.
- The sub-stations were not linked to SCADA and/or were provided with wrong telemetry, defeating the objective of their effective monitoring and control.
- Due to delay in drawal of loans from funding agencies, the Company incurred liability for payment of commitment charges of ₹ 8.29 crore.

## 2.2 Audit on fuel management in thermal power generating stations of Madhya Pradesh Power Generating Company Limited

### Introduction

**2.2.1** The Madhya Pradesh Power Generating Company Limited, Jabalpur (Company) was incorporated on 22 November 2001 as a wholly owned Government Company as part of implementation of the power sector reform initiated by the Government of Madhya Pradesh (GoMP). The Company took over the power generation activities of the erstwhile Madhya Pradesh State Electricity Board and started functioning independently from 01 June 2005. As on 31 March 2017, the Company was operating four Thermal Power Stations<sup>1</sup> (TPSs) with a total installed capacity of 4,080 Mega Watt (MW).

Coal and Oil<sup>2</sup> are two components of fuel used in TPS. During the period 2014-17 the Company incurred expenditure of ₹ 13,263.17 crore<sup>3</sup> on procurement of fuel which constituted 56 *per cent* of the total generation cost.

### Organisational Setup

**2.2.2** The Company is under the overall administrative control of the Department of Energy, GoMP headed by the Additional Chief Secretary (ACS)/Principal Secretary. The day to day management of the Company is vested with a Board of Directors (BoD). The Managing Director (MD) is the Chief Executive Officer of the Company who is assisted by Director (Technical), Director (Commercial), Chief Financial Officer, Executive Directors (EDs), Chief Engineers (CEs) and Company Secretary. Chief Engineer- Fuel Management (FM) is responsible for ensuring continuous coal supply to the TPS through Long Term Coal Supply Agreement (Agreement). TPS is headed by CE, who is assisted by Additional CEs (ACEs) and Superintending Engineers who are responsible for regular operation and maintenance, civil works, contract and material management, environment and safety issues and coal handling activities at TPS. ACE (FM) of the respective TPS is responsible for the matters related to fuel management at the TPS.

Category of staff	Sanctioned strength	Actual manpower	Shortage in <i>per cent</i>
Technical staff	4,873	3,833	21.34
Non-technical staff	1,490	1,200	19.46
<b>Total</b>	<b>6,363</b>	<b>5,033</b>	<b>20.90</b>

<sup>1</sup> Sanjay Gandhi Thermal Power Station, Birsinghpur (installed capacity 1,340 MW), Satpura Thermal Power Station, Sarni (installed capacity 1,330 MW), Amarkantak Thermal Power Station, Chachai (installed capacity 210 MW) and Shree Singaji Thermal Power Project, Khandwa (installed capacity 1,200 MW).

<sup>2</sup> Includes furnace oil, light diesel oil and high speed diesel oil.

<sup>3</sup> Coal: ₹ 13,015.21 crore and Oil: ₹ 247.96 crore.

<b>Table No. 2.2.2 TPS wise manpower position</b>				
<b>Name of TPS</b>	<b>Category of staff</b>	<b>Sanctioned strength</b>	<b>Actual manpower</b>	<b>Shortage in per cent</b>
Shree Singaji TPS	Technical staff	769	577	24.97
	Non-technical staff	252	110	56.35
<b>Sub total</b>		<b>1,021</b>	<b>687</b>	<b>32.71</b>
Satpura TPS	Technical staff	1,611	1,276	20.79
	Non-technical staff	294	262	10.88
<b>Sub total</b>		<b>1,905</b>	<b>1,538</b>	<b>19.27</b>
Amarkantak TPS	Technical staff	712	430	39.61
	Non-technical staff	204	123	39.71
<b>Sub total</b>		<b>916</b>	<b>553</b>	<b>39.63</b>
Sanjay Gandhi TPS	Technical staff	1,018	852	16.31
	Non-technical staff	282	175	37.94
<b>Sub total</b>		<b>1,300</b>	<b>1,027</b>	<b>21.00</b>
<b>Grand total of TPSs</b>	Technical staff	4,110	3,135	23.72
	Non-technical staff	1,032	670	35.08
	<b>Total</b>	<b>5,142</b>	<b>3,805</b>	<b>26.00</b>

### Audit Objectives

**2.2.3** The audit was conducted with a view to assess whether:

- the planning, transportation, procurement and consumption of fuel was done effectively, economically and efficiently;
- an efficient internal control mechanism exists to ensure effective fuel management;
- ash management system was compliant to environmental regulations.

### Audit Criteria

**2.2.4** The criteria adopted for audit is derived from the following sources:

- Fuel related norms and guidelines issued by the Central Electricity Authority (CEA), Central Electricity Regulatory Commission (CERC) and Madhya Pradesh Electricity Regulatory Commission (MPERC);
- Company's policies and instructions on fuel management;
- Terms and conditions contained in agreements with coal companies, Railways and contractors; and
- Environmental regulations relating to ash management.

### Scope and Methodology of Audit

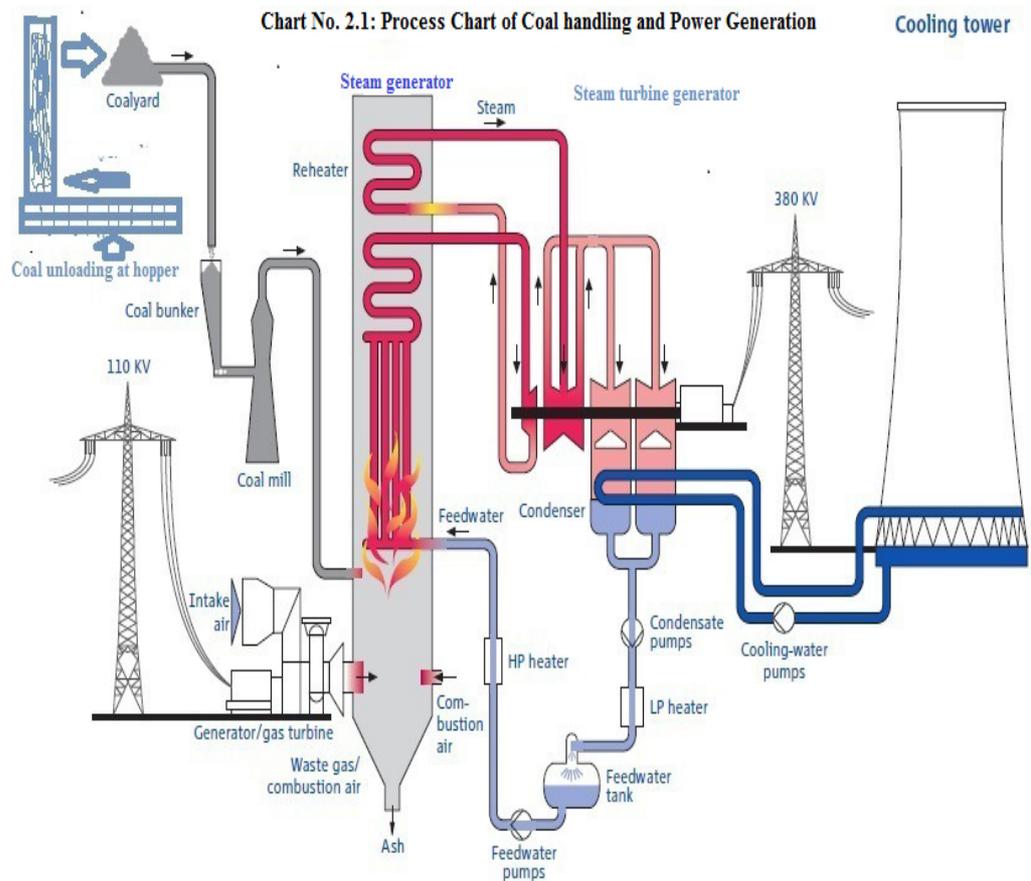
**2.2.5** The audit was conducted during March to June 2017 covering the Company's activities relating to fuel management in all the four TPSs during the period 2014-17. The audit methodology comprised of scrutiny of records in corporate office of the Company and its four TPSs, interactions with the auditee, analysis of data with reference to audit criteria, raising of audit

queries and issue of draft report to the Department of Energy (Department), GoMP and Company for their response/reply.

An entry conference was held on 16 March 2017 with the ACS of the Department and MD of the Company wherein Audit objectives and scope of audit were discussed. The exit conference was held with ACS and MD on 28 October 2017. The draft report was issued to GoMP and the Company on 12 March 2018 and replies were received on 12 April 2018. The replies furnished by the Department and views of the Department and the Company in the exit conference have been suitably included in the Report.

### Coal handling and power generation process

**2.2.6** Coal received from the mines through railway wagons is unloaded at the track hopper<sup>4</sup> in the TPSs and is stacked at coal stacking yard with the help of conveyor belts. Thereafter, the coal is crushed, and supplied to the coal bunker<sup>5</sup> through conveyor belts, after which, the coal is fed to the coal mills. At the coal mills, the coal is pulverised and fed into the boiler for heating of water. The steam which is generated at high temperature is transferred at high pressure to the turbine. The rotation of the turbine is transferred to a generator which produces electricity. Fuel oil is used for start-up and balancing of flame in furnace.



<sup>4</sup> Track Hopper is used to unload coal from railway wagons at TPS.

<sup>5</sup> Coal Bunker is used to store coal.

## Audit findings

The audit findings are discussed in the succeeding paragraphs.

## Internal Control and Monitoring Mechanism

**2.2.7** Internal controls and monitoring mechanism are safeguards that are put in place by the management of an organisation to provide assurance that its activities are executed efficiently as planned so that its declared objectives are achieved. Reasonable assurance provided by such internal controls strengthens accountability of public authorities and ensures transparency in public dealing.

While reviewing the fuel related transactions and records, Audit noticed that internal control system and monitoring mechanism in the Company were inadequate to the following extent.

- Significant issues relating to the planning, procurement, revision of contracted quantity with the coal companies, non-realisation of claims pertaining to the grade slippage and oversized stone, deviation in operational parameters of coal mill reject and unburnt coal in the ash had not been apprised to BoD as discussed in *paragraphs 2.2.9, 2.2.15, 2.2.16, 2.2.24 and 2.2.27*. This resulted in lack of monitoring of these vital functional matters by BoD.
- Competent authorities were not following the system of recording specific reasons or justifications while taking important decisions and/or while according approval for deviating from Government directives and terms and conditions of contracts as discussed in *paragraphs 2.2.9, 2.2.20, 2.2.22 and 2.2.29*.
- Multiple reasons were attributed by the Company without conducting detailed cause wise analysis for deficiency in achieving its operational norms in respect of coal mill reject, SHR, unburnt coal and fuel oil as discussed in *paragraphs 2.2.24, 2.2.26, 2.2.27 and 2.2.30*. Further, system for identifying the responsible person for non achievement of operational norms was not developed.
- The Company did not have an internal audit and Inspection wing of its own. Internal audit was outsourced to practicing Chartered Accountants. The internal audit reports were not submitted to BoD and Audit Committee.

## Planning and Procurement of coal

**2.2.8** In terms of the New Coal Distribution Policy notified (October 2007) by the Ministry of Coal, Government of India (GoI), coal is allocated by Standing Linkage Committee<sup>6</sup> of the Ministry of Coal, GoI to the TPSs. Accordingly, subsidiaries of Coal India Limited (CIL) are required to enter

<sup>6</sup> The Standing Linkage Committee is headed by Additional Secretary, Ministry of Coal and comprises of fifteen members from the Ministries of Coal, Power, Shipping, Steel, Railways; Coal India Limited and its subsidiaries, CEA, National Thermal Power Company Limited, Central Mine Planning and Design Institute etc,

into agreements with TPSs. The Company entered into (between August 2009 and January 2016) six agreements with two subsidiaries<sup>7</sup> of CIL for supply of coal for a period of twenty years for its four TPSs at the price notified from time to time by CIL. The deficiencies noticed in the planning and procurement of coal are discussed in succeeding paragraphs.

***Non-revision of contracted quantity resulted in additional liability***

**2.2.9** The Company's agreement (August 2009) with South Eastern Coalfields Limited (SECL) stipulated supply of 20 lakh metric tonnes (LMT) of coal per annum for the three<sup>8</sup> units of Amarkantak TPS. The Company is permitted to transfer coal meant for one of its power plants to its other power plants at its own cost (clause 3.2). The supplier sanctioned coal based on the monthly rail programme (MRP<sup>9</sup>) submitted by the Company with the Railways (clause 6.1.1). The Company is eligible to receive compensation on account of short delivery of coal at prescribed rates if the supplier fail to deliver the coal quantity as per MRP submitted during the year for a quantity equal to or more than 90 *per cent* of Annual Contracted Quantity (Contracted Quantity).

Similarly, if the Company failed to submit MRP for minimum 90 *per cent* of contracted quantity in a year, it would be liable to pay compensation to supplier for short lifting of coal (clause 3.6.1). Further, as per the agreement (clause 2.2) as well as mutual consent (August 2009) between supplier and the Company, contracted quantity shall be revised on the basis of varying actual life of the units of TPS.

Out of three units of Amarkantak TPS for which agreement was signed, two units<sup>10</sup> were retired (1 May 2014 and 13 January 2015) and the same was approved by the Central Electricity Authority on 4 March 2016. Though, TPS requested (August 2016) its Corporate Office to reduce the contracted quantity of coal from the existing 20 LMT to 13 LMT per year for operational Unit-3, the same was not acted upon by the CE (FM) for reasons not on record. The CE (FM) also failed to put up the matter to the BoD.

Audit observed that for the period 2014-16, the Company had continuously raised demands of coal on the supplier based on the original contracted quantity. Coal received in excess of its requirement was diverted to other TPS. The Company raised (January-February 2017) claim of ₹ 19.51 crore for the period 2014-16 towards short delivery of coal, which was pending with the supplier (October 2017). On the other hand, on account of lower demand of coal by other TPSs during 2016-17, Amarkantak TPS submitted MRP quantity based on the actual requirement of its operational Unit-3. Since, MRP quantity was less than 90 *per cent* of contracted quantity<sup>11</sup> of Amarkantak

**Company failed to revise the annual contracted quantity of coal after decommissioning of two power plant units resulting in liability to pay compensation of ₹ 17.21 crore to SECL for short lifting of 6.27 LMT coal.**

<sup>7</sup> South Eastern Coalfields Limited, Bilaspur (SECL) and Western Coalfields Limited, Nagpur (WCL)

<sup>8</sup> Unit-1 (120 MW), Unit-2 (120 MW) and Unit-3 (210 MW).

<sup>9</sup> MRP prescribes the quantity of coal required by each TPS during a month, which is to be lodged with the Railways at least seven working days prior to the commencement of the concerned month. MRP quantity is subsequently sanctioned by the coal supplier.

<sup>10</sup> Unit-2 and Unit-1.

<sup>11</sup> Contracted quantity for three units including closed Unit no. 1 and 2

TPS, the Company was liable to pay compensation of ₹ 17.21 crore for short lodging of MRP by 6.27 LMT of coal.

The Department stated (April 2018) that in view of the proposed installation of the new unit in place of retired units, contracted quantity was not reduced. It was further stated that there is no financial loss to the Company and SECL has not lodged claim for short lifting of coal for the year 2016-17.

The reply is not acceptable as the Company itself estimated the commissioning of the new unit in 2024-25 only. Thus, the Company would have to incur penalty for short lifting till new plant is commissioned. The reply that claim had not been raised by the SECL till date, is not acceptable as the Company is liable to pay compensation as per the agreement conditions.

**Recommendation: The Company should assess and procure coal as per actual requirement of units in operation in its TPSs.**

***Extra transportation cost due to non utilisation of allocated coal of nearer location***

**2.2.10** An agreement was signed (December 2009) between the Western Coalfields Limited (WCL) and the Company for supply of 66 LMT of coal per annum for nine<sup>12</sup> existing units of Satpura TPS. Subsequently, another agreement was executed (January 2013) with WCL for supply of 18.51 LMT of coal per annum in respect of two<sup>13</sup> additional units of Satpura TPS. Similarly, the Company executed (January 2013) agreement with SECL for supply of 49.94 LMT of coal per annum for two<sup>14</sup> units of Shree Singaji TPS.

As five units of Satpura TPS (Power House-I) were decommissioned between October 2012 and January 2014, WCL unilaterally revised (May 2016) the contracted quantity from 66 LMT to 47.95 LMT per annum retrospectively<sup>15</sup> from respective dates of decommissioning. WCL mines were located nearer (402-616 Kms) to Shree Singaji TPS than SECL mines (624-968 Kms). Hence, the Company had swapped (January 2016) 18.51 LMT of coal of WCL meant for the additional units of Satpura TPS with equivalent<sup>16</sup> 21.67 LMT coal of SECL meant for Shree Singaji TPS. Audit noticed that the CE (FM) could have made similar arrangements to swap contracted quantity of 18.05 LMT<sup>17</sup> coal of WCL meant for decommissioned units of Satpura TPS with Shree Singaji TPS. Thus, transportation cost of ₹ 80.10 crore could have been saved on 13.37 LMT of coal actually lifted from SECL during the period from January 2016 to March 2017.

**Company failed to swap coal from more distant SECL mines to nearer WCL mines for Shree Singaji TPS and incurred avoidable transportation cost of ₹ 80.10 crore.**

<sup>12</sup> Power House-I - five units of 62.5 MW each, Power House-II - one unit of 200 MW and one units of 210 MW, Power House-III – two units of 210 MW each.

<sup>13</sup> Power House-IV - two units of 250 MW each.

<sup>14</sup> Two units of 600 MW each.

<sup>15</sup> Contracted quantity was reduced (May 2016) with retrospective effect from the ensuing financial year after date of actual decommissioning of the units i.e., quantity was revised from 66.00 LMT to 63.61 LMT w.e.f. April 2012, 55.66 LMT w.e.f. April 2013 and 47.95 LMT w.e.f. April 2014

<sup>16</sup> 18.513 LMT of coal of WCL linked to Satpura TPS having Gross Calorific Value of 4,600-5,200 Kcal/kg was swapped with 21.67 LMT of coal of SECL linked to Shree Singaji TPS having lower Gross Calorific Value of 4,300-4,600 Kcal/kg.

<sup>17</sup> 66.00 LMT - 47.95 LMT

The Department stated (April 2018) that in view of decommissioning of five units, WCL unilaterally reduced contracted quantity and it was not possible to utilise 18.05 LMT of coal of WCL at Shree Singaji TPS.

The reply is not acceptable as the Company has not made timely efforts for swapping of coal before unilateral reduction (May 2016) of contracted quantity by WCL. Further, it was possible to swap the contracted quantity from Satpura TPS with Shree Singaji TPS as the Company had already done the same exercise in January 2016.

**Recommendation: The Company should ensure swapping of coal of decommissioned units for the power plants situated nearer to mines in future.**

***Payment of compensation due to deficient planning in coal receipts***

**2.2.11** As per the two agreements (signed in December 2009 and January 2013) for supply of coal to Satpura TPS, the Company was liable to pay incentive<sup>18</sup> to WCL, when actual delivery of coal was more than 90 per cent of the contracted quantity in a year (clause 3.12.1).

During 2015-16, while under first agreement, WCL has claimed incentive of ₹ 36.53 crore for 8.47 LMT coal supplied in excess of 90 per cent of contracted quantity, under the second agreement, WCL claimed compensation of ₹ 15.53 crore for short lifting of 7.83 LMT. Audit observed that the CE (FM) could have rearranged the supply in accordance with the agreement (clause 6.1.1) by submitting MRP judiciously for both the agreements and simultaneously taking up the matter with the coal company. Thus, the liability for compensation of ₹ 15.53 crore on short lifting on the one hand and incentive of ₹ 35.43 crore on excess supply of 7.83 LMT coal on the other hand could have been avoided. Reasons for not rearranging the coal supply were not recorded.

The Department stated that (April 2018) the claim of ₹ 36.53 crore by WCL was declined as the contracted quantity was reduced from 66 LMT to 47.95 LMT from back date by the WCL. It was further stated that claim of ₹ 15.53 crore was returned to WCL as it was not admissible due to failure of WCL to supply the demanded quantity of coal.

The reply is not acceptable. The contracted quantity was reduced by WCL from the actual dates of the decommissioning of the units and lodging of MRP including the quantity relating to decommissioned units by the Company was not justified. Further, decline of claims had not relieved the Company from its liability. Also, in the exit conference (October 2017) the MD and CE (FM) had accepted that rearrangement of contracted quantity of coal from one agreement to another of same TPS was possible.

**Recommendation: The Company should lodge MRPs judiciously under different agreements of a TPS and coordinate with the coal companies to minimise short lifting/ excess delivery of coal.**

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<sup>18</sup> In order to encourage higher coal supply, incentive is payable by the Company to Coal Companies for supply of coal more than 90 per cent of annual contracted quantity.

### ***Unwarranted procurement of costly imported coal***

**2.2.12** In anticipation of short supply of indigenous coal, the Company placed order (March 2015) on M/s Adani Enterprises Limited for supply of 7.0 LMT of imported coal for its four TPSs at a cost of ₹ 534.45 crore. The agreement conditions (clause 6.16) enabled the Company to terminate the contract at its sole discretion by giving 30 days' written notice. Subsequently, considering the sufficient stock of indigenous coal and readiness of the indigenous coal companies, the Company foreclosed (November 2016) the contract after import of 4.36 LMT of coal during May 2015 to June 2016.

**Company procured 1.76 LMT costlier imported coal and at the same time shortlifted 12.68 LMT of indigenous coal resulting in extra expenditure of ₹ 51.24 crore.**

In this regard, Audit analysed the actual lifting of indigenous coal during the period of import of coal and observed that 1.76 LMT coal was imported during the months in which there was short lifting of 12.68 LMT of cheaper indigenous coal. Had the CE (FM), who was responsible to ensure continuous coal supply to TPSs, exercised due diligence and made arrangements for lifting the entire indigenous coal and foreclosing the order for imported coal, purchase of costlier coal could have been avoided. As this did not happen, the Company incurred extra expenditure of ₹ 51.24 crore.

The Department stated (April 2018) that shipment schedule already finalised and intimated to coal supplier was not liable for termination. It was further stated that indigenous coal was short supplied by the coal companies during May 2015 to June 2016.

The reply is not acceptable as supply order empowered the Company to regulate/ reschedule/suspend the delivery schedule (clause 3.0 and Schedule V) as per the requirement of TPSs and by applying above clause, the Company had made 26 revisions in delivery schedules during April 2015 to June 2016. Further, the reply regarding short supply by the coal companies is factually incorrect as company did not demand full allocated quantity.

**Recommendation: The Company should lift available indigenous coal and avoid procurement of costlier imported coal.**

### ***Undue benefit to the supplier of imported coal***

**2.2.13** The Company had placed (September 2011) a supply order on M/s Bhatia International Limited, Indore (BIL) for supply of 8.0 LMT of imported coal at total cost of ₹ 478.43 crore, scheduled to be supplied within six to eight months. Company issued (September 2013) a repeat order for supply of additional 2.0 LMT coal to be delivered during the period from October 2013 to January 2014. M/s BIL supplied 9.71 LMT of coal up to July 2014 and the balance quantity of 0.29 LMT was not supplied.

The Company had recovered ₹ 2.78 crore from the supplier by invoking the risk purchase clause (6.12) of the supply order. In addition, as per clause 9.01, the Company was required to levy a penalty at the rate of 10 *per cent* of unexecuted portion of the contract. However, considering that the contract was operated for prolonged time, the Company, with the approval of the Managing Director, closed the contract without imposing penalty of ₹ 1.71 crore and thus extended undue benefit to the contractor. It is also to be mentioned that the contractor had been engaged only from September 2011 to July 2014, and therefore did not merit any unilateral benefit/ concession.

The Department stated (October 2017/ April 2018) that as the risk purchase clause was already exercised by the Company, penalty clause was not invoked. It was further stated that penalty has been recovered by the Company.

The reply is not acceptable as penalty clause (6.12) and risk purchase clause (9.01) are distinct and separate<sup>19</sup>. Further, the Department has produced no proof for the penalty recovered.

**Recommendation: The Company should recover penalty from the contractor as per the terms of the contract.**

### Quality Assurance of coal

**2.2.14** Coal companies raise invoices based on the rate of declared grade of gross calorific value (GCV<sup>20</sup>) of coal fixed by CIL. As per Schedule-IV of the agreement, coal samples shall be collected jointly and analysed in designated laboratories at the loading end in the presence of the seller and purchaser for determining its quality. Monthly statements of results of analysis of quality are authenticated jointly and bills originally raised on the basis of declared grade of coal are adjusted for actual quality determined in above analysis. Difference between the GCV as analysed in sample testing at the loading end and the GCV actually billed on declared grade basis is termed as “grade slippage” of coal. However, several disputes about the determination of coal quality occurred, mainly due to non-adherence of the prescribed procedure by the coal supplier, which are discussed below.

#### *Failure in realising coal grade slippage compensation*

**2.2.15** As per the agreement, the coal supplier was bound to give regular credit notes on account of grade slippage to the extent of difference between the billed base price of declared grade and analysed grade of coal within seven days of acceptance of results by both the parties (clause 11.2.2). There was no specific provision in the agreement which enabled the Company to lodge claim for grade slippage.

However, as the coal companies failed to issue credit notes, the TPSs were lodging grade slippage claims with the coal companies *suo moto* in their own financial interest. Audit analysed the grade slippage claims related to the period 2014-17 and observed that coal companies had not entertained the claims raised by the Company and each TPS had dealt with the issue in diverse manner as elaborated below.

➤ ACE (FM) of Satpura TPS had lodged grade slippage claims (₹ 65.13 crore) for the entire period of 2014-17 and due to non-receipt of credit note from coal supplier, withheld the claim amount while settling the

<sup>19</sup> Clause 6.12 stipulates that seller shall be liable to pay excess cost incurred by the purchaser on procurement of unexecuted supply of coal. Further, clause 9.01 stipulates that seller shall be liable to pay penalty at the rate of 10 *per cent* of unexecuted contract value.

<sup>20</sup> Heat produced in Kcal by complete combustion of one kilogram of coal.

bills. Though, ACE (FM) of Amarkantak TPS had lodged grade slippage claims (₹ 23.72 crore) for the period 2015-17, he did not withhold outstanding claim amount of ₹ 14.68 crore and no reasons were recorded for the same. ACE (FM) of the Sanjay Gandhi TPS neither lodged any formal grade slippage claim (₹ 349.83 crore) nor withheld the claim amount for the period 2014-16 even after communicating grade slippage test results to the coal supplier (SECL) and no reasons were recorded for the same. However, grade slippage claims (₹ 56.20 crore) for the subsequent year (2016-17) were withheld against the dues of coal supplier.

➤ ACE (FM) of Shree Singaji TPS failed to maintain records related to grade slippage for the period April 2014 to July 2015 for reasons not on record. Therefore, the TPS failed to assess claims for this period. Further, for the period from August 2015 to March 2017, though ACE (FM) had lodged grade slippage claims of ₹ 59.14 crore, the amount credited by the coal companies/ withheld by the TPS was ₹ 24.33 crore and the balance amount of ₹ 34.81 crore was not realised, for reasons not on record.

➤ Audit further observed that grade slippage related matters were never submitted to the BoD. As a result, diverse procedures were adopted by the TPSs in respect of grade slippage claims.

The Department stated (October 2017/ April 2018) that, as per the agreement, calculation of grade slippages and issue of credit notes are within the purview of the coal supplier. After appointment (July 2016) of the Central Institute of Mining and Fuel Research<sup>21</sup> (CIMFR) as the single third party sampling agency, either credit notes are being received or amount is being withheld regularly. It was further stated that in the absence of any provision for recovery of claims, it was not appropriate to withhold the amount against grade slippage.

The reply is not acceptable as grade slippage claims were dealt by the different TPSs in diverse manner. As already observed, Satpura TPS and Sanjay Gandhi TPS had withheld grade slippage claims for 2016-17. Also, on the one hand, the Company withholds claims against grade slippage and on the other it states that such withholds are inappropriate, which is contradictory. Further, CIMFR is only entrusted with the sampling of coal and intimating grade slippage. It has no role in issuing credit notes or withholding outstanding claims. Hence the Department's reply is irrelevant.

**Recommendation: The Company should actively pursue with the higher management of the coal companies for ensuring their adherence to coal supply agreement provisions regarding grade slippage.**

#### *Non realisation of claims towards oversized stones*

**2.2.16** As per the agreement, oversized<sup>22</sup> stones in the coal shall be assessed jointly by the representative of the TPS and the coal company at the TPS end (clause 4.6.2). In case the coal company's representative fails to be present for the joint assessment, the quantity of oversized stones assessed by the TPS

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<sup>21</sup> CIMFR was jointly appointed (July 2016) by the Company and coal companies for collection, preparation and analysis of quality of coal on behalf of both the parties.

<sup>22</sup> Size more than 250 mm

shall be taken as final and binding (clause 4.6.3). Coal companies shall adjust the full weighted average base price and other charges<sup>23</sup> for the quantity of oversized stones by issuing regular credit notes (clause 8.2 and 9.1).

Audit observed that oversized stone claims of the TPSs for the period April 2014 to December 2015, aggregating to ₹ 5.85 crore were accepted by the coal companies. However, an amount of ₹ 4.82 crore alone was adjusted in the bills by the coal companies and ₹ 1.03 crore was pending for realisation due to lack of effective pursuance by the ACE (FM) of the TPSs. Further, for the period January 2016 to March 2017, oversized stones to the tune of 7,724.27 MT valued at ₹ 1.27 crore were reported to be received by the TPSs. However the coal companies did not depute their representatives for joint assessment stating that as per instructions of Ministry of Coal, GoI only 100 mm coal was supplied to TPSs since January 2016.

Audit further observed that despite the above non-compliance of agreement provisions by the coal companies, the matters were not discussed by BoD and taken up with coal companies. This showed lack of monitoring by BoD.

The Department stated (October 2017) that claims had been regularly pursued by the Company. Further, in view of non-deployment of representatives for joint inspection by the coal companies from January 2016, TPSs has unilaterally assessed the oversized stones and lodged the claims.

The reply is not acceptable as claims of ₹ 2.30 crore were pending<sup>24</sup> to be recovered from the coal companies due to ineffective pursuance by the Company and the BoD also failed to take cognizance of the matter for remedial action. Further, the reply regarding lodging of claims based on unilateral assessment due to non-deployment of representatives for joint inspection by the coal companies is not relevant, as the same was required to be done by the Company as per the agreement clause 4.6.3 discussed above.

**Recommendation: The Company should take up the matter of non-compliance of agreement conditions and non-issue of credit notes by the coal companies with their higher management for appropriate remedial action.**

### Transportation of coal

**2.2.17** Coal procured is transported from the coal mines to the TPS of the Company through railway wagons, trucks and conveyer belts. Freight is a major component of cost of coal and the same is determined by the Railways. In this regard, Audit made the following observations:

#### *Excess payment of railway freight*

**2.2.18** The Railways had prescribed (July 2014) the rules and procedures regarding diversion of coal rake and e-payment facility for collecting freight charges. As per these rules, in case of diversion of rakes by the customers who are availing e-payment, the system will calculate and collect differential

<sup>23</sup> Sizing charges, rapid loading charges etc., excluding statutory charges such as royalty, cess, duties etc and railway freight.

<sup>24</sup> ₹ 1.03 crore for the period April 2014 to December 2015 and ₹ 1.27 crore for the period January 2016 to March 2017.

freight<sup>25</sup> through e-payment account at the originating station. For this purpose, the Company is required to maintain a centralised e-payment account with the Banks. In the absence of centralised e-payment account, in case of diversion of rakes, the Railways collect two full freights i.e., one for original destination and second for changed destination. Claims for refund of original destination freight are to be lodged subsequently by the Company with the Railways (rule 106 of the Railways Act, 1989).

**Company failed to open centralised e-payment account for payment of railway freight resulting in blockage of fund of ₹ 45.15 crore and consequently loss of interest of ₹ 6.30 crore.**

Audit observed that centralised e-payment system was available in July 2014. Further on request by the Company to adjust the freight paid for original destination against freight due for diverted destination, the Railways had also intimated (January 2016) the Company to open the centralised e-payment account. However, the CE (FM) did not take initiative to open centralised e-payment account till April 2017. In response to enquiry (May 2017) by the Company, South East Central Railway (SECR) had intimated (July 2017) the formalities for opening of centralised e-payment account. Subsequently, the Company opened the account with SECR in September 2017. However, account was yet to be opened with the Central Railways<sup>26</sup>.

Consequently, instead of charging differential freight, Railways recovered full extra freight for diversion of rakes. This resulted in excess payment of ₹ 45.15 crore during the period July 2014 to March 2017. Though, regular claims for refund of original destination freight were preferred by the Company with the Railways, no refund was received (October 2017). Consequently, the amount of ₹ 45.15 crore remained blocked with the Railways on which the Company suffered loss of interest of ₹ 6.30 crore<sup>27</sup>. The reasons for delay in opening centralised e-payment account were not recorded in the files.

The Department stated (October 2017) that centralised e-payment railway freight account was opened in September 2017 for SECR. Based on its experience, opening of e-freight account for coal supplies from WCL shall be finalised with Central Railways.

The reply is not acceptable and is clearly an afterthought. The facility of opening centralised e-payment account and its benefits were stipulated by the Railways way back in July 2014, but the Company failed to open the account till September 2017. The reply that account with Central Railway would be opened based on the experience of e-payment account with SECR is also not acceptable as the Company is already aware of the benefits of the centralised e-payment account.

**Recommendation: The Company should take immediate steps to open centralised e-payment account with Central Railway to avoid further blockage of funds and consequent loss of interest.**

<sup>25</sup> Difference between the amount of freight already paid as per Original Railway Receipt (ORR) and freight due as per Super sessional Railway Receipt (SRR)

<sup>26</sup> The Company was required to open centralised e-payment account with South Eastern Central Railways (SECR) and Central Railways separately as it receives coal through both Railways

<sup>27</sup> Audit has worked out interest loss from the date of actual payment of original freight at the rate of 10.65 per cent p.a which was the minimum interest rate at which Company had availed working capital loan during 2014-17

### ***Non recovery of idle freight charges***

**2.2.19** The Company's agreement with the coal companies stipulated that idle freight paid by the Company to the Railways resulting from under loading of wagons shall be compensated by the coal companies by adjustment through their coal bills (clause 10.3). However, the coal companies did not adjust full idle freight paid to the Railways. Therefore, the Company was required to assess and lodge claims for the unadjusted amount with the coal companies in its financial interest.

Audit observed that ACE (FM) of the Sanjay Gandhi TPS neither assessed nor lodged the idle freight claims for the year 2014-15. Though, the claims of ₹ 0.92 crore were lodged by ACE (FM) with SECL for the period 2015-17, the same were neither adjusted by the coal supplier nor withheld by the TPS. Further, ACE (FM) of Amarkantak TPS failed to lodge claims of ₹ 0.51 crore with SECL for the period 2014-17. ACE (FM) of Shree Singaji TPS lodged the claims of ₹ 0.65 crore with SECL for the year 2016-17, however the same were neither adjusted by the coal supplier nor withheld by the TPS. The reasons for non-assessment and lodging of claims by respective TPSs were not recorded.

The Department stated (October 2017/April 2018) that claims of Shree Singaji TPS for the year 2016-17 and Amarkantak TPS for the years 2014-17 have since been lodged. It was further stated that claims were being pursued with coal companies.

The reply is not acceptable as idle freight claims for Shree Singaji TPS for the period 2016-17 and Amarkantak TPS for the period 2014-17 were neither adjusted by the coal supplier nor withheld by the TPSs. Further, the reply is silent in respect of non-assessment and non-lodging of idle freight claims by Sanjay Gandhi TPS for the year 2014-15.

**Recommendation: The Company should immediately lodge the pending claims for idle freight and effectively pursue the same for early realisation/adjustment of dues.**

### ***Payment of incentives to liaisoning contractors***

**2.2.20** The Company has been engaging liaisoning contractors for liaisoning with the coal companies and the Railways for coal movement from mines to TPS through Railways, on payment of monthly service charges. In this regard, Audit noticed the followings.

- As per the direction of Department of Energy, GoMP (November 2010), the Company was required to incentivise the liaisoning contractor for coal receipts in excess of the annual contracted quantity. However, the Company with the approval of MD, incorporated (July 2011) an incentive clause in the liaisoning contract enabling the contractor to get slab wise incentives for coal receipts in excess of MRP quantity instead of annual contracted quantity. The reason for linking incentive to MRP was stated to be the extra efforts required by the contractor for increasing receipt of coal beyond MRP. However, the clause for levy of penalty in case of shortfall in the receipt of coal was not incorporated. The CE (FM) further modified (June 2014) the incentive clause by linking it to MRP or monthly quantum of annual contracted quantity

whichever is higher citing past experience and to avoid extra payment of incentive in case MRP is less than monthly contracted quantity. However, the incentive was still not linked to annual contracted quantity as directed by GoMP.

Audit observed that during 2014-16 the Company paid incentive of ₹ 0.69 crore to the contractor for coal received in excess of MRP quantity/monthly contracted quantity even though total receipt of coal during the year was less than the annual contracted quantity.

The Department stated (October 2017) that the incentive clause was incorporated in 2011, when coal supply was deficient. In the present situation, the incentive is proposed to be deleted from the future contracts. The reply is not acceptable as the Government direction was categorical about linking payment of incentive to more than 100 *per cent* materialisation of annual contracted quantity, deviation from which caused avoidable expenditure of ₹ 0.69 crore.

- Satpura TPS entered into a liaisoning contract (June 2014) for its existing units having contracted quantity of 66 LMT and extension units having contracted quantity of 18.51 LMT. As per clause 2.6 of the contract, the contractor was eligible for monthly incentive payment, if materialisation of coal quantity in a particular month is more than MRP quantity or monthly contracted quantity (as given in clause 2.4 of the contract), whichever is higher.

During December 2015, the materialisation of coal was more than the monthly linkage quantity by 0.59 LMT, for which incentive of ₹ 0.26 crore was paid to the contractor by TPS.

Audit observed that the Company had considered MRP and actual materialisation quantity of PH-II and III (existing units) only for computation of incentive while excluding the MRP quantity (1.54 LMT) and actual quantity (0.67 LMT) of PH-IV (extension unit). The contract clearly stipulated that the quantity of both existing and extension units is to be considered for calculating incentive. As the actual MRP quantity of existing and extension units for the month of December 2015 was 3.81 LMT, against which actual materialisation of coal was 3.53 LMT only, no incentive was payable to the contractor.

The Department stated (April 2018) that calculation of incentive was done separately for both agreements and there was no erroneous interpretation of the contract clause.

The reply is not acceptable as the liaisoning contract (clause 2.6) clearly mentioned that incentive would be calculated based on quantity mentioned in clause 2.4 which included monthly contract quantity of both the units. The above erroneous interpretation of the company may also lead to excess payment of undue incentive in future also.

**Recommendation: The Company should adhere to the directives of Department of Energy and terms and conditions of liaisoning contracts to protect its financial interest.**

## Coal handling

### *Extra expenditure due to non-functioning of in-motion weighbridge*

**2.2.21** Shree Singaji TPS procured 4.34 LMT of imported coal against two supply orders<sup>28</sup> during June 2014 to January 2016. As per supply order, payment for coal was to be regulated based on final weight recorded at the in-motion weighbridge<sup>29</sup> (clause 7). If weighbridge at TPS was out of order, payment had to be made based on weight recorded in railway receipt (RR) at loading end (clause 11). But in such a situation, the Company has to pay for the coal lost during transit also.

Audit observed that in-motion weighbridge at Shree Singaji TPS was not working properly from the date of its commissioning (July 2014) as it was installed at a technically unsuitable location and the same has not been rectified by the Company so far (October 2017) despite lapse of more than three years. As a result, the Company was forced to pay ₹ 1.96 crore being the value of 2,891.10 MT<sup>30</sup> of coal lost during transit. This payment could have been avoided had the in-motion weighbridge been working properly.

The Department stated (October 2017/April 2018) that there was no penalty clause in the agreement for transit loss. In-motion weighbridge is being shifted to suitable location, which will improve its working. Further, the transit loss in imported coal in Shree Singaji TPS was not comparable with other TPS as these plants were situated at longer distance.

The reply is not acceptable as in the absence of weighment of coal, the Company was paying for the entire quantity billed by the supplier including the transit loss. Further, as the actual transit loss at Shree Singaji TPS cannot be correctly worked out due to non-working of in-motion weighbridge, the Audit has taken minimum transit losses on imported coal reported at other TPSs.

**Recommendation: Company should take immediate action to rectify the deficiency in in-motion weighbridge to avoid further payment of transit losses on imported coal.**

### *Payment of demurrage charges to the Railways and non-recovery of shunting charges from unloading Contractors*

**2.2.22** The Company had appointed unloading contractor at Amarkantak TPS and Sanjay Gandhi TPS (PH-I and II) for ensuring timely unloading of coal. Similarly, O&M Contractors<sup>31</sup> were appointed at Sanjay Gandhi TPS (PH-III), Shree Singaji and Satpura TPS (PH-IV) for maintenance of unloading

<sup>28</sup> Placed on M/s Adani Enterprises Limited (November 2012 and March 2015)

<sup>29</sup> In-motion weighbridge is used at TPSs to measure coal weight by passing the wagon over it.

<sup>30</sup> The transit losses in imported coal at other TPSs were in the range of 0.66 per cent on total quantity of 1.70 LMT supplied at Satpura TPS and 1.29 per cent on total quantity of 5.27 LMT supplied at Sanjay Gandhi TPS. Audit has considered the minimum transit loss of 0.66 per cent recorded at Satpura TPS.

<sup>31</sup> The scope of O&M Contract at Sanjay Gandhi TPS (PH-III) included O&M of unloading equipment and timely unloading of coal, whereas in case of Shree Singaji and Satpura TPS-IV, the scope of O&M contract included O&M of Coal Handling Plant besides O&M of unloading equipment and timely unloading of coal.

equipment including timely unloading of coal. As per the contract, demurrage and other charges levied by Railways shall be recovered from the contractor to the extent to which he was liable. In this regard, audit observed the followings:

(A) Railways had allowed free time of five hours for mechanical unloading and nine hours for manual unloading of a coal rake, beyond which demurrages at the rate of ₹ 150 per wagon per hour are levied. Audit observed that out of 7,495 coal rakes received during the period 2014-17 by all four TPSs, unloading of 4,627 coal rakes (61.73 per cent) were delayed for which the Company had to pay demurrage charges of ₹ 21.35<sup>32</sup> crore. Further analysis revealed the followings:

- Sanjay Gandhi TPS had incurred an amount of ₹ 13.05 crore on demurrage charges due to delay in unloading of 84.55 per cent of rakes arrived during 2014-17 mainly caused by limited coal conveying capacity (1,200 tonne per hour) of the conveyor belt. Though, the TPS had initiated proposal for construction of alternative coal path in October 2010, CE (O&M Generation) and CE (Renovation and Modernisation) at Corporate office and CE of Sanjay Gandhi TPS kept the proposal pending for more than three years due to delayed finalisation of funding source and cost benefit analysis. Finally, at the instance of Principal Secretary, Energy Department, GoMP (October 2014), with the approval of BoD (83<sup>rd</sup> Meeting held on January 2016), the Company placed (February 2016) orders on M/s Energo Engineering Project Limited, Gurgaon (lowest bidder in competitive bidding) for construction of alternative coal path at a cost of ₹ 48.90 crore with completion schedule by October 2017. The work was not completed<sup>33</sup> as on October 2017.

The Department stated (April 2018) that construction of alternative coal path with parallel system of existing CHP is an excessively tedious job, and all efforts are being made to complete the works at the earliest. The reply is not acceptable as proposal for alternative coal path, initiated in October 2010 was kept pending by CE (O&M Generation), CE, Renovation and Modernisation (R&M) and CE of Sanjay Gandhi TPS and the Company started (February 2016) the construction after five years.

- Shree Singaji TPS had incurred an amount of ₹ 7.51 crore on demurrage charges due to delay in unloading of 54.57 per cent of rakes arrived during 2014-17, mainly due to receipt of big size coal lumps which required breaking into smaller pieces<sup>34</sup>, delay in placement of rakes for unloading and outages of unloading equipment. The Company had appointed (January 2015) operation and maintenance (O&M) contractor (M/s Energo Engineering) through competitive bidding for ensuring timely unloading of coal, breaking of big lumps of coal and O&M of unloading facilities. As per terms and scope of the O&M contract, the contractor was responsible for demurrage due to delay.

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<sup>32</sup> Sanjay Gandhi TPS (₹ 13.05 crore) + Shree Singaji TPS (₹ 7.51 crore) + Satpura TPS (₹ 0.43 crore) + Amarakantak TPS (₹ 0.36 crore).

<sup>33</sup> RCC work, excavating work and fabrication works were in progress.

<sup>34</sup> Since standard size of steel grid through which coal is dropped over track hopper is 250 mm, the big size of lump and coal are required to be broken into pieces before passing through steel grid. The delay in breaking the lumps and stone increase detention time of rakes. As per conditions of O&M contract, the contractor was required to ensure timely breaking of lumps and stone so that coal from wagons could be unloaded in free time.

A committee<sup>35</sup> was formed at Shree Singaji TPS in April 2015 for assessing the cause-wise analysis of delay and as per recommendations of the committee, ₹ 0.28 crore was recovered from the contractor for reasons attributable to the contractor during the period January 2015 to October 2015.

Audit observed that the committee did not recommend recovery of ₹ 2.28 crore from the O&M Contractor for delay in unloading of coal on account of big lumps of coal stone/ shales, wet and sticky coal for which the contractor was responsible (clause 10). Further, the contractor was also responsible for overall maintenance of the system and in case of delay in unloading of wagons due to outages/failure of the system, the demurrage should also have been recovered from the contractor. However, the O&M contract did not include any clear clause for recovery of demurrages due to system outages<sup>36</sup> and this resulted in non-recovery of demurrage of ₹ 2.96 crore from the contractor for system outages. The committee did not submit any report after October 2015, for which reasons were not recorded.

In contrast to above, during 2014-17 Sanjay Gandhi TPS (PH-III) and Satpura TPS (PH-IV) had attributed reasons (big lumps of coal, stone and system outages) to the O&M contractor and recovered the demurrage charges for the same as per terms and conditions of the O&M contract. Thus, the CE of the respective TPS failed to enforce terms and conditions of O&M contract and monitor timely unloading of coal leading to avoidable payment of demurrage to Railways.

The Department stated October 2017/April 2018) that demurrage was recovered from the contractor as per terms and conditions of O&M contract. Further demurrage charges were to be levied to a maximum of 10 *per cent* of contract value exclusive of taxes. The reply is not acceptable as the demurrage was not recovered from the contractor for the delays attributable to him. Further, the non-recovery of demurrage of ₹ 2.28 crore at Shree Singaji TPS as pointed out by audit was within the limit of 10 *per cent* of contract value of ₹ 37.03 crore.

**(B)** In case of detention of Railways loco in TPS siding beyond five hours, TPS was liable to pay shunting charges on the basis of cost of engine hours. Sanjay Gandhi TPS and Amarkantak TPS did not have their own Railways engine. Accordingly, shunting charges are payable by Sanjay Gandhi TPS and Amarkantak TPS to the Railways when Railways engine is detained in TPS siding beyond free time of five hours.

Though, Amarkantak TPS paid ₹ 0.85 crore as shunting charges to Railways for the period 2014-17, ACE (FM) did not arrange recovery of the shunting charges from the contractor despite having clause in the unloading contract (clause 2.2 C<sup>37</sup>).

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<sup>35</sup> Additional CE (O&M), SE (Services-I) and SE (Services-II).

<sup>36</sup> The delay in unloading of wagons due to hopper jam, conveyor system problem, unloading equipment outages and crushing system outages etc. were attributable to the contractor.

<sup>37</sup> Contractor should ensure unloading of wagons within free time (five hours) and penalty, demurrage charges and any other charges levied by Railways due to delay in unloading of wagons shall be recovered from the contractor

Further, Sanjay Gandhi TPS paid ₹ 20.43 crore as shunting charges to Railways for the period 2014-17. However, due to deficient provision in the contract, the same could not be recovered from the unloading contractor.

The Department stated (April 2018) that shunting charges were not penalty but engine hire charges. As these are regular charges, no provision was made in the contract for recovery. The reply is not acceptable as clause 2.2(C) of the contract also provided for recovery of any other charges from contractor levied by Railways.

**Recommendation: Company should adhere to the terms and conditions of O&M/unloading contract and also complete the alternative coal path works at the earliest to avoid further payment of demurrage.**

***Avoidable expenditure on Operation & Maintenance charges of Coal Handling Plant***

**2.2.23** Shree Singaji TPS executed (February 2015) an agreement with M/s Energo Engineering Projects for operation and maintenance (O&M) of its Coal Handling Plant (CHP) and for keeping the same in working condition, for a period of three years from 13 January 2015.

In a similar contract placed (October 2014) by the Satpura TPS on M/s Mc Nally Bharat Engg. Company Limited, Kolkata, a specific condition was included stating that 70 to 80<sup>38</sup> per cent of the monthly charges alone will be paid on pro-rata basis for the days of outage exceeding five days. However, similar clause was not included in the O&M contract at Shree Singaji TPS and as a result full payment was made to O&M contractor without any pro-rata reduction for the period of plant shut down. This has resulted in avoidable expenditure of ₹ 2.64 crore. The Company had no standard form of agreement containing uniform terms and conditions for executing CHP (O&M) works though these two<sup>39</sup> contracts were awarded by respective CEs of TPS with the prior approval of MD/ BoD<sup>40</sup>.

The Department stated (April 2018) that O&M contract of CHP at Shree Singaji was awarded in July 2014. Subsequently, O&M contract of CHP was awarded (October 2014) at Satpura TPS with the condition of pro-rata payment.

The reply is not correct as the O&M contract of CHP at Shree Singaji TPS was awarded in February 2015 whereas O&M contract at Satpura TPS was awarded in October 2014. Thus, the Company failed to protect its financial interests by not incorporating favourable terms of O&M contract of Satpura TPS in the O&M contract of Shree Singaji TPS.

**Recommendation: The Company may adopt standard form of agreement containing uniform terms and conditions for all four TPS to protect its financial interests. Also, the favourable clause in the O&M contract at Satpura TPS should be included in O&M contracts of other TPSs.**

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<sup>38</sup> If one unit of PH remains under shut down beyond five days, 80 per cent of monthly charges is allowed and in case both units of PH remain under shut down beyond five days, 70 per cent of monthly charges is allowed.

<sup>39</sup> Out of four TPSs, the CHP (O&M) works contracts were awarded only in Shree Singaji TPS and one unit of Satpura TPS (PH-IV).

<sup>40</sup> As per delegation of power in the company, the O&M contract at Satpura TPS (PH-IV) and Shree Singaji TPS was awarded with the approval of MD and BoD respectively.

**Avoidable loss on excess coal mills rejects**

**2.2.24** Coal mills in TPSs are designed to reject tramp iron<sup>41</sup>, pyrites<sup>42</sup> and other denser material during the process of coal grinding. These coal mill rejects are stacked in adjacent yards near the plants and are sold when accumulated. The Company had set upper limit of one *per cent* of coal handled for coal mill rejects.

The quantity of coal mill rejects in all TPSs was within norms except at Satpura TPS PH-III and IV. Satpura TPS PH-III had excess coal mill rejects of 0.13 LMT, valued at ₹ 3.36 crore, during 2014-17. Similarly, excess coal mill rejects in Satpura TPS PH-IV during 2014-15 was 0.40 LMT, valued at ₹ 10.38 crore. The reasons<sup>43</sup> for excess coal mill rejects were over loading of mill due to high fineness and high moisture, improper operation due to low air flow and low mill outlet temperature, delayed maintenance and non-replacement of worn out parts of coal mill, which were controllable by CE, TPS through proper operation and maintenance of coal mills. Audit further observed that the BoD did not monitor the status of coal mill rejects and the same is monitored by respective CE at TPS level.

The Department stated (October 2017/April 2018) that there is continuous reduction in coal mill rejects in old units and efforts are being made to further reduce the same by proper maintenance of mills, timely replacement of grinding elements and filtering out of foreign material and impurities etc. The Satpura TPS-IV was commissioned during 2013-14 and had teething problems during initial stage of operation.

The reply is not acceptable as the company failed to keep coal mill rejects in these units within limits fixed by it. More efforts are required to keep the coal mill rejects of Satpura TPS PH-III and PH-IV within norms by following best practices of other units.

**Recommendation: The Company should take effective steps to adhere to operational norms.**

<b>Consumption of coal</b>
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**2.2.25** As coal cost is a major component of cost of power generation, efficient and economic coal consumption is essential for any TPS. Madhya Pradesh Electricity Regulatory Commission (MPERC) had fixed plant specific norms for Gross Station Heat Rate (SHR)<sup>44</sup>. The higher SHR leads to higher coal consumption in production of power due to higher heat requirement. Audit noticed the followings, in respect of consumption of coal.

<sup>41</sup> Stray metallic particles or objects such as staples, baling wire and nails etc.

<sup>42</sup> A shiny yellow mineral consisting of iron disulphide.

<sup>43</sup> As per operational manual of coal mill, reasons analysis done by company and also analysed by audit based on examination of records.

<sup>44</sup> Gross Station Heat Rate means the heat energy input in kCal required to generate one unit of electrical energy at generator terminals of a Thermal Power Generating station.

### **Excess coal consumption due to higher Station Heat Rate**

**2.2.26** As per MPERC (Terms and Conditions for Determination of Generation Tariff) Regulations 2012 and 2015, the value of excess coal consumption due to higher SHR has to be absorbed by the Company and is not recoverable from electricity consumers. Audit observed that actual SHR was higher than the norms in all TPSs during 2014-17 except in Amarkantak TPS during 2015-17. Higher SHR resulted in excess consumption of 26.88 LMT of coal valued ₹ 866.12 crore during 2014-17.

**There was excess consumption of 26.88 LMT of coal over the MPERC norms resulting in extra expenditure of ₹ 866.12 crore.**

The reasons for higher SHR and consequent excess coal consumption as analysed by the Company were: inadequate maintenance and failure to ensure timely overhauling of the TPSs due to paucity of funds<sup>45</sup>, partial loading of power plant, frequent forced shut downs, poor performance of coal mills, deviation from recommended technical parameters<sup>46</sup> viz., pressure, temperature, condenser vacuum, fuel and air ratio. The above factors could have been controlled by adequate and timely maintenance and overhauling of TPSs, optimum loading of the plant and by maintaining the recommended technical parameters. The BoD regularly monitor the status of SHR through status report submitted by the CE (FM) but reasons for higher SHR and corrective actions to be taken to bring down the SHR were not discussed in BoD meetings.

The Department stated (October 2017/April 2018) that the MPERC norms were becoming stringent year by year and ageing of units were not being given due consideration by MPERC. Further, poor quality of coal and frequent Reserve Shut Downs (RSD)<sup>47</sup> were the main reasons for higher SHR, which are beyond the control of the Company.

The reply is not acceptable as MPERC had fixed the norms after considering performance of similarly placed units, vintage of equipment, nature of operation and past performance. Moreover, the adequate repairs and maintenance of old units were not being carried out due to paucity of funds. Further, the quality of coal also deteriorated after receipt of coal at generating stations as there was substantial difference between GCV of coal received from coal companies and GCV of coal fired/used in generating stations due to improper stacking and reclaiming. The SHR was higher even before

<sup>45</sup> Short recovery of expenses through generation tariff due to non-achievement of operational norms i.e., SHR, fuel oil etc., and blockage of funds due to delay in payment of power purchase bills by Madhya Pradesh Power Management Company Limited were the reasons for paucity of funds. During 2014-17, the TPSs required average annual funds of ₹ 549 crore for repairs and maintenance, against which the BoD allocated ₹ 293 crore.

<sup>46</sup> Corporate Office issued (April 2014) guidelines for all TPSs stipulating various technical parameters for reduction of SHR.

<sup>47</sup> As per Merit Order Dispatch (MOD) system, scheduling for generation would be given to generating stations having least cost of generation and units with higher generation cost would then go for reserve shut down (RSD) i.e. withdrawn from power generation. MOD system was applicable to all the TPSs of the Company and the private power generators of the MP.

introduction of MOD system and the Company also not assessed separately the impact of reserve shut downs in higher SHR.

**Recommendations: (i) The Company should take effective steps to adhere to operational norms in respect of SHR. (ii) The Department of Energy should hold regular review meetings with the Company and Madhya Pradesh Power Management Company Limited (MPPMCL) for ensuring timely payment of energy dues by MPPMCL to avoid funds shortage for essential activities of the Company.**

***Higher unburnt coal in ash***

**2.2.27** Non-maintenance of required coal fineness and air-fuel ratio in the furnace results in improper combustion of coal, which causes release of un-burnt coal particles in the ash. The design parameter of boiler prescribes the maximum limit of un-burnt coal particles in the ash.

Audit observed that, during the period 2014-17, unburnt coal content in ash was higher than the norms in all TPSs (except Amarkantak TPS and Satpura TPS PH-II and III), including the three newly set up PHs<sup>48</sup> resulting in wastage of 0.93 LMT of coal valued ₹ 31.54 crore. The Satpura TPS PH-IV had highest *per cent* of excess unburnt coal, which ranged from 1.13 *per cent* to 2.35 *per cent* of total ash generated during the period 2014-17.

The reasons<sup>49</sup> for higher unburnt coal in ash were, irregular coal particles size distribution in pulverized coal and poor combustion in furnace due to non-maintenance of required coal particle fineness and air fuel ratio. The unburnt coal losses can be minimised by regular O&M of coal mills and maintaining adequate air fuel ratio and coal particle fineness.

Further, the status of unburnt coal is monitored by respective CE of the TPS through chemical reports prepared by chemist of the TPS. However, the chemical report contained only actual percentage of unburnt coal in ash and no benchmark was mentioned. The reasons for higher unburnt coal in ash were also not discussed in the chemical report. Further, there was no adequate management information system (MIS) in place which reports such plant level operational issues to the BoD.

The Department stated (October 2017) that the main reasons for higher unburnt coal in ash were running of units on partial load, frequent reserve shutdown, deferment of comprehensive R&M of old age units due to paucity of funds etc.

The reply is not acceptable as Sanjay Gandhi TPS PH-III, Shree Singaji TPS and Satpura TPS PH-IV were newly set up units in which unburnt coal in ash was higher than the norms during 2014-17. Further, the unburnt coal in ash was also higher than norms in 2014-15 i.e., before introduction of the MOD regime causing frequent reserve shut downs.

**Recommendation: The Company should take effective steps to adhere to operational norms in respect of unburnt coal in ash.**

<sup>48</sup> Shree Singaji TPS PH-I (February 2014), Sanjay Gandhi TPS PH-III (June 2007) and Satpura TPS PH-IV (August 2013).

<sup>49</sup> Based on the technical parameters stipulated in operational manual and reasons analysis carried out by TPSs.

## Ash management

**2.2.28** After combustion of coal in the boiler of a TPS, ash is generated as waste. Around 20 *per cent* portion of the total ash is collected at the bottom of the furnace and pushed out into the ash pond in the form of slurry called bottom ash. The remaining portion of ash is collected in ash silos through electrostatic precipitator (ESP)<sup>50</sup> and the same is called fly ash. Audit noticed the following in respect of ash management.

### *Non-compliance of Government directions on environmental protection*

**2.2.29** Ministry of Environment, Forest and Climate Change (MoEF), GoI had issued (September 1999) notification containing directives regarding utilisation of fly ash from coal based TPS, which was subsequently amended in November 2009.

- As per the directives, 100 *per cent* fly ash of TPS had to be utilised within five years from the date of notification. However, Audit observed that ash utilisation in Sanjay Gandhi TPS, Amarkantak TPS and Satpura TPS during the period 2014-17 was in the range of 40.67 to 78.41 *per cent* only. In respect of Shree Singaji TPS the target of 50, 70 and 90 *per cent* was fixed for the first, second and third year of operation whereas utilisation of ash was only one, three and 14 *per cent* respectively. The main reasons as observed by Audit for lower ash utilisation was its high transportation cost and low demand. Audit further observed that BoD did not monitor the ash utilisation of the TPSs except that of Satpura TPS.
- All the TPSs were required to prepare and submit action plans for ash disposal to the Central Pollution Control Board and concerned Regional Office of the MoEF within a period of four month from the date of notification. However, after delay of 17 years and at the instance of Audit, the Company prepared action plan for all the four TPS in October 2017.
- Para 2(7) of the notification stipulated that Annual Report of the Company should contain an annual implementation report about the compliance of provisions of notification. However, Company has not complied with this.

The Department stated (October 2017/ April 2018) that in compliance to para 2 (7) of the notification, publishing of annual report would be done. Further cement and brick manufacturers near TPSs are using fly ash and the Company is pursuing other agencies to utilise ash in their activities.

Fact remained that the Government directions for proper ash management were not complied with.

**Recommendation: The Company should ensure strict compliance of environmental norms in respect of ash utilisation.**

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<sup>50</sup> Electrostatic Precipitator is a filtration device that removes fine particles, like dust and smoke, from a flowing gas.

### Consumption of fuel oil

**2.2.30** Fuel oil is mainly used for start-up of the TPS and also for maintaining the required heat in case of low quality of coal. MPERC has prescribed norms for consumption of fuel oil for each Power House (PH) considering past performance, performance of similarly placed units, fuel, vintage of equipment and nature of operations.

There was excess consumption of 20,123 KL of fuel oil over the MPERC norms resulting in extra expenditure of ₹ 95.80 crore.

Audit observed that during the period 2014-17, TPSs of the Company (except Sanjay Gandhi TPS PH-III and Amarkantak TPS) consumed fuel oil of 20,123 KL valued at ₹ 95.80 crore in excess of the norms. The reasons for excess fuel consumption as analysed by the Company<sup>51</sup> were: higher consumption of oil on regular start-up, frequent shut down of plant, partial loading, coal flow interruption<sup>52</sup> and coal mill outages. These were caused by equipment outages due to inadequate maintenance and reserve shut down due to low demand for power.

As per CEA recommendation, fuel oil is to be used only to support TPS on start-ups, but TPSs had used fuel oil for other requirements<sup>53</sup> also. Excess consumption of fuel could have been reduced by managing adequate primary fuel supply, proper loading of power plant and regular maintenance and overhauling of the power plant. Adequate maintenance and overhaul was not done due to paucity of funds<sup>54</sup>. Further, due to MOD based sale of power, the company could not run its power plant regularly and at full capacity due to higher generation cost resulting in frequent shutdowns and consequent higher oil consumption. Audit observed that though the status reports of fuel oil consumption are regularly submitted by the CE (FM) to BoD, there was no discussion on reasons for higher oil consumption and corrective action to be taken. The Department stated (October 2017/April 2018) that MPERC reduced (2009-10) target of fuel oil consumption, even though the units were becoming older. It was further stated that frequent starting and stopping of units due to reserve shut down increased oil consumption.

The reply is not acceptable as MPERC fixed the norms after considering performance of similarly placed units, vintage of equipment and nature of operation. Further, the oil consumption was also higher than norms before introduction of MOD regime in September 2015 that caused frequent reserve shut downs.

**Recommendation: The Company should take effective steps to adhere to operational norms in respect of consumption of fuel oil.**

<sup>51</sup> Reasons for excess oil consumption were analysed by respective SE (Operation) on daily basis at TPS level and CE (FM/ Generation) at Corporate Office

<sup>52</sup> During rainy season, coal becomes sticky and wet causing interruption in feeding of coal.

<sup>53</sup> Oil requirement due to coal flow interruption, outages of coal mills, shut downs of TPS and flame stabilisation

<sup>54</sup> During 2014-17, the requirement of funds for R&M sent by TPSs was drastically reduced due to paucity of funds and the company has been regularly availing working capital loan to meet his day to day obligations.

## Conclusion

- Management information system was deficient and important issues were not reported to Board of Directors for remedial action.
- Failure of the Company to reduce contracted quality of coal for two closed units of Amarkantak Thermal Power Stations led to avoidable liability of ₹ 17.21 crore towards compensation for short lifting of 6.27 LMT of coal during the year 2016-17.
- The Company could not use 18.05 LMT coal of WCL in Shree Singaji TPS even when WCL mines were located nearer to Shree Singaji TPS than SECL mines due to failure in swapping of coal between TPSs resulting in avoidable expenditure of ₹ 80.10 crore.
- The Company had incurred liability to pay incentive on account of excess supply of coal in one agreement and penalty on account of short lifting of coal in another agreement to WCL due to failure in judiciously rearranging the supply of coal among the agreements resulted in avoidable loss of ₹ 50.96 crore.
- The Company short lifted 12.68 LMT of indigenous coal although 1.76 LMT of imported coal at higher cost was procured during May 2015 to June 2016 resulting extra expenditure of ₹ 51.24 crore.
- The Company failed to maintain a centralised e-payment account with the Banks for payment of freight charges to Railways which resulted in excess payment of ₹ 45.15 crore during the period 2014-17. Consequently, the Company suffered loss of interest of ₹ 6.30 crore on the blocked up funds.
- The Company failed to unload the coal rakes within the prescribed time limit which resulted in avoidable payment of demurrage charges of ₹ 21.35 crore to Railways during 2014-17.
- The actual station heat rate (SHR) was higher than the norms prescribed by Madhya Pradesh Electricity Regulatory Commission in all Thermal Power Stations during 2014-17 except Amarkantak TPS for the year 2015-17. Higher SHR resulted in excess consumption of 26.88 LMT of coal valued ₹ 866.12 crore during 2014-17.
- TPSs of the Company consumed excess fuel oil of 20,123 Kilo litre than the prescribed norms resulting in extra expenditure of ₹ 95.80 crore.