सत्यमेव जयते

Report of the Comptroller and Auditor General of India

for the year ended 31 March 2020

लोकहितार्थ सत्यनिष्ठा
Dedicated to Truth in Public Interest

Compliance Audit of Activities of selected Central Public Sector Enterprises Union Government (Commercial) No. 9 of 2022

Report of the
Comptroller and Auditor General of India

for the year ended 31 March 2020

Compliance Audit of Activities of selected
Central Public Sector Enterprises
Union Government (Commercial)
No. 9 of 2022

CONTENTS

PREFACE

1. This Report of the Comptroller and Auditor General of India has been prepared for submission to the Government under the provisions of Section 19-A of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971, as amended in 1984.

2. This Report contains the results of review of selected areas of operation of three Central Public Sector Enterprises under administrative control of Ministry of Power, Government of India, as detailed below:

a. Operational Performance of Kanti Bijlee Utpadan Nigam Limited

b. Fuel Management in Damodar Valley Corporation

c. Srinagar Leh Transmission System

3. The Audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

EXECUTIVE SUMMARY

I Introduction

This Audit Report contains reviews on selected areas of operation relating to Kanti Bijlee Utpadan Nigam Limited (KBUNL), Damodar Valley Corporation (DVC) and Power Grid Corporation of India Limited (PGCIL) under administrative control of Ministry of Power, Government of India. These areas were selected in Audit for review on the basis of their relative importance in the functioning of the concerned organisation. This Audit Report includes the following reviews:

1. Operational Performance of Kanti Bijlee Utpadan Nigam Limited
2. Fuel Management in Damodar Valley Corporation
3. Srinagar Leh Transmission System

II Highlights

Highlights of significant observations on the selected areas included in the Report are given below:

Operational Performance of Kanti Bijlee Utpadan Nigam Limited

Kanti Bijlee Utpadan Nigam Limited (KBUNL) had been set up to revive the power plant of Bihar State Electricity Board and to set up new projects to cater to power requirements of the nation. The Company however, even after 15 years of its operation, was unable to operate at full capacity and its operations have continued to remain constrained.

(Para 1.1)

The Company failed to achieve the norms fixed by CERC for gross station heat rate, auxiliary power consumption and specific fuel oil consumption due to non-scheduling of power for Stage I units and installation of oversized machineries in Stage II units. This resulted in higher cost of generation and non-recovery of energy charge rate. The projects under Stage II units were delayed which resulted in time and cost overrun. The actual cost increased by 65 *per cent* (₹2,063 crore) over approved cost.

(Para 1.4.2 & 1.4.3)

Due to delay in completion of projects, CERC disallowed ₹121.99 crore of fixed charges claim of the Company. Risk and cost amount of ₹74.39 crore was not recovered from defaulting contractors due to inaction or delayed action. Penalty of ₹49.93 crore was paid to coal companies due to short lifting of coal and further, substantial grade slippage during transportation of coal from loading to unloading points led to excess payment made by KBUNL on this account.

(Para 1.4.3 & 1.4.4)

KBUNL has also been unable to adhere to the emission norms and norms for utilisation of ash fixed by Ministry of Environment, Forest and Climate Change.

(Para 1.4.5)

With regard to Chapter on Operational Performance of Kanti Bijlee Utpadan Nigam Limited, Audit recommends that:

- ***Company may take measures to achieve norms fixed by CERC for gross station heat rate, auxiliary power consumption and specific fuel oil consumption, to make generation of power more economical.***
- ***Company may strengthen project monitoring mechanism and take time bound steps for imposition of penalty on defaulting contractors and award of contracts on risk purchase basis to prevent further time and cost overrun in the completion of its on-going projects.***
- ***Company may immediately put in place a fool proof mechanism to resolve the grade slippage issue of coal during transportation from loading to unloading points with the sampler and coal companies to ensure such losses do not occur in future.***
- ***Company may place focus on its environmental commitments, ensure strict adherence to environmental norms and prevent any damage to the habitat and ecology surrounding the plant.***

Fuel Management in Damodar Valley Corporation

Damodar Valley Corporation (DVC) was set up in 1948 and engaged mainly in generation and distribution of power. The main source of revenue of DVC is sale of power and DVC has seven coal based thermal power generating stations with a total installed capacity of 7090 Megawatt.

(Para 2.1)

There was, however, non-materialization of Fuel Supply Agreements to the extent of its Annual Contracted Quantity and DVC had to incur additional expenditure on account of payment for Performance Incentive due to inadequate Annual Contracted Quantity in the Fuel Supply Agreements and less lifting of coal than the quantity allocated in Annual Contracted Quantity. Additional expenditure was also incurred for procurement of coal through the Memorandum of Understanding, though, there was scope to source the same from the Fuel Supply Agreement at a lower price.

(Para 2.3.1)

Daily coal stock position was under critical/ super-critical levels at most of the power stations due to which generation of power was adversely affected and DVC had to suffer loss of capacity charges. Delay in development of allotted coal block was also observed.

(Para 2.3.2 & 2.3.3)

Supply of higher grades of coal with reference to grades of coal mentioned in the Fuel Supply Agreements by the coal companies were observed which led to additional burden on consumers. DVC received oversized extraneous materials such as stones with coal primarily due to deficiency in supervision on the part of the contractor/ representatives of DVC at the loading points and major portion claim for supply of such stones were lying unadjusted. There was deficiency in the sampling system of the coal supplied resulting in non-settlement of the value of grade slippage of coal received. The transit and handling loss of coal was more than the norms fixed for the same.

(Para 2.3.4)

DVC had to bear additional expenditure on account of Engine Detention Charge and punitive charges for overloading of wagons due to faulty contract clause. All the deficiencies noticed indicate the lack of seriousness on the part of the DVC in ensuring effective management of fuel.

{Para 2.3.5.1(i) & 2.3.5.1(ii)}

With regard to Chapter on Fuel Management in Damodar Valley Corporation, Audit recommends that:

- ***Annual Contracted Quantity in the Fuel Supply Agreements may be equal to normative annual requirement of plants as provided in the New Coal Distribution Policy provision.***
- ***Necessary steps are required to be taken to ensure that power generation is not interrupted due to shortage of coal.***
- ***Efforts may be made to ensure achievement of milestones on time so that there are no delays in development of captive coal blocks.***
- ***Issues of receipt of higher grades of coal/ oversized coal may be taken up with the respective coal companies at the apex level.***
- ***Issue of monthly abnormal transit loss may be taken up for investigation by designated committee as stipulated in the Fuel Manual.***
- ***Suitable penal clause may be incorporated in the logistic contracts to make contractor responsible for losses in the form of punitive charges/overloading charges payable to Railways caused due to its failure/ deficiencies in services.***
- ***Proper steps may be taken to ensure the consumption of secondary oil within the CERC norms with deviations being thoroughly reviewed.***
- ***Management may take steps to ensure early construction of new track hopper at Bokaro Thermal Power Station to avoid payment of Engine Detention Charges in future.***

Srinagar Leh Transmission System

With a view to have uninterrupted power supply in and around Ladakh area round the year and to ensure optimum utilisation of hydro potential in Jammu and Kashmir Region, connectivity of the Region with Northern Grid was envisaged in 2003 through a 220 kV Srinagar Leh Transmission System. The proposal, however, remained shelved until January 2014 when Government of India approved construction of this transmission system.

(Para 3.1)

The project was planned and implemented by PGCIL on behalf of Power Development Department (J&K) and commissioned in January 2019 with a delay of 16 months from scheduled date. Due to delay in taking decision for construction of the line, not only huge cost escalation had occurred but there was also a generation loss of 1,602.64 MUs and an extra expenditure of ₹700.25 crore due to billing of deemed generation to Power Development Department (J&K).

(Para 3.6.1.1)

PGCIL did not assess and verify the present and future load of the region while planning the transmission system.

{Para 3.6.1.2(ii)}

Even after commissioning of the line, the downstream transmission network, meant to serve as a link to the State transmission network, did not come up as Power Development Department (J&K) was unable to complete the same. As a result, some of the Regions could not avail power through the transmission system and the envisaged benefits from the project remained unachieved.

{Para 3.6.1.3(i)}

The process of award of contracts and their execution by PGCIL also suffered from various inadequacies like laxity in finalisation of scope of contracts, frequent revisions in line length, tower quantity & type of towers resulting in delay in completion of Project.

(Para 3.6.2)

With regard to Chapter on Srinagar Leh Transmission System, Audit recommends that:

- ***Proper load of transmission system may be assessed during planning stage by giving due weightage to upcoming power generation stations so that adequate utilisation of transmission system at optimised cost could be achieved.***
- ***As hydro power is a cheap and clean source of energy, downstream network and planned linkages with hydro power projects may be expedited to reap envisaged benefits from operation of the line.***

- ***Modern surveying techniques including aerial survey should be used for timely mapping of entire route, so that all the inherent issues such as right of way, clearances, tower designing/ profiling etc., could be timely identified and resolved without hampering the projects timelines.***

CHAPTER I: Operational Performance of Kanti Bijlee Utpadan Nigam Limited

1.1 Introduction

Bihar State Electricity Board commissioned (March 1985) 110 Mega Watt (MW) capacity coal based Thermal Power Station in Kanti. Second unit of 110 MW within the same boundary was commissioned in March 1986. The operation of the plant was suspended in October 2003 due to high cost of generation. To revive the power plant, Government of Bihar, Bihar State Electricity Board and NTPC Limited (NTPC) entered into a Memorandum of Agreement on December 26, 2005 to form a joint venture company namely Vaishali Power Generating Company Limited with an equity contribution of 51 *per cent* of NTPC and 49 *per cent* from Bihar State Electricity Board. The purpose of the joint venture was to take over 2x110 MW station at Kanti and to set up new project within the boundary of the thermal power station. Subsequently, Vaishali Power Generating Company Limited was incorporated (6 September 2006) and renamed (10 April 2008) as Kanti Bijlee Utpadan Nigam Limited (KBUNL or Company). KBUNL became a fully owned subsidiary of NTPC with effect from 29 June 2018. Presently, the Company has a capacity of 610 MW which is divided into two parts i.e., Stage I and Stage II.

Stage I (2x110 MW): Stage I station consists of two units (1 and 2) of 110 MW each taken over from Government of Bihar. The entire power generated from Stage I units is allocated to North Bihar Power Distribution Company Limited and South Bihar Power Distribution Company Limited.

Stage II (2x195 MW): The Company started expansion work for new 2x195 MW station within the boundary of the Company. The Board of Directors approved (March 2010) the estimated cost of the project at ₹3,154 crore for both Units 3 and 4 of Stage II. Units 3 and 4 were declared under commercial operation in March 2017 and July 2017 (original completion date being October 2012) respectively at a revised estimate of ₹5,217 crore. The beneficiaries of Stage II were North Bihar Power Distribution Company Limited, South Bihar Power Distribution Company Limited, Damodar Valley Corporation, Grid Corporation of Odisha, Jharkhand Bijli Vitran Nigam Limited, Government of Sikkim etc.

1.2 Financial Performance

The financial performance of the Company during the last five years is as mentioned below:

Table 1.1: Financial Performance of the Company

(₹ in crore)

Year	Revenue	Expenditure	Profit before tax	Profit after tax
2015-16	377.63	453.35	(75.72)	(75.72)
2016-17	416.30	438.25	(21.95)	(21.95)
2017-18	869.04	1,050.14	(181.09)	(181.09)

Year	Revenue	Expenditure	Profit before tax	Profit after tax
2018-19	1,610.41	1,483.48	126.93	98.74
2019-20	1,695.30	1,564.06	131.24	103.97

The Company incurred losses during 2015-16 to 2017-18 but subsequently from 2018-19 it started earning profits after Stage II Units 3 and 4 became operational and all beneficiaries (except Grid Corporation of Odisha) started evacuating power from April 2018.

1.3 Audit objectives and scope

Audit was conducted to assess whether:

i) power was generated at optimal cost so as to be competitive in market,

ii) capital projects were executed efficiently, and

iii) tariff petition was filed as per CERC regulation and revenue realization was made properly.

Audit examined records relating to production performance, project management and revenue collection activities undertaken by the Company during the period 2015-16 to 2019-20.

1.4 Audit Findings

1.4.1 Operational Performance

Audit of KBUNL covering a period of five years (2015-16 to 2019-20) was conducted during October 2020 to December 2020 with focus on its operational performance. The operational performance of the Company is given below:

Table 1.2: Operational Performance of KBUNL during 2015-16 to 2019-20

(*in million units*)

Year	Units	Rated capacity[1]	Declared capacity[2] (*per cent* of declared to rated capacity)	Target generation (*per cent* of target to rated capacity)	Scheduled generation[3] (*per cent* of scheduled to target)	Actual generation (*per cent* of actual to scheduled)
2015-16	Stage I	1,932.48	681.94 (35.29)	2,018.00 (104.43)	679.54 (33.67)	657.95 (96.82)
2016-17	Stage I	1,992.72	684.91 (34.37)	1,450.00 (72.76)	672.49 (46.38)	650.92 (96.79)
2017-18	Stage I	1,927.2	783.74 (40.67)	1,262.00 (25.66)	663.47	651.84
	Stage II	2,990.52	1216.36 (40.67)		875.18	856.36

[1] ***Rated capacity of two units of Stage I was 110 MW each and that of two units of Stage II was 195 MW each. Based on the information furnished by Management, rated capacity has been converted into million units in the table.***

[2] ***Declared capacity is the capacity declared one day before the power is generated.***

[3] ***Scheduled generation is the power that the generating company has to generate and provide in the grid as per requirement of beneficiaries.***

Year	Units	Rated capacity[1]	Declared capacity[2] (*per cent* of declared to rated capacity)	Target generation (*per cent* of target to rated capacity)	Scheduled generation[3] (*per cent* of scheduled to target)	Actual generation (*per cent* of actual to scheduled)
	Total	**4,917.72**	**2000.10** (40.67)		**1,538.65** (121.92)	**1,508.20** (98.02)
2018-19	Stage I	1,927.2	820.89 (42.59)	2,675.00 *(50.06)*	675.99	645.40
	Stage II	3,416.40	2,610.91 (76.42)		2,136.49	2,058.45
	Total	**5,343.60**	**3,431.80** (64.22)		**2,812.48** *(105.14)*	**2,703.85** *(96.14)*
2019-20	Stage I	1,932.48	1,565.26 (81.00)	3,025.00 *(56.46)*	538.65	507.24
	Stage II	3,425.76	2,888.57 (84.32)		2,117.26	2,076.93
	Total	**5,358.24**	**4,453.83** (83.12)		**2,655.91** *(87.78)*	**2,584.17** *(97.30)*

Audit observed the following:

- The target for power generation was fixed lower than the rated capacity (between 25.66 *per cent* and 72.76 *per cent*) during 2016-20 except during 2015-16, when the target was fixed marginally higher than rated capacity.

- The declared capacity of Stage I ranged between 34.37 and 81 *per cent* and of Stage II ranged between 40.67 and 84.32 *per cent* of the rated capacity during 2015-20 against the Central Electricity Regulatory Commission (CERC) norm of 80 *per cent* (Stage I) and 85 *per cent* (Stage II).

- The scheduled generation was also lower than the target generation by 12.20 *per cent* to 66.33 *per cent* (except 2017-18 and 2018-19), which indicated low demand for power from KBUNL.

Delay in commissioning of units of Stage II and poor availability of coal for Stage I units resulted in declared capacity being lower than rated capacity. The declared capacity and scheduled generation remained lower than the target generation on account of shut downs due to equipment malfunction, coal shortage and non-placement of demand by beneficiaries.

1.4.2 Loss of ₹137.87 crore due to non-achievement of CERC norms

CERC tariff regulation[4] allows the power generating companies to charge tariff under two heads i.e., capacity charge (fixed charge) and energy charge rate (per unit variable cost). CERC fixes three parameters i.e., gross station heat rate[5], specific fuel oil consumption[6] and

[4] CERC tariff regulation issued at an interval of five years prescribes parameters for finalisation of tariff.
[5] Gross station heat rate is the input heat energy required to generate one Kwh of electric energy.
[6] Specific fuel oil consumption is the secondary fuel (furnace oil) consumed to generate 1 Kwh of electricity.

auxiliary power consumption[7] for a power generating station to calculate energy charge rate. To gain from the electricity generation, a generating unit should operate its station within the specified parameters.

Audit observed that units of Stage I could not meet the norms prescribed for specific fuel oil consumption (except in 2017-18) and auxiliary power consumption during 2015-16 to 2019-20, and units of Stage II did not meet the norms in all categories since their commissioning in March 2017. Details are given in the Table 1.3 below:

Table 1.3: Statement showing performance *vis-à-vis* parameters fixed by CERC

Operational norm	Stage	CERC approved norms	Actual generation				
			2015-16	2016-17	2017-18	2018-19	2019-20
Gross station heat rate (Kcal/ Kwh)	I	3,000	2,979	3,000	2,994	2,989	2,987
	II	2,375	--	--	2,734	2,631	2,610
Specific fuel oil consumption (ml/Kwh)	I	2.0	3.09	2.08	1.26	2.22	2.91
	II	0.50	--	--	5.25	0.92	0.70
Auxiliary power consumption (%)	I	12.0	14.52	14.19	12.95	12.13	13.70
	II	9.0	--	--	12.17	10.60	10.22

Stage I units: Norms of Auxiliary power consumption and specific fuel oil consumption for units of Stage I could not be met due to non-scheduling of power from North Bihar Power Distribution Company Limited and South Bihar Power Distribution Company Limited. The units also faced shortage of coal. Auxiliary power consumption is directly proportional to the Plant Load Factor (PLF[8]) which ranged between 30.41 *per cent* and 40.31 *per cent.* This resulted in higher generating cost than the parameters of energy charge rate fixed by the CERC, due to which the units of Stage I remained non-operational since December 2019. Audit noted that average power purchase cost from North Bihar Power Distribution Company Limited and South Bihar Power Distribution Company Limited was between ₹3.62 and ₹4.05 whereas cost of power purchased from KBUNL was between ₹5.15 and ₹6.18 during 2018-19 and 2019-20. Therefore, there was a strong possibility that the Company would be unable to sell power to other customers as well.

Stage II units: In the units of Stage II, non-achievement was due to installation of machinery of higher than required size for generation of electricity. CERC had fixed gross station heat rate norm at highest permissible rate of 2,375.29 Kcal/Kwh, but the design rate[9] of the machine was 2,395 Kcal/Kwh. Auxiliary power consumption during (2017-20) was

---

[7] ***Auxiliary power consumption is the energy consumed by auxiliary equipment of generating station.***

[8] ***PLF is the ratio of average power generated to the maximum power it could have generated in a given time.***

[9] ***Design rate is the energy in Kcal/Kwh required by machine at optimum parameters at specific load to generate 1 Kwh of electricity.***

between 10.22 *per cent* and 12.17 *per cent* against CERC norm of 9 *per cent* due to installation of oversized equipment like Forced Draft fan, Primary Air fan, Induced draught fan, mill, motor etc., resulting in more power consumption. Audit observed that the Company set up machinery overlooking the parameters of Gross station heat rate and Auxiliary power consumption set by CERC leading to consequential loss. KBUNL will continue to incur such loss in future also till the problem is rectified.

Non-achievement of the parameters fixed by CERC resulted in higher cost of generation and loss of ₹137.87 crore (2018-19 and 2019-20) due to non-recovery of energy charge rate charges permitted by CERC.

Management replied (February 2021) that the major reason for high marginal loss in Stage II units was disallowance of designed gross station heat rate while fixing tariff norms by CERC. Participation under various ancillary services like Reserve Regulation Ancillary Services[10] and Security Constraint Economic Dispatch[11] during real time operation of generating units, generate profit which offset the loss due to non-achievement of parameters fixed by CERC.

Reply of the Management is not acceptable because at the time of finalisation of feasibility report of Main plant package in May 2009, the maximum permissible design heat rate was 2,300 Kcal/Kwh (as per the CERC tariff regulation for the period 2009-14 issued in January 2009) whereas the machinery installed in Stage II was 2,395 Kcal/Kwh. Thus, poor planning on the part of the Company, resulted in installation of oversized machinery and consequent loss due to inability to recover its variable costs which will continue even in the future. Besides, Management has also accepted the fact of oversized machinery in its internal correspondence. Although Security Constraint Economic Dispatch and Reserve Regulation Ancillary Services resulted in additional revenue generation but that was not compensation for the loss to the Company due to non-achievement of CERC norms.

Recommendation No. 1: Company may take measures to achieve norms fixed by CERC for gross station heat rate, auxiliary power consumption and specific fuel oil consumption, to make generation of power more economical

1.4.3 Project Implementation of Stage II units

The Board of Directors of KBUNL accorded (March 2010) approval for construction of Stage II units (195x2 MW) for ₹3,154.33 crore to be completed within 31 months (October 2012). Units 3 and 4 were commissioned for commercial operation in March 2017 and July 2017 respectively after delay of 53 months and 56 months respectively. The Company had spent ₹4,289.73 crore on the project till August 2020 and the project is still far from complete (December 2021).

---

[10] ***The object of Reserve Regulation Ancillary Services is to improve system frequency and to reduce power flow by maintaining load and voltage. Consequently, additional dispatch of power is achieved.***

[11] ***Security Constraint Economic Dispatch is a mechanism that facilitates the supply of cheaper electricity based on order of merit. In this, the power generated from various generating stations is pooled together to utilise their capacity and offer additional power to needy DISCOMs.***

1.4.3.1 Delay in completion of major packages

KBUNL awarded 34 packages of Stage II project since March 2010 of which major packages were main plant (including boiler), Coal Handling Plant, Ash Handling Plant, Switch yard (for power transfer to grid), Railway siding and ash dyke. Audit noted that except the main plant package, none of the other packages were complete and Stage II units were being operated with support facility of Stage I units through contingency arrangement. Table 1.4 below gives the details of the status of important packages and constraints faced by the Company due to non-completion:

Table 1.4: Status of important packages

Package (cost of package)	Status of work	Arrangement made for operation of Stage II units	Constraints due to non-completion
Coal Handling Plant (₹267.29 crore)	Contract of Coal Handling Plant was awarded in December 2012 and terminated in December 2014 due to poor progress of work. Balance work awarded in September 2015 was yet to be completed (December 2021).	Coal handling plant for Stage II units is under construction and existing Coal handling plant of Stage I units is connected with main plant of Stage II units.	Stage II units are running on single belt conveyor. In case of fault in the conveyor, there is risk of stoppage of operation of Stage II units.
Ash Handing Plant (₹83.75 crore)	M/s Tecpro Systems Limited was awarded the contract (May 2012) and later it went into liquidation (August 2017). The work was being carried out by KBUNL by mobilising sub-contractors but the progress of work was slow.	Wet system of Ash evacuation is in use. Dry ash is being evacuated partially through Buffer Hopper System[12].	Difficulty in evacuation of Dry Ash and its utilization resulted in non-adherence of environment norms (discussed in Para 1.4.5.2).
Ash Dyke System (₹118.57 crore)	The contract was awarded to M/s GSCO Infrastructure Private Limited in September 2014. However, on account of arbitration with the contractor, due to disputes on deductions made by the Company for delays, the contract was terminated in August 2019.	Ash Dyke of Stage I units are being used.	Ash dyke of Stage I units were nearly full. Absence of space for disposal of ash would result in stoppage of plant if all the units were operated.

Management replied (February 2021) that delay in completion of Coal Handling Plant was due to abnormal rainfall, ban of heavy vehicles on Mahatma Gandhi Setu and ban on mining of sand in Bihar during 2016 to 2018. Dry Ash Evacuation was being done through buffer hopper system since September 2019 and there was no violation of environmental norms. Fresh contract for completion of balance works of Ash Dyke System was awarded but yet to be completed (June 2021).

[12] ***It collects ash in dry form through vacuum pressure for loading in vehicles and is installed in Ash Handling Plant.***

The reply is not tenable because delay in completion of Coal Handling Plant was on account of poor performance of contractor. The work scheduled for completion by June 2015 was cancelled by KBUNL in December 2014 due to slow progress and fresh contract was awarded (September 2015) to be completed by August 2017. However, Management has intimated (December 2021), that the likely completion date of Coal Handling Plant is estimated to be March 2023. Ban on sand mining and heavy rainfall affected the work for only 10 months (during 2016 to 2017). Ban on heavy vehicles at Mahatma Gandhi Setu was from May 2018, by which time construction of Coal Handling Plant should have been completed. Work of Dry Ash Evacuation System and Ash Dyke system of Stage II units were yet to be completed (February 2021) and operation was being done through contingency arrangement. Dry Ash Evacuation System was also not completed and the buffer hopper installed as a contingency arrangement could on an average extract only 500 tonnes ash daily, which was not sufficient (considering an average daily generation of over 2000 tonnes of ash approximately). Further, environmental clearance granted to KBUNL required 100 *per cent* utilization of ash generated.

1.4.3.2 Time and cost overrun

The estimated cost of Stage II project was ₹3,154 crore (March 2010) which increased to ₹3,345 crore (August 2011) after award of all packages. The cost further increased (December 2018) to ₹5,217 crore (excluding interest during construction) resulting in overall increase of over 65 *per cent* over approved cost. The delay resulted in total cost overrun of ₹2,063 crore and per unit fixed charges by 105 paisa/Kwh. Further, Management also borrowed additional funds of ₹678.47 crore and interest during construction was estimated to increase from ₹221 crore (March 2010) to ₹1,047 crore (374 *per cent*) up to completion of the project.

Management replied (February 2021) that Stage II was the first project to be constructed under KBUNL. Projects were delayed due to heavy rainfall, ban of heavy vehicles on Mahatma Gandhi Setu, ban on sand mining in Bihar, change in Research Designs and Standards Organization[13] guidelines, delay in approval of detailed project report by the railway, land acquisition etc.

The reply of the Management may be seen in the light of the fact that though Stage II was the first project to be constructed under KBUNL, its consultant was NTPC and officers deployed in KBUNL were on secondment basis from NTPC. The reasons highlighted by Management were post 2016 by which time the project was already delayed by three years. Railways revised the Research Designs and Standards Organization guidelines in May 2010 and notice inviting tender of Coal Handling Plant was issued in August 2010. Therefore, Management had the opportunity to incorporate revised guidelines in the tender. Land acquisition issue pertained only to Storm water package which required certain land

[13] ***Research Designs and Standards Organization is the Research and Development organization of Indian Railways which issues guidelines on laying railway network.***

acquisition outside the Plant premises. Audit noted that the above factors stated by the Management were controllable.

1.4.3.3 Loss of ₹121.99 crore due to disallowance of fixed charges by CERC

As per Section 62 of the Electricity Act 2003, CERC shall determine the tariff for electricity generated from a station comprising of capacity charge and energy charge. CERC issues Tariff Regulations for five year period based on which each generating station files tariff petition before CERC demanding year-wise tariff for five years, as per its prevailing/ projected parameters. CERC approved tariff of Stage II units in April 2019 for the period 2017 to 2019.

Audit noted that, in the petition filed (March 2017) by KBUNL, it appealed for condonation of 1,618 days delay in commissioning of the project citing various grounds. Of this, CERC condoned delay of only 948 days citing uncontrollable factors. CERC did not condone 670 days claimed on account of change in policy and specification of wagon tippler by Railways as there was delay of 24 months in finalisation of agency by the Company for which Railways were not accountable. Thus, interest during construction and Incidental Expenditure during construction claimed for 670 days was disallowed for calculation of fixed cost by CERC. Out of total claim of ₹1,440.52 crore for interest during construction and ₹263.77 crore for Incidental Expenditure during construction, CERC disallowed ₹612.22 crore and ₹67.29 crore respectively. Due to disallowance of interest during construction and Incidental Expenditure during construction, Management could not recover ₹121.99 crore[14] as capacity charge from consumers during 2017-18 to 2018-19.

Management stated (February 2021) that they have approached CERC and Appellate Tribunal for Electricity for issues related to disallowance of interest during construction, Incidental Expenditure during construction and other associated issues mentioned in CERC order.

Audit noted that CERC had rejected (January 2020) the review petition of the Company (filed in June 2019) and that it had not yet (May 2021) gone in appeal to the Appellate Tribunal for Electricity.

1.4.3.4 Non-recovery of risk and cost amount

i) KBUNL awarded (January 2013) the work for construction of Coal Handling Plant for Stage II units to M/s Tecpro Systems Limited on turnkey basis at a cost of ₹267.29 crore to be completed by June 2015. M/s Tecpro Systems Limited could complete only 3.28 *per cent* of work till September 2014. The contract was terminated (December 2014) and bank guarantee of ₹27.73 crore was encashed. The remaining work of ₹258.52 crore was awarded to M/s Indure Private Limited at a cost of ₹358.63 crore in September 2015.

---

[14] ***₹121.99 crore has been calculated on the basis of the calculation provided by CERC in the tariff orders dated 29 April 2019 and 11 June 2019.***

The total risk and cost recoverable from M/s Tecpro Systems Limited after adjustment of bank guarantee and amount withheld was ₹62.68 crore.

Audit observed that, though work was slow from the beginning and reasons for delay were attributable to the contractor, the Company issued notice to the agency only in September 2014. Management did not invoke arbitration clause against M/s Tecpro Systems Limited even after termination of the contract in December 2014. M/s Tecpro Systems Limited filed for insolvency before National Company Law tribunal in August 2017. As per direction of National Company Law Tribunal, the Company submitted claim (August 2017) of ₹691.87 crore (of which ₹104.52 crore was towards risk and cost value and ₹18.54 crore for liquidated damages) before Interim Resolution Professional appointed by National Company Law Tribunal. The Interim Resolution Professional rejected the claim in 2017. KBUNL challenged the decision in National Company Law Tribunal, which was also rejected in May 2019. The official liquidator also rejected (February 2020) the claims on the basis of National Company Law Tribunal's decision. Audit observed that due to delay in initiation of risk and cost action, the claim was yet to be realized by the Company.

Management stated (February 2021) that while rejecting the claim, National Company Law Tribunal had stated that claimant has all the possible options to file suit/ application for adjudication of its claim before appropriate forum. The liquidator reiterated the views of National Company Law Tribunal.

Reply of the Management may be seen in the light of the fact that though the contract was terminated in December 2014, Management had two years to recover its claim till August 2017, when Tecpro Systems Limited had gone for liquidation, but no action was taken. Due to delay on the part of the Company, both the Interim Resolution Professional and National Company Law Tribunal rejected the claim of the Company as these were unilateral and had not been adjudicated in any legal forum till then. Besides, Audit noted that the Company was yet to take further action in this regard.

ii) The Infrastructure civil works package for Stage II was awarded to M/s Progressive Construction Limited in September 2010 for ₹68.61 crore to be completed by September 2012. The agency stopped work after executing work for ₹43.89 crore up to September 2016. KBUNL terminated the contract in July 2017. The remaining work was awarded (December 2018) to M/s Aneja Construction (India) Limited for ₹44.32 crore (including leftover work of ₹24.72 crore at risk and cost of M/s Progressive Construction Limited). After encashing the bank guarantee and adjusting the amount withheld from bills, ₹11.71 crore was recoverable from M/s Progressive Construction Limited. Audit observed that Company had not initiated any action against the contractor to recover the amount of ₹11.71 crore. Management stated (February 2021) that a committee had been formed to resolve the issue.

Reply of the Management may be seen in the light of the fact that action had been initiated only after the matter was raised by Audit.

Recommendation No. 2: Company may strengthen project monitoring mechanism and take time bound steps for imposition of penalty on defaulting contractors and award of contracts on risk purchase basis to prevent further time and cost overrun in the completion of its on-going projects.

1.4.4 Tariff and Revenue realization

1.4.4.1 Non-realization of ₹203.81 crore from Grid Corporation of Odisha

Grid Corporation of Odisha Limited, Orissa entered into a power purchase agreement (PPA) with KBUNL (December 2010) for 30 MW of power generated from Stage II units. Grid Corporation of Odisha which is State designated entity requires consent from Odisha Electricity Regulatory Commission (OERC) to procure power under the said PPA. A petition was filed by Grid Corporation of Odisha before OERC in April 2018 for approval of PPA.

Audit noted that Grid Corporation of Odisha had never requisitioned for power from KBUNL since commissioning of the Stage II units in 2017, but KBUNL had raised monthly bills for capacity charges on Grid Corporation of Odisha which accumulated to ₹203.81 crore till September 2020. Grid Corporation of Odisha did not pay the above amount and contested the demand stating that the project came into commercial operation after a delay of 53 months. Grid Corporation of Odisha requested Ministry of Power to de-allocate its share of power in Stage II units and informed KBUNL (September 2015) about its decision of non-signing of Long Term Access Agreement for evacuation of power from KBUNL.

Audit observed that delay in start of commercial operation gave opportunity to Grid Corporation of Odisha not to evacuate power from KBUNL and apply for surrender of power. KBUNL filed (March 2019) a case in CERC regarding the payment of capacity charges by Grid Corporation of Odisha from the date of commissioning of Unit 3 of Stage II (March 2017). The delay in completion of units of Stage II led to non-realization of ₹203.81 crore.

Management replied (February 2021) that KBUNL has approached CERC with regard to short payment/ non-payment of capacity charges. Audit noted that KBUNL approached CERC in 2019 though the plant was commissioned in March 2017 and Grid Corporation of Odisha has denied taking power since then. The decisions of CERC and OERC in this regard were awaited (February 2021).

1.4.4.2 Extra expenditure of ₹21.15 crore on interest

CERC determines tariff for electricity supplied to the beneficiaries. As per the tariff regulation, Company raises bills for electricity supplied on provisional rates till the rates are finalised by the CERC. Regulation 8(13) of CERC tariff regulation 2014, provides that in case the tariff recovered is more than the tariff determined by CERC, the power generating

company shall refund the differential amount along with interest[15]. Further, in case tariff recovered was less than the tariff approved by CERC, Company was entitled to recover the differential amount along with interest.

Audit observed that, while calculating energy charge rate during 2014-19 for Stage I units, the Management considered auxiliary power consumption between 11.21 and 14.01 *per cent* and specific fuel oil consumption between 2.48 and 3.09 ml/Kwh and accordingly charged tariff. CERC subsequently (January 2020) fixed the norms for auxiliary power consumption at 12 *per cent* and specific fuel oil consumption at 2 ml/Kwh. While fixing the above norms, CERC stated that KBUNL achieved auxiliary power consumption of below 12 *per cent* during 2013-14 and 2014-15. Besides, the Tariff Regulation 2014 provided for specific fuel oil consumption of 0.5 ml/Kwh whereas KBUNL was allowed 2 ml/Kwh specific fuel oil consumption considering the fact that its generating station was under stabilization.

The Company thus, charged tariff at a higher rate than what was allowed as per the norms specified in the tariff order approved (January 2020) by CERC for Stage I units for 2014-19. Keeping in view the actual achievement of the Company, the billing should have been done on a conservative estimate, as Management was aware of the fact that any excess billing would lead to refund at high interest rates. This was also acknowledged by KBUNL Board. As a result of billing at a higher rate, Company had to refund ₹66.32 crore along with penal interest (between 12.2 *per cent* and 13.5 *per cent*) of ₹30.23 crore to North Bihar Power Distribution Company Limited (₹40.64 crore) and South Bihar Power Distribution Company Limited (₹55.91 crore). Even after considering interest earned by the Company on the excess amount collected, such billing on a higher side resulted in loss of ₹21.15 crore[16] during 2014-19.

Management stated (February 2021) that CERC norms for the tariff period 2014-19 were not envisaged earlier. KBUNL has filed a review (March 2020) of the aforesaid order in CERC and appeal in Appellate Tribunal for Electricity.

Reply is not tenable because the norms fixed by CERC were based on the tariff regulation and parameters like gross station heat rate, auxiliary power consumption and specific fuel oil consumption achieved as stated by the Company in its petition. As the operating parameters achieved were known to the Company, it was prudent that provisional billing be done on an appropriate basis because excess billing attracted a penal rate of interest. Review petition filed by the Company was pending (February 2021).

1.4.4.3 Fuel Management

Coal is used as a primary fuel in KBUNL for electricity generation. The Company procured 6.90 million tonnes of coal during 2015-20 and consumed 6.75 million tonnes. The

---

[15] ***Interest rate prevailing on 1 April of the year from date of the bill to the date of recovery/ refund of amount.***

[16] ***Considering net interest (₹30.23 crore – ₹9.08 crore) by deducting average savings account interest rate earned during the period.***

Company entered into Fuel Supply Agreements[17] with coal companies with annual contracted quantity of 1.17 million tonnes (0.60 million tonnes with Eastern Coalfields Limited and 0.57 million tonnes with Central Coalfields Limited) for Stage I and 1.604 million tonnes with Central Coalfields Limited for Stage II units. Audit observed that KBUNL made excess payment on account of penalty for short lifting of coal and grade difference of coal which adversely impacted the end users as discussed below:

i) Penalty of ₹49.93 crore due to short lifting of coal in Stage I units

KBUNL signed (2010) Fuel Supply Agreement for Stage I units with Eastern Coalfields Limited for annual contracted quantity of 0.44 million tonnes. Fuel Supply Agreement with Eastern Coalfields was amended in September 2014 and August 2016 (amended quantity of 0.60 million tonnes). As per the Fuel Supply Agreement, if the lifting of coal by KBUNL fell below 90 *per cent* of the annual contracted quantity in a year, KBUNL would be liable to pay compensation to the coal companies for the quantity short lifted.

Audit noted that the Company lifted 0.969 million tonnes of coal against annual contracted quantity of 1.898 million tonnes during 2015-16 and 2016-17 leaving a shortfall of 0.929 million tonnes (49 *per cent*). Shortfall in lifting of contracted quantity of coal resulted in payment of compensation of ₹49.93 crore which was ultimately transferred to the end users as a part of tariff.

Management replied (February 2021) that in order to make provision for consistent and full generation for its customer, annual contracted quantity was set accordingly. However, absence of scheduled demand led to mismatch of lifting of coal.

Reply is not tenable in view of the fact that Distributing Companies (discoms) of Bihar Government were the only beneficiaries for Stage I units and Bihar Government being joint owner of KBUNL, Management should have been aware of the requirement of the discoms and Fuel Supply Agreements should have been modified accordingly.

ii) Excess payment of ₹104.59 crore in Stage II units

Coal companies supply coal to KBUNL as per grade indicated in the Fuel Supply Agreement. Price of coal is charged as per the rate of coal quality indicated in the price notification issued by Coal India Limited from time to time. As per terms of Fuel Supply Agreement, quality of coal considered for payment should be as per grade determined at loading point. The coal quality should be determined by the third party. Sampling work was entrusted to Council of Scientific and Industrial Research - Central Institute of Mining and Fuel Research in June 2016. Sample was to be collected in the presence of representative of both the seller and the purchaser at the loading point. As per CERC tariff regulation, quality of coal considered for calculation of energy charge rate was to be as per sample report taken at the unloading point of the power station. KBUNL deployed Central

[17] ***FSA with Eastern Coalfields Limited for Stage I was entered into in January 2010, which was amended in September 2014 and August 2016. FSA with Central Coalfields Limited entered into in September 2013 for Stage II and in August 2016 for Stage I.***

Institute of Mining and Fuel Research for sampling at unloading end also. Thus, Central Institute of Mining and Fuel Research analysed the sample collected at both loading and unloading points. Payment made to the coal companies, however, was not linked with the sample result at the unloading point.

Audit analysed the coal quality reports of KBUNL and Central Institute of Mining and Fuel Research for both loading and unloading end for the years 2018-19 and 2019-20 and noted that there was wide variation in quality of coal loaded and quality of coal received, as per quality reports given by Central Institute of Mining and Fuel Research at loading and unloading end of each rake. In 2018-19 and 2019-20, 1,086 samples each were collected at loading and unloading end and in 621 cases quality of coal loaded had deteriorated by at least one grade by the time it reached KBUNL. In 349 out of 621 cases, grade slippage ranged between 2 and 5 grades, in 103 cases it was by 6 to 8 grades and in four cases it was 9 to 10 grades. Audit noted that Management did not put in place an effective system to curtail such issues. This has resulted in excess payment of ₹104.59 crore.

Management stated (February 2021) that there was no provision for deduction from the payment to be made to the coal companies on the basis of grade slippage between loading and unloading end.

Audit noted that on the basis of the data available it was concluded that quality of coal sampled at the loading and unloading end did not match. The chances of replacement of good quality coal with inferior one, pilferage or possibility of flaws in sampling or testing could not be ruled out. Clause 15 of Fuel Supply Agreement allowed Management to raise any dispute with the coal companies. However, the Company did not raise the issue till March 2020 when NTPC (parent company of KBUNL) took up the matter with the coal companies.

Recommendation No. 3: Company may immediately put in place a fool proof mechanism to resolve the grade slippage issue of coal during transportation from loading to unloading points with the sampler and coal companies to ensure such losses do not occur in future.

1.4.5 Environment management

1.4.5.1 Non-adherence to the conditions of Consent to Operate and Environmental Clearance

Bihar State Pollution Control Board granted (January 2017) KBUNL the Consent to Operate for the period up to March 2023. As per the terms of order, KBUNL had to comply with the emission/ discharge norms specified by Ministry of Environment, Forest and Climate Change in the environmental clearance issued from time to time.

Audit noted that KBUNL did not comply with the emission norms and a complaint was filed (April 2019) by a local resident against the Company in National Green Tribunal. During inspection (December 2019) by Bihar State Pollution Control Board, on the direction of National Green Tribunal, it was noted that Management had not complied with

some conditions like inadequate facility for maintenance and security of ash ponds, absence of separate storm water and industrial waste water drain etc. Bihar State Pollution Control Board also noted that KBUNL had not complied with the conditions imposed under environmental clearance such as utilisation of fly ash and installation of rain water harvesting, construction of sewerage treatment plant, dry ash evacuation system, Coal Handling Plant and new ash pond. Due to continuous violation and poor performance of KBUNL, Bihar State Pollution Control Board directed (February 2020) the Company to complete the work by March 2021 and submit a performance bank guarantee of ₹5 crore for its compliance. National Green Tribunal also agreed to Bihar State Pollution Control Board's direction for imposition of performance bank guarantee in its order dated September 2020.

Audit observed that none of the requirements included in the environmental clearance were fulfilled by the Company (October 2020) and the performance bank guarantee was belatedly furnished (March 2021).

Management stated (February 2021) that various conditions as indicated in the Consent to Operate and environmental clearance were being complied with and action was being taken for compliance of remaining conditions.

Reply of the Management has to be seen in the light of the fact that conditions stated by Bihar State Pollution Control Board were mostly project related and should have been complied with at the time of commissioning of Stage II units. However, till date the work is incomplete.

1.4.5.2 Poor utilization of ash in KBUNL

KBUNL had installed electrostatic precipitator to control emission of fly ash particles generated in the power plant. The fly ash collected was disposed in wet form to ash pond situated outside the plant area. Ministry of Environment, Forest and Climate Change issued notification (September 1999 and revised in November 2009) for utilization of fly ash generated by thermal power plants. Accordingly, KBUNL was required to utilise 100 *per cent* of fly ash generated since November 2009. Audit noted that the Management was not able to fully utilise the ash generated during 2015-20 (utilisation of fly ash ranged between 5.25 *per cent* in 2015-16 and 75.68 *per cent* in 2019-20).

National Green Tribunal imposed (20 November 2018) penalty of up to ₹5 crore, for non-adherence to the norm, on all thermal power plants depending on their capacity. The penalty was to be collected by the Central Pollution Control Board. Accordingly, the Central Pollution Control Board issued notice (July 2020) to KBUNL, for non-utilisation of 100 *per cent* of fly ash during 2018-19 and 2019-20 and levied environmental compensation of ₹2.19 crore. Failure of the Management to comply with environmental norms led to imposition of penalty.

Management stated (February 2021) that for disposal of pond ash, KBUNL was going to sign an MoU with NHAI for supply of fly ash after which the Company would be in a

position to achieve more than 100 *per cent* ash utilization. Target has been set for 100 *per cent* ash utilization in year 2020-21.

Audit noted that without Dry Ash Evacuation System it was difficult to collect fly ash in dry form and a significant proportion of ash had to be disposed in Ash Dyke in wet form. Dry Ash Evacuation System is an important system which should have been commissioned with Stage II units but the project was abnormally delayed. As per Ministry of Environment, Forest and Climate Change notification, besides 100 *per cent* utilisation of fly ash generated during the year, the Company was also obligated to utilise the ash accumulated from previous years. Further, the penalty imposed by National Green Tribunal, had not been paid by the Company (June 2021).

1.4.5.3 Poor maintenance of ash ponds

After settling of the ash disposed in the ash dyke, water overflows into the river through the sluice gate erected on the earthen bund to protect flooding of the area. The Company took over ash dykes (lagoons I and II) in 2006.

Audit observed that KBUNL in its detailed project report for repair and maintenance of units of Stage I had noted that bunds in several places were damaged and could break and damage crops and surrounding residences. Central Pollution Control Board instructed the Company to complete construction of Ash Dyke lagoon III by December 2013 and renovation and modernisation of lagoons I and II by December 2015.

Audit noted that lagoon III was completed in February 2020 and repair and maintenance of lagoons I and II was ongoing. Audit also observed that due to non-utilization of ash, ash dyke was filled up and there were cases of seepage of contaminated water in surrounding areas. In September 2017, decanted water seeped in from lagoon I to lower areas inundating 89.60 acres of agriculture land damaging the crops. There was another breach damaging crops in 39.72 acres of land in July 2019. Due to poor maintenance of ash ponds, Management paid compensation of ₹0.78 crore.

Management replied (February 2021) that after construction of lagoon III and proper maintenance of existing dykes, no breach was reported during the year 2020.

Recommendation No. 4: Company may place focus on its environmental commitments, ensure strict adherence to environmental norms and prevent any damage to the habitat and ecology surrounding the plant.

1.5 Conclusion

KBUNL had been set up to revive the power plant of Bihar State Electricity Board and to set up new projects to cater to power requirements of the nation. However, after 15 years of its operation, KBUNL has been unable to operate at full capacity and its operations have continued to remain constrained. The Company failed to achieve the norms fixed by CERC for gross station heat rate, auxiliary power consumption and specific fuel oil consumption due to non-scheduling of power for Stage I units and installation of oversized machineries

in Stage II units. This resulted in higher cost of generation and non-recovery of energy charge rate. The projects under Stage II units were delayed which resulted in time and cost overrun. The actual cost was increased by 65 *per cent* (₹2,063 crore) over approved cost of ₹3,154 crore. Due to delay in completion of projects, CERC disallowed ₹121.99 crore of fixed charges claim of the Company.

Risk and cost amount of ₹74.39 crore was not recovered from defaulting contractor due to inaction or delayed action. Penalty of ₹49.93 crore was paid due to short lifting of coal and further, substantial grade slippage during transportation of coal from loading to unloading points led to excess payment. KBUNL has also been unable to adhere to the emission norms and norms for utilisation of ash fixed by Ministry of Environment, Forest and Climate Change.

CHAPTER II: Fuel Management in Damodar Valley Corporation

2.1 Introduction

Damodar Valley Corporation (DVC) was set up in 1948 and engaged in generation and distribution of power, flood control, irrigation, soil conservation and other social activities within the Damodar Valley area in the states of Jharkhand (erstwhile Bihar) and West Bengal. The main source of revenue for the DVC was through sale of power. As on March 2020, the DVC had coal based thermal power generating stations at seven[1] locations with a total installed capacity of 7,090 megawatt per year and hydel power generating stations at three[2] locations with installed capacity of 147.2 megawatt per year.

Figure 2.1 Mejia Thermal Power Station

A thematic audit on "Fuel Management on Thermal Power Stations of DVC" was conducted earlier covering the period from 2006-07 to 2010-11 and the findings included in the CAG's Audit Report No. 8 of 2012-13. The major issues highlighted were:

- Unrealistic assessment of requirement of coal.
- Grade slippage of coal received.
- Receipt of oversized stones and extraneous materials with coal.
- Transit loss of coal.
- Excess consumption of oil over Central Electricity Regulatory Commission norms.

In this Report also, the above issues have been noticed and discussed in the subsequent paragraphs.

2.2 Audit Scope, Objectives and Criteria

Audit examined the assessment, planning, procurement, transportation, storage and consumption of coal and oil during the period from 2014-15 to 2019-20 in respect of six selected thermal power stations except Durgapur Thermal Power Station as two of its units were decommissioned in October 1985 and another in March 2016 and remaining one unit was also on the verge of decommissioning. However, observations relating to earlier

---

1 ***Bokaro Thermal Power Station, Chandrapura Thermal Power Station, Durgapur Steel Thermal Power Station, Durgapur Thermal Power Station, Koderma Thermal Power Station, Mejia Thermal Power Station, and Raghunathpur Thermal Power Station.***

2 ***Panchet Dam, Mython Dam, and Tilaiya Dam.***

periods which continued subsequent to 2014-15 have also been included, wherever pertinent.

Audit was carried out to assess the extent of remedial measures taken by the DVC to address the deficiencies highlighted in previous Audit report and also to assess whether:

1. Fuel Supply Agreements (FSA) were executed with coal companies on time for the required quantum of coal;
2. Adequate steps were taken for continuous supply of coal from the captive coal blocks (for two units of Mejia thermal power station and one unit of Chandrapura thermal power station);
3. Fuel Supply Management was effective and economical; and
4. Monitoring mechanism for assessing the quality and quantity of coal received was effective.

Audit criteria were derived from the following sources:

- New Coal Distribution Policy issued by the Government of India from time to time.
- Central Electricity Authority norms and Central Electricity Regulatory Commission regulations.
- Project reports of generating stations.
- Fuel Supply Agreements and Memoranda of Understanding with coal companies.
- Guidelines/ Policies issued by Ministry of Coal, Ministry of Power and Ministry of Railways, Government of India.
- Agenda and minutes of meetings of Board of Directors.
- Works and Procurement Manual and Fuel Management Manual of the DVC.

2.3 Audit Findings

2.3.1 Adequacy of Annual Contracted Quantity

As per New Coal Distribution Policy issued (October 2007) by the Ministry of Coal, 100 *per cent* of the quantity as per the normative requirement of power utilities would be considered for supply of coal through Fuel Supply Agreement by Coal India Limited at fixed prices to be declared/ notified by Coal India Limited. The normative requirement of power station for a year (annual coal requirement) as per CERC is 85 *per cent* of Plant Load Factor[3]. As per the Fuel Supply Agreements with coal companies, in the event of supply and receipt of coal in excess of 90 *per cent* of the Annual Contracted Quantity, coal companies were entitled to receive Performance Incentive.

[3] ***Plant Load Factor is the ratio of average power generated to the maximum power it could have generated in a given time.***

The details of coal requirement, Fuel Supply Agreements executed with the coal companies and coal procured against the same in respect of six thermal power stations during the last six years ending 31 March 2020 are given in the following table:

Table 2.1: Annual procurement of coal vis-a vis requirement

Year	Normative Annual Coal Requirement (in million metric tonnes per annum)	Fuel Supply Agreements executed (in million metric tonnes per annum)	Percentage of Fuel Supply Agreement executed against Annual Coal Requirement	Coal procured against Fuel Supply Agreements (in million metric tonnes per annum)	Percentage of coal procured against Fuel Supply Agreements
2014-15	29.35	19.15	65.24	17.27	90.18
2015-16	29.35	18.76	63.92	18.43	98.24
2016-17	36.70	20.73	56.49	19.00	91.65
2017-18	33.63	24.66	73.33	20.01	81.01
2018-19	33.63	24.70	73.43	21.05	85.22
2019-20	29.12	24.86	85.37	22.07	91.31
Total	**191.78**	**132.86**	**69.28**	**117.83**	**88.69**

The above table indicates the following:

- As against a normative annual requirement of 191.78 million metric tonnes per annum during the period 2014-15 to 2019-20, Fuel Supply Agreements were executed only for 69.28 *per cent.*

- The Annual Contracted Quantity in the Fuel Supply Agreements ranged between 56 *per cent* to 85 *per cent* of Annual Coal Requirement of power stations between 2014-2020.

- Supply of coal through the Fuel Supply Agreements were not sufficient to meet plant's normative coal requirement per annum.

- The DVC had procured coal from coal companies ranging between 81 to 98 *per cent* of the executed Fuel Supply Agreements.

Thus, inadequate Annual Contracted Quantity in the Fuel Supply Agreements was responsible for procurement of coal at higher price through payment of Performance Incentive to coal companies (Para no. 2.3.1.1). Further, there was loss of generation of power due to shortage of coal (Para no. 2.3.2). These issues have been discussed in detail in the subsequent paragraphs.

The issues related to assessment of requirement of coal were also highlighted in CAG Report No. 8 of 2012-13.

2.3.1.1 Mejia Thermal Power Station

The annual requirement of coal for eight units of Mejia Thermal Power Station (i.e., Units 1 to 8) during the period from 2014-15 to 2019-20 was ranging between 7.5 million metric

tonnes per annum and 13 million metric tonnes per annum. Against these annual requirements, three Fuel Supply Agreements were entered into with Eastern Coalfields Limited, Bharat Coking Coal Limited and Mahanadi Coalfields Limited for a total quantity of 5.6 million metric tonnes per annum only. Units 7 and 8 were linked to captive coal blocks of Khagra-Joydev mines and, therefore, no Fuel Supply Agreements were required for such units.

The DVC was allotted coal block of Khagra-Joydev in March 2015 for its Mejia Thermal Power Station. On account of failure of the DVC to submit Mine Closure Plan on time, there was avoidable delay in development of Khagra-Joydev mines allotted for Units 7 and 8 (refer para no. 2.3.3). Therefore, the DVC sourced beyond the Annual Contracted Quantity in the Fuel Supply Agreements from coal companies. As per the modalities of Fuel Supply Agreements, coal received in excess of 90 *per cent* of Annual Contracted Quantity attracts payment of performance incentive to the coal companies. During the period from 2014-15 to 2016-17, the DVC paid to the coal companies ₹290.04 crore as performance incentive for supply of coal in excess of Annual Contracted Quantity.

In this regard, Audit observed the following:

- As per New Coal Distribution Policy provision (2007), 100 *per cent* of the quantity as per normative requirement of the consumers would be considered for supply of coal through Fuel Supply Agreement, at fixed prices to be notified by Coal India Limited. However, the DVC agreed to pay performance incentive for supplies above 90 *per cent* of Annual Contracted Quantity.

- Reasons for payment of performance incentive were inadequate Annual Contracted Quantity in the Fuel Supply Agreements when compared to Annual Coal Requirement and delay in development of allocated blocks.

- Performance incentive was not required to be paid from 2017-18 onwards because of entering (December 2016) into bridge linkage for procurement of coal for Units 7 and 8.

Thus, the DVC incurred additional expenditure of ₹290.04 crore on account of payment for performance incentive due to inadequate Annual Contracted Quantity in the Fuel Supply Agreements and delay in development of allocated blocks as well as delayed entering of bridge linkage.

The Management stated (December 2019) that prior to bridge linkage, the procurement of coal for Units 7 and 8 was done by paying performance incentive and the same was unavoidable during that period. The Ministry stated (May 2020) that Fuel Supply Agreement is not meant to take care of entire coal requirement of the plant.

The reply of the Ministry/ Management is to be viewed in light of the fact that Units 7 and 8 started commercial operation without ensuring sustainable coal supply as allocated block was not developed on time. Further, the contention of the Ministry that Fuel Supply Agreement is not meant to take care of entire coal requirement of the plant is not acceptable as New Coal Distribution Policy provision (2007) provided for 100 *per cent* of the

normative quantity requirement of the consumers to be considered for supply of coal through Fuel Supply Agreement.

Recommendation No. 1: Annual Contracted Quantity in the Fuel Supply Agreements may be equal to normative annual requirement of plants as provided in the New Coal Distribution Policy provision.

2.3.1.2 Durgapur Steel Thermal Power Station

The DVC entered (July 2013) into a Fuel Supply Agreement with Bharat Coking Coal Limited for Annual Contracted Quantity of 1.756 million metric tonnes per annum for Unit 2 and another Fuel Supply Agreement for 1.975 million metric tonnes per annum was entered (September 2013) into with Central Coalfields limited for Unit 1.

In this regard, Audit observed that the DVC procured 1.98 million metric tonnes of coal from Bharat Coking Coal Limited during 2014-15 which was 113 *per cent* of Annual Contracted Quantity, in spite of the fact that during the same period the quantum of coal procured from Central Coalfields Limited against the Fuel Supply Agreement was only 37 *per cent* of the Annual Contracted Quantity. This resulted in payment of performance incentive amounting to ₹23.04 crore to Bharat Coking Coal Limited towards procurement of additional quantity of coal over and above the Annual Contracted Quantity.

The Management/ Ministry stated (December 2019/May 2020) that Central Coalfields Limited was unable to supply coal as per Fuel Supply Agreement requirement due to unavailability of coal and logistics issues.

The reply is not tenable as coal was available with Central Coalfields Limited as confirmed by them (April 2016), while the logistics issues should have been addressed by the DVC. DVC had also appointed a private contractor for proper liaison with railway authorities and to ensure availability of rakes. However, no penal action was taken against the contractor.

2.3.1.3 Chandrapura Thermal Power Station

The coal requirement of units (1, 2, 3 and 7) of Chandrapura Thermal Power Station was met through three Fuel Supply Agreements[4] (2.735 million metric tonnes per annum) and supply of coal from Bermo Mines (captive mine of the DVC located in Jharkhand). The annual coal requirement of Unit 8 was 1.21 million metric tonnes per annum. The DVC was allotted coal block of Tubed, Jharkhand in September 2016 for its Chandrapura Thermal Power Station Unit 8 which was not developed on time.

The Units 1, 2 and 3 of Chandrapura Thermal Power Station were found to be old, inefficient and sub-critical. Therefore, the DVC de-commissioned Units 1 and 2 during 2016-17 and 2017-18 respectively. Further, Unit 3 was kept under shutdown w.e.f., August 2017 to save fuel and other allied costs. Subsequently, the supply of coal from Bermo mines was

[4] ***Two agreements with Central Coalfields Limited (July 2009 and December 2012) for 2.08 million metric tonnes per annum and one with Bharat Coking Coal Limited (March 2010) for 0.655 million metric tonnes per annum.***

discontinued from October 2016 due to non-compliance of the Jharkhand Mineral Transit Challan Regulations, 2005 by the DVC and non-renewal of lease agreement. Despite closure of three units, three Fuel Supply Agreements were continued with the same annual contracted quantity till 2019-20. Therefore, the Fuel Supply Agreements were sufficient to cater to the coal requirements of Unit 8. However, the DVC entered (December 2016) into Memoranda of Understanding with Bharat Coking Coal Limited and Central Coalfields Limited for supply of 0.766 million metric tonnes per annum of coal for Unit 8.

Audit observed that the DVC procured 0.22 million metric tonne of coal through the above Memoranda of Understanding for Unit 8 during 2017-18 to 2019-20. However, there was scope to source the same from the Fuel Supply Agreements of Units 1 to 3 at a lower price than that of the Memoranda of Understanding. This resulted in additional expenditure of ₹2.90 crore for procuring 0.22 million metric tonnes of coal.

The Management stated (December 2019) that due to de-commissioning of Units 1, 2 and 3, the corresponding Fuel Supply Agreements had been decreased proportionately. Further, there was no scope for procurement of coal from such Fuel Supply Agreement for Unit 8. The Ministry stated (May 2020) that earlier Unit 8 was operated by taking coal against Fuel Supply Agreements of old units and from Bermo mines. After stoppage of allocation of coal post retirement of Units 1 and 2 and closure of Bermo Mines (October 2016), Memoranda of Understanding was entered into for supply of coal for Unit 8.

The contention of the Management/ Ministry is not tenable as the DVC used to source the coal requirement of Unit 8 from the Fuel Supply Agreements of Units 1 to 3 and 7. Since the Fuel Supply Agreements were still valid, there was ample scope to source 0.22 million metric tonnes of coal for Unit 8 from the Fuel Supply Agreements of Units 1 to 3 and 7 at a lower price than that of the Memoranda of Understanding.

2.3.2 Fuel Supply Management

The Central Electricity Authority norms for number of days of coal stock to be kept in the power station range from 15 to 30 days depending on the distance of the power station from the mine head to avoid the stock being depleted to critical[5] or super-critical[6] stock level so that the power stations do not suffer loss of generation due to shortage of coal. Loss in power generation arises on account of various reasons like low system demand[7], non-availability of inputs (like water, chemicals, oil etc.), condition of power plant, shortage of coal etc. Although each of these reasons directly impact power generation, the loss attributable to shortage of coal shall decrease if the loss in power generation on account of any other reason increases.

---

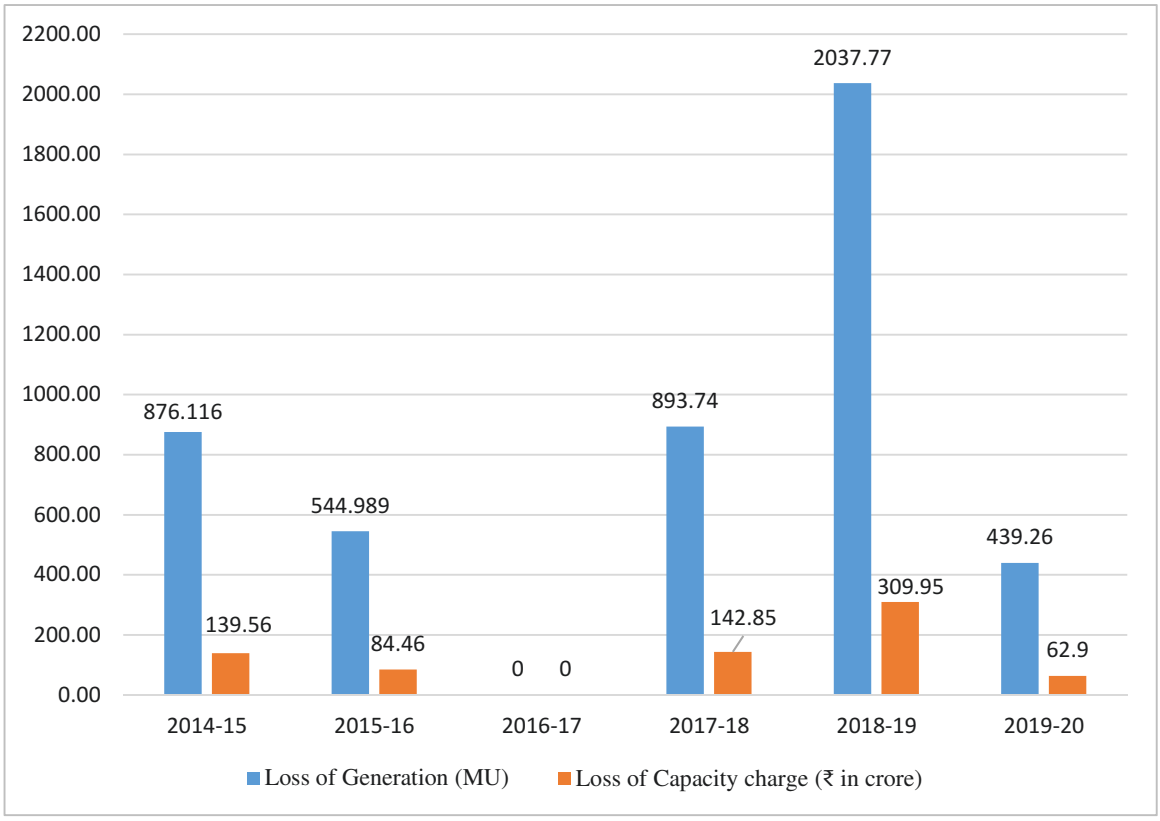
5 ***Critical Stock: Pit head plants- <5 days, Non pit-head plants-< 7 days.***

6 ***Super-Critical Stock: Pit head plants - < 3 days, Non pit-head plants- < 4 days.***

7 ***Power plants generate power based on the drawal schedule of the beneficiaries and accordingly 'Declared Capacity' is given by the power plants. Low system demand occurs mainly due to non-scheduling of drawal of power by the consumers and accordingly, capacity of the power plant is reduced despite availability of plant to generate.***

In this regard, Audit observed that the daily coal stock position of all the six power stations under review reached critical and super-critical levels during the period from 2014-15 to 2019-20 (except 2016-17). The shortage of coal was mainly attributable to non-procurement of entire Annual Contracted Quantity of Fuel Supply Agreement and non-exploration of sourcing of coal from other modes i.e., Memorandum of Understanding, e-auction, etc. Further, in Mejia Thermal Power Station, Bokaro Thermal Power Station, Durgapur Steel Thermal Power Station and Raghunathpur Thermal Power Station there were several occasions when the coal stock position dropped to such a low level that led to the DVC not being able to generate 4791.87 million units of power. Due to this it lost opportunity to earn capacity charges of ₹739.71 crore by selling the same through bilateral power purchase agreements available with the DVC. Year wise loss of generation *vis-à-vis* loss of capacity charges from bilateral consumers due to non-maintenance of desired stock position is depicted in the following chart:

Chart 2.1: Loss of power generation and capacity charges due to shortage of coal



The above chart illustrates the following:

- Loss of generation of power ranged between 439.26 million units to 2,037.77 million units during the period from 2014-15 to 2019-20 (except 2016-17).

- The DVC, thereby, had to suffer loss of capacity charges ranging from ₹62.90 crore to ₹309.95 crore from bilateral consumers during the above period.

- There was abnormal loss in capacity charges in 2018-19 in comparison to 2017-18 (116 *per cent*) due to shortage of coal.

- The DVC claimed in the annual reports of 2019-20 that there was 77 *per cent* reduction in loss of power generation due to coal shortage over that of 2018-19.

The claim of the DVC, may however be seen in the light of the fact that though loss in power generation on account of shortage of coal had drastically reduced in 2019-20 over that of 2018-19, there was no significant increase in the generation of power in 2019-20 (36,677 million units in 2018-19 to 36,998 million units in 2019-20). Moreover, at the same time, outages on account of low system demand steeply declined from 4,925 million units in 2017-18 to 2,257 million units in 2018-19 and again steeply increased to 10,040 million units in 2019-20. The loss in power generation during 2019-20 was therefore attributable mainly to low system demand and consequently such loss due to shortage of coal was drastically lower.

Therefore, the reduction in loss of power generation on account of shortage of coal during 2019-20 as claimed by DVC, did not indicate any improvement in fuel management on the part of DVC.

The Management stated (December 2019) that the critical coal stock position in the power stations were mainly because of non-clearance of dues of the coal companies due to fund crunch and delay in construction of private railway sites at Raghunathpur Thermal Power Station. The contention of the Management is not acceptable since procurement of coal was made on the basis of advance payment to the coal companies. For this purpose the DVC maintained Line of Credit with the banks, the limit of which had been enhanced from time to time to cope with the increased requirement of coal. Shortage of coal existed in Chandrapura Thermal Power Station even prior to stoppage of coal transportation from Bermo Mines from October 2016. Further, in case of Raghunathpur Thermal Power Station, though the unit was commissioned in March 2016, the DVC could not ensure completion of the railway site till February 2020.

The Ministry stated (May 2020) that the critical coal stock position in the power stations were mainly due to non-clearance of dues by Jharkhand Vidyut Bitaran Nigam Limited (₹4,678 crore as on 31 March 2021). Reply of the Ministry is to be viewed against the fact that Government of Jharkhand is also a stakeholder in the DVC and it should take proper steps so that dues from Jharkhand Vidyut Bitaran Nigam Limited, would be received within the stipulated time.

Recommendation No. 2*: *Necessary steps are required to be taken to ensure that power generation is not interrupted due to shortage of coal.

2.3.3 Avoidable delay in achievement of milestones in development of coal blocks

The DVC was allotted coal block of Khagra-Joydev in March 2015 for its Mejia Thermal Power Station Units 7 and 8. As per the milestones stipulated by Government of India for

development of captive coal blocks, the DVC was required to get the approval of Mine Closure Plan and opening Escrow Account in respect of Khagra-Joydev within six months from the date of allotment. Such Mine Closure Plan was required to be prepared in the name of the owner of the mine.

Audit observed that instead of preparing a fresh Mine Closure Plan for Khagra-Joydev, the DVC pursued (2015) with Government of India to accept the earlier Mine Closure Plan submitted in the name of DVC-EMTA which was a joint venture company of the DVC with a private party. Government of India did not accept the same and intimated (December 2015) to submit a fresh Mine Closure Plan. Finally, the DVC submitted fresh Mine Closure Plan in the name of the DVC in May 2017 which was approved by Ministry of Coal during September 2019. Thus, non-achievement of the milestone stipulated for development of Khagra-Joydev resulted in Ministry of Coal appropriating ₹7.91 crore (10 *per cent* of Performance Bank Guarantee for delay in submission of Mine Closure Plan and 15 *per cent* for delay in opening of Escrow account) from Performance Bank Guarantee (₹31.65 crore).

The Management in their reply (December 2019) described the various stages involved for land acquisition prior to commencement of mining operation but was silent about the delay in submission of Mine Closure Plan for Khagra-Joydev.

While accepting the delay in submission of Mine Closure Plan, the Ministry of Power stated (May 2020) that efforts were being made for reclaiming the apportioned amount from Ministry of Coal. However, the DVC applied (February 2020) for relief in the Hon'ble Delhi High Court which is sub-judice.

Recommendation No. 3*: *Efforts may be made to ensure achievement of milestones on time so that there are no delays in development of captive coal blocks.

2.3.4 Issues related to quality of coal

2.3.4.1 Higher grades of coal supply

The DVC entered into Fuel Supply Agreements with the coal companies for supply of specific grade of coal. During the period covered by Audit, the DVC received coal from Eastern Coalfields Limited, Central Coalfields Limited, Bharat Coking Coal Limited and Mahanadi Coalfields Limited for its six thermal power stations.

Examination of records of the six power stations revealed that three coal companies (except Mahanadi Coalfields Limited) supplied (2014-15 to 2019-20) coal of higher grade of 9.02 million metric tonnes valuing ₹323.34 crore to five thermal power stations (except Raghunathpur Thermal Power Station). The supply of higher grade of coal resulted in increase in cost of generation of power without any benefit as boilers were suited for particular range of coal grade. The financial implication due to supply of higher grade of coal is detailed in the table below:

Table 2.2: Higher grades of coal supplied by coal companies

Year	Higher grade of coal supplied in metric tonnes				Differential price for higher grade of coal (₹ in crore)
	Bharat Coking Coal Limited	Central Coalfields Limited	Eastern Coalfields Limited	Total	
2014-15	3,19,277.84	1,684.02	0	3,20,961.86	65.58
2015-16	3,51,099.67	4,826.22	0	3,55,925.89	58.77
2016-17	4,16,882.97	1,067.60	0	4,17,950.57	34.93
2017-18	2,69,149.43	0	0	2,69,149.43	26.87
2018-19	10,357.84	0	0	10,357.84	00.44
2019-20	58,58,923.78	0	17,91,485.86	76,50,409.64	136.75[8]
Total	**72,25,691.53**	**7,577.84**	**17,91,485.86**	**90,24,755.23**	**323.34**

Audit observed that there was no loss to the DVC due to use of higher grade of coal as additional cost for higher grade of coal was recovered through tariff which led to additional burden on consumers. Higher tariff was fraught with the risk of the DVC losing consumers to competitors who supply power at lower rates.

While accepting the Audit observation, the Management/Ministry stated (December 2019/May 2020) that they had taken up the matter with the coal suppliers to ensure supply of required grade of coal.

2.3.4.2 Receipt of oversized stones/extraneous materials with coal

As per the Fuel Supply Agreement, the coal should be delivered by the coal companies to the DVC within the specified size of 250 mm without any extraneous materials. The DVC was required to take up the issue of adjustment of the value of oversized stones received during the month with the coal companies by 10th day of the following month. All such adjustments should be regularized by issuing credit notes regularly by the coal companies.

Scrutiny of records revealed that during the period from 2014-15 to 2019-20, the DVC received 0.389 million metric tonnes of oversized stones in all the six power stations out of which value of 0.115 million metric tonnes of oversized stones was pending for adjustment as on 31 March 2020 for want of joint reconciliation.

In this regard, Audit observed the following:

- The joint reconciliation for oversized stones received at Mejia Thermal Power Station for the years 2017-18 and 2018-19 was carried out with Bharat Coking Coal Limited and the unit received credit notes valuing ₹12.99 crore. Stone quantity received from Bharat Coking Coal Limited during the year 2019-20 was reconciled at 26,273.69 metric tonnes, however, the unit had not received credit note for ₹4.81 crore till October 2020. Similarly, joint reconciliation for 2270 metric tonnes of stones received from Eastern Coalfields Limited was also carried out, but credit note valuing ₹0.52 crore was pending.

[8] ***Increase in higher grade coal supply in 2019-20 was due to procurement of coal through special E-auction from Eastern Coalfield Limited.***

- The DVC received 36,032.82 metric tonnes of stones from Central Coalfields Limited during 2014-15 to 2018-19 for its three thermal power stations at Koderma, Bokaro and Chandrapura valuing ₹9.64 crore. The DVC requested Central Coalfields Limited through various correspondences for stone reconciliation. However, Central Coalfields Limited refused to accept such reconciliation and informed the DVC that it has been supplying less than 100 mm crushed coal only. The DVC deducted crushing charges from the bills of Central Coalfields Limited, but the same has not been accepted by Central Coalfields Limited.

Thus, there was delay in settlement of the claims amounting to ₹16.24 crore on account of stones/ oversized coal received from the coal companies due to deficiency in supervision during loading/ unloading of coal by the DVC or by its agent.

Loss of ₹135.08 crore on account of receipt of extraneous material with coal and inability to recover ₹59.07 crore from coal companies on account of oversized stones was also highlighted in CAG Report No. 8 of 2012-13.

While accepting the Audit observation, the Management/ Ministry stated (December 2019/ May 2020) that the power plants had been advised to take up the matter of receipt of oversized stones/ extraneous materials with the coal companies. The Ministry/ Management, however, did not offer any comment regarding unsettled issue of stones received from Central Coalfields Limited at three Thermal Power Stations at Koderma, Bokaro and Chandrapura.

Recommendation No. 4*: *Issues of receipt of higher grades of coal/ oversized coal may be taken up with the respective coal companies at the apex level.

2.3.4.3 Deficiency in sampling of coal

The sampling work of coal at loading and unloading point was awarded to Central Institute of Mining and Fuel Research. As per agreements, Central Institute of Mining and Fuel Research should communicate the analysis of result of the samples within 18 working days from the date of collection of such sample to the coal company and the DVC. In case of disputes, the samples should be sent to the designated laboratories for referee result. The finding of the referee sample shall be binding on all the parties for commercial purposes. The agreement further stated that in case the referee results in majority of cases went in favour of the coal companies repetitively, those cases would be presented before the Apex Committee for necessary action.

Test check of sampling reports of Central Institute of Mining and Fuel Research in respect of six thermal power stations for the period 2016-17 to 2019-20 (sampling commenced in respect of Raghunathpur Thermal Power Station from December 2017) revealed the following:

i. Delay of 5 to 19 months was noticed in getting results for 4,816 samples referred for referee results (March 2020) by DVC or Companies.

ii. Despite 79.95 *per cent* (5,326 samples) of 6,662 referee samples being overturned in favour of the coal companies, the DVC did not present the case before Apex Committee for necessary action. Thus, DVC failed to protect its interest by not exercising this enabling option against the coal companies.

iii. The coal companies were required to issue credit/debit notes within 2-3 weeks from the date of submission of reports by Central Institute of Mining and Fuel Research appointed for sampling[9]. Year-wise details of debit/ credit notes that were pending for issuance are enumerated in the table below for the period 2016-17 to 2019-20:

Table 2.3: Pendency in issue of debit/credit notes

(₹ in crore)

Year	Year-wise credit notes pending issuance	Year-wise debit notes pending issuance
2016-17	22.68	5.05
2017-18	119.06	45.87
2018-19	114.03	115.46
2019-20	141.94	84.49
Total	**397.71**	**250.87**

The table above indicates that credit notes pending for issue from the coal companies were of ₹397.71 crore as on 31 March 2020 on account of grade slippage based on the Central Institute of Mining and Fuel Research sampling reports in respect of six power stations. Meanwhile, Debit Notes valuing ₹250.87 crore were also pending for issuance by coal companies.

Thus, delays in issuance of credit/ debit notes by coal companies and pendency of reconciliation of claims for more than four years led to delays in adjustment of the claims and consequent loss to DVC. This is also not in conformity with the recommendation of Standard Operating Procedure on Third Party Sampling and Analysis of Coal issued by Central Electricity Authority in July 2015.

The issue of grade slippage of coal between loading and unloading points was also highlighted in CAG Report No. 8 of 2012-13.

While accepting the Audit observations, the Management/ Ministry (December 2019/May 2020) stated that they had taken up with the concerned authorities for increasing the infrastructural facilities for timely testing of coal samples. It further added that it had raised the matter of claims on account of grade slippage, finalisation and issuance of credit/ debit notes by coal companies, both with the Apex Committee as well as coal companies for early settlement of the issue.

[9] ***As per the suggested modifications in the Standard Operating Procedure on Third Party Sampling and Analysis of Coal issued by Central Electricity Authority in July 2015.***

2.3.4.4 Transit and Handling Loss beyond norms

Central Electricity Regulation Commission Tariff Regulations for the period 2014-19 inter-alia allowed monthly normal Transit and Handling Loss of the quantity of coal transported by the coal companies as 0.2 *per cent* and 0.8 *per cent* for pit-head and non-pit-head generating stations respectively and beyond the same, Transit and Handling Loss was not recoverable through tariff. As per Fuel Manual of the DVC, any shortfall beyond 0.5 *per cent* (monthly basis), noticed in transit of coal received would be investigated by the respective designated committees. Audit scrutinised records related to Rail Receipt quantity of coal dispatched and quantity received at unloading points of six power stations. It revealed the following:

- In Mejia Thermal Power Station and Durgapur Steel Thermal Power Station, the Transit and Handling Loss during 2014-20 was beyond the norms for considerable period as stated in the table below:

Table 2.4: Statement showing Transit and Handling Loss

Station	No. of months in which Transit and Handling Loss was higher than norms	Range of Transit and Handling loss in *per cent*	Transit and Handling Loss Quantity (million metric tonnes)	Value (₹ in crore)
Mejia Thermal Power Station	40	0.53 to 8.24	0.57	184.97
Durgapur Steel Thermal Power Station	28	0.51 to 2.83	0.085	16.95
Total Transit and Handling Loss			**0.735**	**201.92**

Audit further observed the following:

- The DVC could not recover Transit and Handling Loss of ₹201.92 crore incurred in Mejia Thermal Power Station and Durgapur Steel Thermal Power Station through tariff as the same was beyond permissible limit.

- Audit did not find any records regarding investigation by any designated committee about abnormal transit loss to find out the reasons thereof for taking remedial measures.

Issues of transit loss of coal was also highlighted in CAG Report No. 8 of 2012-13.

The Management/ Ministry contended (December 2019/May 2020) that annual Transit and Handling Loss was within the norms in respect of Mejia Thermal Power Station during the period from 2017-18 to 2018-19 and for Durgapur Steel Thermal Power Station during 2017-18.

The contention of the Management/ Ministry is not tenable as they considered Transit and Handling loss on annual basis which should be on monthly basis as stipulated by Central Electricity Regulation Commission. The Management, however, did not offer any comment

for not taking up the issue of monthly abnormal transit losses for investigation by designated committees as stipulated in the Fuel Manual.

Recommendation No. 5: Issue of monthly abnormal transit loss may be taken up for investigation by designated committee as stipulated in the Fuel Manual.

2.3.5 Other Issues

2.3.5.1 Issues related to logistic contractor

The original logistic contract was awarded (June 2009) to M/s AKA Logistics Private Limited (Contractor) by the DVC for Units 1 to 6 of Mejia Thermal Power Station for composite work of supervision and liaison with Railways/ Coal Companies including loading /unloading, arrangement of rakes etc. The contract was originally for one year with the provision of extension for another year. The DVC extended the contract several times due to poor response/ higher rates against Notice Inviting Tenders issued from time to time by the DVC. The DVC also awarded similar contract to the same Contractor in other thermal power stations at Durgapur and Koderma.

The scope of work of the contract was as follows:

- Liaison with Collieries and Railway for coal rakes.
- Supervision of loading of coal in rakes at loading point for indigenous coal to ensure good quality, appropriate sized coal free from stones, boulders, loose slurry and other extraneous materials.
- Unloading of coal rakes at track hopper and wagon tippler.
- Operation & Maintenance of in-motion weigh bridge (Mechanical part).

In this regard, Audit observed the following:

- The Contactor was not performing the above work effectively resulting in the DVC not receiving adequate coal due to non-arrangement of sufficient rakes by the contractor (Para no. 2.3.1.2).
- The supervision at loading point was also not sufficient as the DVC received coal of higher grades and coal with stones, boulders etc. (Para nos. 2.3.4.1 & 2.3.4.2).
- Even the loading of coal in the wagons was more than the rated capacity of wagons {Para no. 2.3.5.1 (ii)}.
- Improper supervision by the Contractor resulted in payment of Engine Detention Charges and punitive charges to Railways due to overloading. However, in the absence of penal clause in the contract securing the interest of the DVC, recovery of the above penalties imposed by Railways from the Contractor was not possible. The DVC, however, tried to

rectify its mistake in the later agreements[10] (2016) with the Contractor by stipulating 20 *per cent* punitive charges to be borne by the Contractor. These issues have been discussed in the ensuing paras.

(i) Avoidable payment of Engine Detention Charges

The DVC incurred Engine Detention Charges[11] amounting to ₹20.03 crore[12] for Mejia Thermal Power Station and Durgapur Steel Thermal Power Station during the period from 2014-15 to 2019-20. This was primarily due to existence of oversized coal and boulders/ extraneous materials in the loaded rakes for which there was detention of engine at the unloading point beyond free time allowed by Railways. The job of supervision of loading of coal of required quality and size at Mejia Thermal Power Station and Durgapur Steel Thermal Power Station was entrusted to M/s AKA Logistic Private Limited (Contractor).

Audit observed that the Engine Detention Charges in respect of the Mejia Thermal Power Station and Durgapur Steel Thermal Power Station could not be recovered from the Contractor as there was no clause in the agreement to recover such Engine Detention Charges. Therefore, the DVC had to bear such Engine Detention Charges of ₹20.03 crore during the above period.

The Management stated (December 2019) that the Engine Detention Charges were not attributable to the Contractor in Mejia Thermal Power Station as rake movements therein was carried out in Merry-Go-Round system in which rakes were loaded in collieries and after unloading, the empty rakes were sent to the collieries for reloading. Thus, in Merry-Go-Round system the engine remained with the loaded rakes.

This contention is not acceptable as the free time prescribed by Railways is for loading and unloading of rakes at the sidings including Merry-Go-Round system. Thus, despite Merry-Go-Round system, delay occurred due to more time required in evacuating coal from rakes as oversized coal and extraneous materials blocked evacuation opening in the rakes. The clearance of evacuating portion is required to be done manually. Presence of such oversized coal was due to lack of proper supervision by the Contractor at the loading points.

---

[10] ***Mejia Thermal Power Station – August 2016, Koderma Thermal Power Station – March 2016 and Durgapur Steel Thermal Power Station – May 2016.***

[11] ***Railways claimed Engine Detention Charges for detention of engines beyond allowable hours (free time of 2 hours) at the unloading point.***

[12] ***Mejia Thermal Power station-₹17.62 crore and Durgapur Steel Thermal Power station-₹2.41 crore.***

Figure 2.2-Wagon Tippler

While accepting the Audit observation, the Ministry stated (May 2020) that at Mejia Thermal Power Station, the Contractor was saving demurrage charges. Thus, the Contractor was indirectly taking care for the Engine Detention Charges though without any payment on this account.

Reply of the Ministry is to be viewed against the fact that the demurrage charges were being recovered from the Contractor as per the terms of contract with him. However, Engine Detention Charges in respect of Mejia Thermal Power Station which arose mainly due to failure on the part of the Contractor to perform its duty at loading points were borne by the DVC. Therefore, saving demurrage charges did not relieve the Contractor from bearing of Engine Detention charges which was levied due to his lapses.

The Management /Ministry was silent with regard to Engine Detention Charges for Durgapur Steel Thermal Power Station.

(ii) Punitive Charges for overloading of Railway wagons

The Railways claim punitive charges for overloading of wagons with reference to their carrying capacities. As per the annual service contract, M/s AKA (Contractor) was responsible for supervising that the wagons in respect of Thermal Power Stations at Mejia, Koderma and Durgapur Steel were loaded up to their carrying capacity to avoid punitive overloading charges. There was no condition for penalty on the Contractor for its failure.

However, the DVC tried to rectify its mistake in the subsequent agreements[13] of 2016 with the Contractor by stipulating 20 *per cent* of punitive charges to be borne by the Contractor in the three power stations mentioned above. Since the punitive charges arose due to failure on the part of the Contractor at the loading points, recovery of only 20 *per cent* punitive charges was not in the financial interest of the DVC. During the period covered by Audit, the DVC made payment of ₹39.75 crore as punitive charges to Railways, out of which only ₹4.23 crore was recovered from the Contractor.

Thus, the DVC had to bear the remaining amount of ₹35.52 crore of punitive charges which was attributable to deficiency in services of the Contractor but could not be recovered due to faulty contract clause.

Management/Ministry (December 2019/May 2020) stated that overloading of wagons at the loading points was not under the control of its supervising agency.

---

[13] ***Mejia Thermal Power Station – August 2016, Koderma Thermal Power Station – March 2016 and Durgapur Steel Thermal Power Station – May 2016.***

The reply of the Management/Ministry is not acceptable as the contractor was contractually responsible to supervise that the wagons were loaded only up to its rated capacity.

Recommendation No. 6 : Suitable penal clause may be incorporated in the logistic contracts to make contractor responsible for losses in the form of punitive charges/overloading charges payable to Railways caused due to its failure/ deficiencies in services.

2.3.5.2 Excess consumption of fuel oil over norms

Central Electricity Regulation Commission has fixed norms for consumption of fuel oil for different thermal power stations for different periods. Audit observed that during period under review, four out of six thermal power stations consumed 15,659.61 kiloliters of fuel oil in excess of the norms which is described in the table below:

Table 2.5: Excess consumption of fuel oil over norms

Name of the unit	Year	Norms (millilitre/ kilowatt hour)	Excess secondary oil consumption beyond Central Electricity Regulation Commission norms (kilolitre)	Excess expenditure against secondary oil consumption beyond Central Electricity Regulation Commission limit (₹ in crore)
Mejia Thermal Power Station	2014-20	1 for Units I to IV and 0.5 for Units V to VIII	4,602.746	20.92
Koderma Thermal Power Station	2014-15	0.5	1,791.818	08.00
Raghunathpur Thermal Power Station	2016-18	0.5	9,089.668	33.20
Chandrapura Thermal Power Station	2017-18	1.5	112.385	00.29
Total			**15,596.617**	**62.41**

The above table indicates the following:

- The problem of secondary oil consumption beyond norms persisted every year during the period of review in Mejia Thermal Power Station.

- Raghunathpur Thermal Power Station's consumption of secondary oil beyond norms was 5,081 kiloliters in 2016-17 and 4,008 kiloliters in 2017-18 which was abnormally high.

- Koderma Thermal Power Station and Chandrapura Thermal Power Station consumed secondary oil beyond norms in 2014-15 and 2017-18 respectively.

- As the cost of excess consumption of fuel oil was not recoverable through tariff, the DVC suffered a loss of ₹62.41 crore for such excess consumption.

Loss on account of excess consumption of oil over Central Electricity Regulatory Commission norms was also highlighted in CAG Report No. 8 of 2012-13.

The Management (December 2019) in its reply accepted the excess consumption of fuel oil over norms and stated that power stations would try to adhere to the Central Electricity Regulation Commission norms for oil consumption. In its reply about Mejia Themal Power

Station, Management further added that reasons for excess consumption of oil than norms were heavy rain, wet coal/ low system demand etc., which were beyond the control of power station. Reply of Management was however silent about other power stations.

Ministry of Power (May 2020) endorsed the reply of the Management.

The Management contention is not acceptable because reasons for excess consumption mentioned by Management are common operational conditions faced by all power stations. But this problem was recurrent in all the five years under review in Mejia Thermal Power Station, two years in Raghunathpur and one year each in Koderma and Chandrapura. No secondary oil consumption beyond norms was noticed in the Thermal Power Stations at Bokaro and Durgapur Steel during the period under review. Therefore, reasons for excess consumption of secondary oil beyond norms at all the four Thermal Power Stations requires indepth review, especially at Mejia and Raghunathpur.

Recommendation No. 7: Proper steps may be taken to ensure the consumption of secondary oil within the CERC norms with deviations being thoroughly reviewed.

2.3.5.3 Deficiency in supervision by DVC

Engine detention charges are levied by Railways in the event of retention of engines beyond the allowed free hours. At Bokaro Thermal Power Station, the job of supervision of loading of coal of required quality and size was done by the DVC. In this regard Audit noted that, during the period 2014-15 to 2019-20, there was deficiency in supervision of loading of coal by DVC and consequently it paid ₹15.14 crore as Engine Detention Charges.

Management stated (December 2019) that the existing track hopper was not enough to accommodate unloading of rakes in one placement which ultimately led to incurrence of Engine Detention Charges.

The Ministry accepted the audit observation and assured that once the new system is commissioned, Engine Detention Charges could be avoided or minimised.

Recommendation No. 8: Management may take steps to ensure early construction of new track hopper at Bokaro Thermal Power Station to avoid payment of Engine Detention Charges in future.

2.4 Conclusion

The findings of Compliance Audit on "Fuel Management on Thermal Power Stations of DVC" covering the period from 2006-07 to 2010-11 was included in the CAG's Audit Report No.8 of 2012-13. Findings of current Audit indicated that the Management did not take appropriate measures on the major deficiencies pointed out in the earlier Audit Report. Similar nature of deficiencies recurred during the period covered by Audit like inadequacy of Fuel Supply Agreements to the extent of its Normative Annual Coal Requirement, avoidable delay in development of coal blocks, continuation of receipt of oversized extraneous materials and non-adjustment of value of stones /higher grades of coal received in consignment. DVC incurred loss of ₹290.04 crore during 2014-15 to 2019-20 by paying

performance incentive to coal companies at Mejia Themal Power Station. Further, daily coal stock position in most of the power stations reached super critical/ critical levels on many occasions. DVC incurred opportunity loss of ₹739.71 crore by not generating power due to shortage of coal. There were also cases of transit and handling loss of coal beyond norms that led to loss of ₹201.92 crore. Loss of ₹323.34 crore was passed on to customers by DVC due to higher grade of coal. DVC also suffered loss of ₹62.41 crore on account of consumption of fuel oil more than norms. All the deficiencies continuing over the years indicate the lack of seriousness on the part of the DVC in ensuring effective management of fuel for which responsibility needs to be fixed.

CHAPTER III: Srinagar Leh Transmission System

3.1 Introduction

Ladakh Region comprising of Leh and Kargil districts, is one of the highest inhabitations in the world. Due to its difficult terrain, most of the Ladakh region was not electrically connected with the rest of the power grid. Because of this, power demand of the area was met by some local small hydropower projects and diesel generators. During winters, generation from hydropower projects reduced considerably whereas power demand increased. While in summers, hydropower generation was at maximum level whereas demand was generally low. There is also presence of various defence establishments. In addition, Kargil and Leh hydroelectric stations of NHPC Limited (NHPC) were approved by Planning Commission without approval of the transmission system to connect these hydroelectric stations with the national grid. Therefore, to have uninterrupted power supply in Ladakh area and to ensure optimum utilisation of hydropower potential of Kargil and Leh hydropower stations of NHPC, connection of these power stations with the National Grid was envisaged.

Government of India (GoI) in 2003 had announced a special package for Jammu and Kashmir (J&K) comprising 375 km transmission system project at 220 kV voltage level from Alusteng (Srinagar) to Leh via Kargil with four substations at Drass, Kargil, Leh and Khaltsi at an estimated cost of ₹377.52 crore. However, in September 2004, the scope of the transmission system was revised by shifting overhead line between Gagangir to Zojila Pass to underground line alongwith change in the transmission capacity at Kargil substation, being an avalanche prone area, which led to an increase in estimated cost to ₹633.79 crore. The Government of Jammu and Kashmir accorded its approval (15 December 2004) for execution of the project by Power Grid Corporation of India Limited (PGCIL); however, the project was put on hold (27 June 2005) by the Ministry of Power.

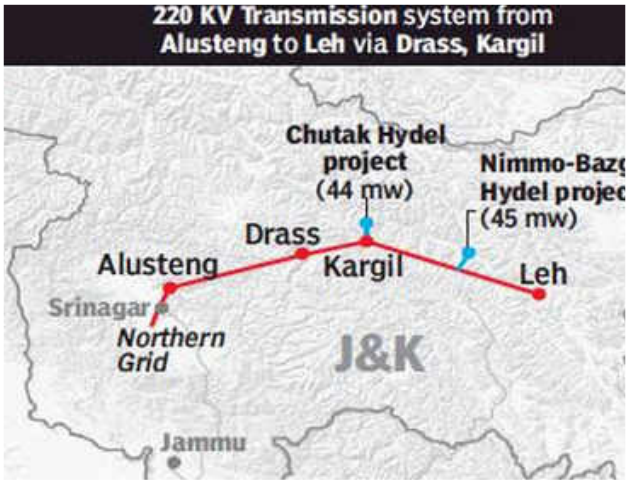


Figure 3.1: 220 kV Transmission System from Alusteng to Leh via Drass, Kargil

The project was finally approved by the GoI in January 2014 at an estimated cost of ₹1,788.41 crore with scheduled completion period of 42 months from the date of release of first instalment of fund. The first instalment was received on 01 March 2014 and the

approved commissioning schedule of the project was September 2017. The downstream network at 66 kV level for the above project was being implemented under Deendayal Upadhyaya Gram Jyoti Yojana (erstwhile RGGVY).

The project cost was to be borne by GoI and Government of J&K in the ratio of 95:5 and upon commissioning, the transmission system was to be transferred to the State of J&K, which would be responsible for carrying out operation and maintenance and other related activities at their own cost as per the terms and conditions, to be signed in the Memorandum of Understanding (MoU).

The MoU between Power Development Department (J&K) and PGCIL was entered into on 22 November 2016, under which, PGCIL was to be paid consultancy fees at the rate of 12 *per cent* of actual executed project cost less local taxes and duties for implementation of the project. The scope and responsibilities of PGCIL as well as Power Development Department (J&K) defined in the MoU are as detailed below:

i) Responsibility of PGCIL

PGCIL implemented this project on behalf of Government of J&K as Project Management Consultant (PMC). The scope of services performed by the PMC on behalf of the owner, included detailed survey, soil investigation, design (including development of tower designs and their testing), engineering, procurement *inter-alia* including issuance of NIT (on Open competitive Global/ Domestic bidding basis including e-procurement), tender evaluation, finalization of contract, entering into contract agreement, payment to contractors, Manufacturing Quality Assurance, Project Management, field checks and Field Quality Assurance, supervision of erection, testing and commissioning of 220 kV lines (with ACSR[1] Deer conductor), 220 kV power cable, 220/ 66 kV Substations, 66 kV transmission lines and 66 kV substation extensions.

ii) Responsibility of Power Development Department (J&K)

Power Development Department (J&K) discharged all functions related with Statutory/ Regulatory/ Administrative approvals, clearances, permits, consents, security arrangements, Law and Order support, Land Acquisition, Resettlement and Rehabilitation (R&R), Right of Way (RoW), and power and water for construction of substations. Apart from the above, Power Development Department (J&K) was also involved in construction of 220 kV line bay at the Alusteng Grid Station (at Srinagar).

3.2 Rationale and scope of Audit

The Compliance Audit was carried out considering the importance of the project as well as to analyse economy, efficiency and effectiveness of the project. Audit covered the activities from conceptualisation to execution/ implementation of 220kV transmission system[2] from Alusteng (Srinagar) to Leh by Power Development Department (J&K) and PGCIL along

[1] ***Aluminium-Conductor Steel Reinforced.***
[2] ***Evacuation capacity of this system is 200 MW approximately.***

with its utilisation. Audit of selected offices of Power Development Department (J&K) was conducted for examination of the assigned aspects viz., conceptualization of the project, monitoring of works, financial management, and impact of non-connecting of this line with bay at Alusteng substation, and its impact on power system of J&K.

3.3 Audit objectives

The Audit objectives were to assess whether:

1. the transmission system was timely conceptualized and the project was planned and executed economically, efficiently and effectively;
2. monitoring system was in place to review the works and take corrective measures to overcome deficiencies identified; and
3. the envisaged objectives were achieved and the project resulted in improvement of grid connectivity and reliable power supply to Ladakh Region.

3.4 Audit criteria and methodology

The criteria adopted during the course of Audit included MoU between Power Development Department (J&K) and PGCIL, Detailed Project Reports (DPR) of Nimmo Bazgo and Chutak Hydro Power Projects, Central Electricity Authority's (CEA) Technical Standards and its directions, Works and Procurement Policy and Procedure (WPPP) of PGCIL, Guidelines issued by Central Vigilance Commission (CVC) from time to time, Feasibility Report and DPRs of the Transmission Project, Directions issued by the Ministry, Government of India and Power Development Department (J&K) regarding implementation of the project, and Contract Agreements/ Work Orders.

An Entry Conference was held with the Management of PGCIL on 24 May 2019, wherein scope of Audit, Audit objectives, Audit criteria and Audit sample were discussed. An Entry Conference was held on 25 July 2019 with the Chief Engineer, System and Operation, Kashmir and Director Planning Power Development Department. Field audit of PGCIL and NHPC and Power Development Department (J&K) was conducted wherein the relevant records were examined.

During the course of Audit, observations were issued to the management for their comments. The draft report was issued to Audit entities i.e., Power Development Department (J&K) and PGCIL. After considering the reply of Audit entities, the report was finalised and issued to the Ministry and Government of J&K in October 2020. Reply of the Ministry was received in April 2021 and it has been suitably considered. However, reply of Government of J&K is awaited (January 2022) despite reminders.

3.5 Audit coverage and sample

While conducting Compliance Audit of 220 kV Srinagar Leh Transmission System, Audit reviewed construction of 220 kV line bay at the Alusteng Grid Station (at Srinagar), conceptualisation of the project, monitoring of works, financial management, delay in completion of bay at Alusteng substation and consequent non-connection with the line, and

impact of system on the power system of J&K and impact on end user of electricity due to delay in commissioning of this system.

PGCIL executed the project during the period 2014-19 through 10 contracts valuing ₹1,802.25 crore (***Annexure I***). Process of award and execution of all 10 contracts were examined during Audit.

3.6 Audit findings

3.6.1 Planning of Transmission System

Audit examination of the various activities covered under project planning of Srinagar Leh Transmission System is brought out in the following paragraphs:

3.6.1.1 Delay in planning of transmission line resulted in generation loss of 1,602.64 MUs

National Electricity Policy, 2005 requires that while planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities.

As per notification of CERC dated 26 March 2001, in case of reduced generation due to the reasons beyond the control of Generating Company or on account of non-availability of board's transmission lines resulting in spillage of water, the energy charges on account of such spillage shall be payable to the Generating Company. Apportionment of energy charges for such spillage among the beneficiaries shall be in proportion to their shares in saleable capacity of the station.

NHPC has two run of the river projects[3] i.e., Nimmo Bazgo Power Station (3x15 MW) and Chutak Power Station (4x11 MW) for harnessing the hydropower potential in Ladakh Region. These projects were planned (2003) to be implemented by NHPC by August 2010 and February 2011 respectively. All units of these projects were commissioned between November 2012 and October 2013.

As per the Power Purchase Agreements (PPAs) dated 26 October 2005 between NHPC and Power Development Department (J&K), evacuation of power from the delivery point of the project shall be through the transmission system of PGCIL, Power Development Department (J&K) and/ or any other Agency as the case may be. The Bulk Power Customer [Power Development Department (J&K)] shall be responsible and make necessary arrangements separately with the concerned Agency, for evacuation of power and payments of evacuation charges etc., and NHPC shall not be responsible for the same in any manner.

As per the initial planning by the Ministry/ CEA, power generated from Nimmo Bazgo and Chutak Power Stations was to be evacuated through 33 kV transmission system, to be developed by Power Development Department (J&K), the only bulk power customer of the

[3] ***A hydroelectric generation plant whereby little or no water storage is provided.***

above projects. Excess power, if any, from these power stations, due to seasonal variation in requirement, was to be transmitted through a 220 kV transmission line from Srinagar (Alusteng) to Leh, which was planned (August 2003) for commissioning, matching with the commissioning of these projects. Revised estimated cost of Srinagar Leh Transmission System was envisaged as ₹633.79 crore as in September 2004. However, the above transmission system was put on hold in June 2005 by the Ministry. Later, in order to consider/ assess the requirement of transmission system with commissioning of Nimmo Bazgo and Chutak Hydro Power Stations of NHPC, a meeting was held in Planning Commission in May 2010 and thereafter, the DPR was updated in September 2010 and August 2011 which was finally approved only in January 2014 at an estimated cost of ₹1,788.41 crore with scheduled completion by September 2017. The transmission system was commissioned in January 2019 with completion cost of ₹1,583.36 crore. As evident from the above that due to time lag in approval/ implementation of the transmission system, completion cost has escalated to ₹1,583.36 crore from initial estimated cost of ₹633.79 crore.

Chutak and Nimmo Bazgo Hydro Power Stations, commissioned in the years 2012-13 and 2013-14 respectively, were catering to the load requirement of the entire Ladakh Region. Audit noticed that in the absence of National Grid connectivity due to delay in commissioning of Srinagar Leh Transmission System, Chutak and Nimmo Bazgo Hydro Power Stations were operated in isolation mode and could not be optimally utilised upto their designed capacity and their generation had to be curtailed up to the limited requirements of the Ladakh Region only. As a result, 1,602.64 MUs of power could not be generated which resulted in generation loss as summarised in Table 3.1.

Table 3.1: Details of loss of electricity generation

Generation period since commissioning	Electricity generation capacity (Design Energy)	Actual electricity generation	Deemed electricity generation[4]	Energy Charges Rate (in ₹)	Loss on account of deemed electricity generation (Amount in ₹)
1	2 (In MUs)	3 (In MUs)	4(In MUs)	5	6 [(4) x (5) x10^6]
(A) Nimmo Bazgo					
2013-14 (w.e.f., 10.10. 2013 i.e., date of commission of the project)	72.90	49.70	23.20	7.22	16,75,04,000
2014-15	239.30	75.55	154.60	4.57	70,65,22,000
2015-16	239.30	90.71	148.59	4.63	68,79,71,700
2016-17	239.30	94.44	144.86	4.61	66,78,04,600

[4] ***As per notification of CERC dated 26 March 2001, in case of reduced generation due to the reasons beyond the control of Generating Company or on account of non-availability of board's transmission lines resulting in spillage of water, the energy charges on account of such spillage shall be payable to the Generating Company. Apportionment of energy charges for such spillage among the beneficiaries shall be in proportion to their shares in saleable capacity of the station. Loss of generation due to non-availability of load has been considered on basis of data of deemed generation confirmed by Power Development Department (J&K) or design energy minus actual generation whichever is less.***

Generation period since commissioning	Electricity generation capacity (Design Energy)	Actual electricity generation	Deemed electricity generation[4]	Energy Charges Rate (in ₹)	Loss on account of deemed electricity generation (Amount in ₹)
1	**2 (In MUs)**	**3 (In MUs)**	**4(In MUs)**	**5**	**6 [(4) x (5) x10^6]**
2017-18	239.30	98.81	140.49	4.63	65,04,68,700
2018-19 (December 2018)	207.51	76.78	130.67	4.62	60,36,95,400
Total (A)	**1,237.61**	**485.99**	**742.41**		**348,39,66,400**
B. Chutak					
2012-13 (w.e.f 29.11.2012 i.e., date of commission of the project)	34.80	14.68	1.65	6.95	1,14,67,500
2013-14	213.00	34.22	124.37	3.81	47,38,49,700
2014-15	213.00	35.49	148.92	4.02	59,86,58,400
2015-16	213.00	36.93	101.78	4.16	42,34,04,800
2016-17	213.00	44.05	168.95	4.16	70,28,32,000
2017-18	213.00	45.79	167.21	4.15	69,39,21,500
2018-19 (December 2018)	186.95	39.60	147.35	4.17	61,44,49,500
Total (B)	**1,286.75**	**250.76**	**860.23**		**351,85,83,400**
Total (A + B)	**2,524.36**	**736.75**	**1,602.64**		**700,25,49,800**

It is evident from the above table that since commissioning to December 2018, actual generation from these two power stations was only 736.75 MUs (29 *per cent*) against their generation capacity of 2,524.36 MUs. Central Electricity Regulatory Commission, however, allowed NHPC to claim the tariff in respect of deemed generation. Accordingly, NHPC raised bill of ₹1,166.56 crore for deemed generation on Power Development Department (J&K) and received part payment of ₹267.59 crore from Power Development Department (J&K) and balance amount is yet to be paid.

Thus, non-connectivity of these power stations with the National Grid and delay in planning/ implementation of the transmission system resulted in generation loss of 1,602.64 MUs and extra burden amounting to ₹700.25 crore on Power Development Department (J&K).

Power Development Department (J&K) stated (July 2020) that they would pursue the issue with Ministry. PGCIL/ Ministry stated (April 2021) that Srinagar Leh Transmission System was planned during similar time frame of Nimmo Bazgo & Chutak HEPs. It was, however, decided, during the PIB meeting dated 08 June 2005, that the transmission system be put on hold. Ministry approved the transmission system for implementation in 2014 after commissioning of both generation projects. There was mismatch due to delayed approval to undertake implementation of this transmission system.

However, the fact remains that delay in approval of this transmission system with respective power generation projects resulted in mismatch in commissioning of generation and

transmission projects, which consequently resulted in loss of electricity generation of 1,602.64 MUs and undue financial burden of ₹700.25 crore on Power Development Department (J&K).

3.6.1.2 Planning of Transmission System without considering prospective load

(i) The total length of 375 kms. (approx.) of Srinagar Leh Transmission System with underground cable portion of 8.3 kms. route length was first proposed (2004) by Snow & Avalanche Study Establishment, DRDO due to avalanche prone section. In the revised DPR (2011) prepared by PGCIL, total length of transmission line was revised to 352.3 kms with same underground cable portion of 8.3 kms.

Ministry of Statistics & Programme Implementation, GoI, had given their comments (July 2012) on the proposal for 220 kV Transmission system from Alusteng to Leh stating that Ladakh Region was prone to heavy snow, landslides and highspeed winds and snow accumulation on transmission lines leading to increase in conductor load which might damage the transmission facilities. It was also opined that maintenance of transmission lines in heavy snow area was cost intensive. Ministry of Statistics and Programme Implementation also suggested that possibility of placing more part of the line underground needs to be explored as it would also be a better option from the security point of view in the border area, as compared to the overhead transmission lines.

Audit noticed that contracts were awarded during August 2014 to October 2015 for 344 kms overhead transmission lines and 12 kms length of cable for 8.3 kms route length of underground cable. However, during execution, PGCIL decided (July 2016) that it was not feasible to lay underground cable in 6 kms portion and accordingly overhead transmission lines were constructed in place of underground cable in the avalanche prone area (6 kms).

Thus, after 2004, no study was found available on record about reviewing the possibilities of laying more underground cable for safety, security and reliability of transmission line as suggested (July 2012) by Ministry of Statistics and Programme Implementation. Evidently, one tower had collapsed on 21 February 2019, soon after commissioning (January 2019) due to an avalanche and it took PGCIL more than seven months to fully restore the line on 2 October 2019. During the above restoration period of the transmission line, Power Development Department (J&K) lost ₹56.44 crore[5] from March 2019 to September 2019 on account of deemed saleable energy.

PGCIL stated (April 2020) that underground cable was provided based on the suggestions made by Snow and Avalanche Study Establishment and for other overhead line locations, necessary measures against avalanche protection were provided as per the recommendation/ suggestion of Snow and Avalanche Study Establishment. Management added that after tower failure, the matter was taken up with Snow and Avalanche Study Establishment and

---

[5] ***Loss of ₹56.44 crore is computed for the restoration period of the transmission line after collapse of one tower in February 2019. This is in addition to ₹709.33 crore.***

based on joint visit, new foundation with higher raised chimney height was implemented. The Ministry endorsed (April 2021) the views of the Management.

The reply of PGCIL/ Ministry is to be viewed against the fact that strengthening of foundation based on actual technical input should have been finalised with the consent of Ministry of Statistics and Programme Implementation at the time of construction of original foundation. Besides, a fresh study should have also been conducted by PGCIL to explore the possibility of laying underground cable in place of overhead transmission line as per the suggestions of Ministry of Statistics and Programme Implementation for safety, security and reliability of power supply in the Region.

(ii) In January 2011, Power Development Department (J&K) requested to retain the scope of transmission line as envisaged in 2004 on the basis of unrestricted load of 150 MW (Leh 85 MW and Kargil 65 MW), and projected load of about 224 MW in the next 4-5 years. Planning Commission, however, stated (September 2012) that load projected by Power Development Department (J&K), was not realistic and directed that present load might be verified from NHPC, which had commissioned three units of Chutak HEP.

However, no action was taken on the recommendations of Planning Commission. Besides this, Integrated Plan for Desert Power Development was released by PGCIL in December 2013. It focused on opportunities to harvest solar power in the north and north-west of the country, specifically in the deserts and wastelands of the Thar in Rajasthan, the Rann of Kutch in Gujarat, Ladakh in Jammu and Kashmir, and the Lahaul and Spiti valley in Himachal Pradesh. Though this data was available with PGCIL, however, it was not considered while planning of this transmission line.

PGCIL stated (April 2020) that assessment and verification of present and future load requirement was not in the scope of PGCIL. The final scope of work was finalized by CEA for which load demand was provided by Power Development Department (J&K) in 2011. The Ministry endorsed (April 2021) the views of Management.

Reply of PGCIL/ Ministry is to be viewed against the fact that PGCIL's scope of work in this project consists of the scope of both consultant as well as the owner. As such, future load demand should have been checked before finalising the DPR.

Recommendation No. 1: Proper load of transmission system may be assessed during planning stage by giving due weightage to upcoming power generation stations so that adequate utilisation of transmission system at optimised cost could be achieved.

3.6.1.3 Mismatch in the commissioning of Srinagar Leh transmission system with downstream network

For effective utilisation of the Srinagar Leh transmission system and to meet the load of Ladakh region, there was need for a well-integrated interconnection system between 220 kV transmission line and 66 kV transmission systems in the Region. Therefore, the interconnection system was also planned to connect all four substations of PGCIL with 66/11 kV Substations at Drass, Kargil, Khaltsi and Leh.

In this regard, the following Audit observations are made:

(i) Four gas insulated substations (GIS) (220/66 kV each) constructed by PGCIL at Drass, Kargil, Khaltsi and Leh under Srinagar Leh Transmission System were commissioned at the same time. These Substations were to be interconnected with respective receiving Substations of Power Development Department (J&K) through which electricity to the respective regions was to be supplied. As planned, Kargil, Khaltsi and Leh Substations were interconnected with respective receiving Substations of Power Development Department (J&K). However, interconnection of Substations at Drass could not be achieved due to non-construction of receiving Substation by Power Development Department (J&K). In the absence of interconnection of Substations at Drass, 220/66 kV Substation constructed by PGCIL was charged on "No Load basis"[6].

The construction work of receiving Substation at Drass was assigned to PGCIL on behalf of PDD (J&K) in February 2018 with expected date of commissioning as August 2021. In the absence of any downstream Substation, the power to the consumer of Drass area was supplied through alternate arrangements, as supplied prior to conceptualisation of this transmission system.

Thus, despite this transmission system having been commissioned in January 2019, the envisaged benefits for providing reliable power supply to consumers of Drass could not be achieved.

Power Development Department (Ladakh Region) in its reply stated (June 2020) that due to non-completion of the 66/11 kV Receiving Station, the power to Drass area, was continued to be supplied through the said projects.

The fact remains that even after commissioning of Srinagar Leh transmission system (January 2019), Drass Region is still not getting power from this system defeating the very purpose of constructing this system for supply of power in the Ladakh Region especially, in winter season.

(ii) PGCIL 220/66 kV substation at Kargil is connected with 66/11 kV Power Development Department (J&K) substation through a 66 kV interconnection bay at PGCIL substation Kargil. It was envisaged at the planning stage that Chutak Hydro Power Station would be linked directly with 220/66kV PGCIL substation at Kargil with 66 kV transmission line for evacuation of power from Chutak Hydro Power Station. This interconnection work has, however, not yet been completed by PGCIL and its power is being evacuated through the erstwhile interconnection with Power Development Department (J&K) 66/11 kV substation. Thus, the 220 kV transmission system was not fully operational as per its approved plan.

PGCIL stated (April 2020) that the work of interconnection of NHPC Chutak Hydro Power Station to 220/66 kV Kargil substation was completed but not connected as there was no

---

[6] ***Charging of Sub-Station on "no load basis" means non-availability of connecting downstream transmission system.***

confirmation from Power Development Department (J&K) to take over the system in near future. The system can be normalised whenever Power Development Department (J&K) demands it. The Ministry endorsed (April 2021) the views of Management.

The reply of PGCIL/ Ministry needs to be viewed against the fact that 66/11 kV Drass substation is still not commissioned even after delay of more than 24 months since commissioning of this transmission line (January 2019). Without commissioning of interconnection link between Chutak Hydro Power Station to 220/66 kV Kargil substation till Septmeber 2020, transmission system could not be considered fully commissioned or utilised. Both the above substations could not be fully commissioned due to lack of inadequate planning and coordination between Power Development Department (J&K) and PGCIL.

Recommendation No. 2: As hydro power is a cheap and clean source of energy, downstream network and planned linkages with hydro power projects may be expedited to reap envisaged benefits from operation of the line.

3.6.2 Project Execution

PGCIL executed the 220kV transmission project from Alusteng (Srinagar) to Leh during the period 2014-19 through 10 contracts. Examination of award and execution activities in respect of these 10 contracts indicated the following:

3.6.2.1 Irregularities noticed in award of contracts

PGCIL has its own procurement policy and procedure. This includes examination of bids in consonance with guidelines of Central Vigilance Commission (CVC). Audit reviewed the evaluation procedures and observed non-compliance of guidelines and improper/ non-assessment of bidders' capacity.

CVC stated that the award of public contract through open tender is to ensure transparency in public procurement, to maximize economy and efficiency in public procurement, to promote healthy competition among tenderers, and to provide for fair and equal treatment to all the tenderers.

The bids for three tower packages, i.e., TW01, TW02 and TW03 in respect of Srinagar Leh Transmission project were invited by PGCIL under Domestic Competitive Bidding on 06 February 2014. The first envelope and the second envelope of the bids received for the said three tower packages were opened in June 2014. Since the deviation of L1 bidder from the updated cost estimate for TW02 and TW03 tower packages was 26.83 *per cent* and 33.03 *per cent* higher than the estimated cost respectively, both the packages were annulled[7]. For TW01 tower package, all five firms which had submitted the bids, were found as

[7] ***As per Works & Procurement Policy and Procedure of PGCIL, annulment can be decided by competent authority, if the recommended award price is higher than the reviewed estimated cost by more than 10 per cent.***

technically qualified, with M/s Gammon India Limited, emerging as the L1 bidder, to whom the contract was awarded at a final evaluated price of ₹216.05 crore.

Audit noticed that at the time of evaluation of all the three tower packages, one of the bidders for TW03 i.e., M/s A2Z, was disqualified as it was undergoing Corporate Debt Restructuring. Audit also noticed that in the same evaluation report ongoing Corporate Debt Restructuring proceedings of M/s Gammon India Limited were also discussed. However, they were considered qualified to execute the contract and the package TW01 was awarded to M/s Gammon India Limited.

The differential treatments of similar conditions of ongoing Corporate Debt Restructuring proceedings for different bidders i.e., M/s A2Z and M/s Gammon India Limited, remained unexplained on records.

Subsequently, during execution of work through M/s Gammon India Limited, PGCIL observed persistent shortage of cement, steel and manpower at site, which hampered the progress of execution of the above contract. The contract was completed with a delay of about 25 months and persistent shortage of cement and steel at site was also one of the factors for this delay.

PGCIL stated (April 2020) that they had also observed that M/s Gammon India Limited was under Corporate Debt Restructuring. It was, however, decided to take limited exposure on such parties which were under Corporate Debt Restructuring. It was further stated that Corporate Debt Restructuring package in A2Z had not been made operational as they were yet to fulfil certain formalities. The Ministry endorsed (April 2021) the views of Management.

Reply of PGCIL/ Ministry is not tenable because although both the bidders were under Corporate Debt Restructuring, only one of them was rejected and capacity of other bidder (M/s Gammon India Limited) was considered as $3/4^{th}$ of the total capacity despite the discussion on its ongoing Corporate Debt Restructuring proceedings in the same evaluation report. Further, after award of work to M/s Gammon India Limited, PGCIL observed persistent shortage of cement, steel and manpower at site, which hampered the progress of execution of the above contract.

3.6.2.2 Laxity in finalization of scope of contracts

i) Underground cable package (M/s Cable Corporation of India Limited)

The scope of work for the underground cable package was divided in two sections namely Gagangir to Baltal and Baltal to India Gate (Zojila Pass), each with approximate route length of 6 kms. During the review meeting held on 09 September 2015, Director (Projects) had instructed for rerouting survey of 220 kV Baltal – Drass Section to avoid underground cabling. Without deliberating the avoidance of underground cabling, contract for underground cable was awarded (October 2015) to Cable Corporation of India Limited. Route II i.e., Baltal to India Gate (Zojila Pass) was, however, cancelled by PGCIL (19 July 2016) and included as overhead lines in the scope of another contractor (Larsen

and Toubro Limited) who was executing tower contract in respect of the same transmission line. Thus, instead of underground cable, towers were to be erected, which significantly decreased the awarded scope of work of the cable contractor by 50 *per cent*. The contract was completed in January 2019 with a delay of around 15 months with just about half of the awarded scope largely due to laxity on the part of PGCIL in finalizing the scope of underground cable.

PGCIL stated (April 2020) that the award of cable package was in advanced stage at the time of review meeting taken by Director (Projects). Further, there was only decrease in scope i.e., Baltal to India Gate (Zojila Pass) and the same had been intimated to party in the month of August 2016. The Ministry endorsed (April 2021) the views of Management.

Reply of PGCIL/ Ministry is not tenable because while giving directions (9 September 2015) to carry out rerouting survey, Director (Projects) was also aware of the status of the award process. Further, the argument that there was only a decrease in scope is also not tenable as addition of this scope of work in another contractor had contributed to delay in completion of transmission line.

ii) Tower package (TW-02, M/s Larsen and Toubro Limited)

Tower package {TW-02 from Alusteng (Srinagar) – Drass Part II} was awarded in December 2014 to M/s Larsen and Toubro Limited at an awarded value of ₹205.90 crore.

Audit noticed that the contract included construction of 66 kV D/C interconnection transmission line (Drass – Bimbat) between 220/66 kV substation of PGCIL to 66/11kV substation of Power Development Department (J&K), which was included, without finalization of land for 66/11 kV Substation of Power Development Department (J&K). During meeting with PGCIL (October 2014), Power Development Department (J&K) informed that their substation would be located in the same plot of 220/66 kV substation. As such, the scope of the contract should have been revised by excluding the interconnection transmission line. The same was, however, initially included in the scope of work of the contractor and later deleted from the scope resulting in large variation in quantity, with the contract price being reduced by 22.49 *per cent* (LoA cost ₹205.90 crore reduced to ₹159.59 crore). Subsequently, the scope of the contractor was further increased by adding additional work as discussed in para 3.6.3.2.

PGCIL stated (April 2020) that although Power Development Department (J&K), during meeting with PGCIL (October 2014) had informed that their Substation would be located in the same plot of 220/66 kV Substation, the tendering activities of the subject package had been initiated 4-5 months before the award of the work on 04 December 2014. The bids had also been opened in September 2014 before the meeting with Power Development Department (J&K). In view of this, the scope was not revised in order to avoid further delay in award.

Reply is not acceptable because at the time of award of work, the management was aware that a large portion (22.49 *per cent*) of the contract was not required to be executed/

awarded. Yet the work was awarded with full scope resulting in variation during execution which was partially compensated by PGCIL by award of other work without tendering.

3.6.2.3 Execution of Contracts – Reasons for delay in execution of contracts

The construction work in respect of 220 kV Alusteng (Srinagar) Leh Transmission system including 66 kV inter-connection was divided into five tower packages (transmission line), two substation packages, one insulator package, one conductor package and one cable package, as given in ***Annexure I***.

As per practice, route alignment, line length, number and type of towers required for a transmission line is decided by PGCIL based on the preliminary/ walk over survey. The work is awarded on the basis of the requirements assessed during the preliminary/ walk over survey. Detailed survey[8] is carried out by contractor subsequently during execution of work, wherein variations in the line length, number and type of towers from those decided during preliminary/ walk over survey, are observed. As the quantities decided during preliminary survey form the basis for bidding and award of contract, it is essential that the same is carried out properly to minimise large variations from planned quantities during the execution of work.

Audit, however, observed that there were wide variations in the line length as per preliminary/ walk over surveys and as per detailed surveys as detailed in ***Annexure II***.

From review of records, significant delays ranging from 9 to 28 months and 1 to 27 months, in respect of completion of route alignment and detailed and check surveys respectively were observed as given in Table 3.2.

Table 3.2: Reasons for delay in detailed and check surveys

Sl. No.	Transmission line	Detailed survey			Check survey[9]			Brief reasons for delay
		As per integral plan of Project activities	Actual	Delay (In months)	As per integral plan of Project activities	Actual	Delay (in months)	
1	Alusteng to Drass (Part I) M/s Gammon India Ltd (now Transrail Lighting Ltd)	Nov 2014 to Oct 2015	April 2015 to Feb 2018	28	January 2015 to Nov 2015	Jan 2015 to Feb 2018	27	Delay in finalisation of bay at substation and cabling arrangement between Kangan and Baltal section.
2	Alusteng to Drass (Part II) M/s Larsen and Toubro	May 2015 to Oct 2015	May 2015 to July 2016	9	June 2015 to August 2016	July 2015 to Sept 2016	1	Non-clarity in scope of Baltal Section regarding underground cabling, excess

[8] ***Detailed survey includes measurement of soil resistivity, route marking, tower profiling, optimisation of tower location/ tower spotting (span, extension/ truncation, loading, road crossing, railway crossing, river crossings, power line crossings and telecommunication line crossings), clearance from ground, building, trees etc, finalisation of forest clearance proposal etc.***

[9] ***Check survey is being done after detailed survey. Through check survey, tower locations is located on ground conforming to the approved profile and tower schedule.***

Sl. No.	Transmission line	Detailed survey			Check survey[9]			Brief reasons for delay
		As per integral plan of Project activities	Actual	Delay (In months)	As per integral plan of Project activities	Actual	Delay (in months)	
								weight span than allowable limits in various locations and delayed submission of SASE report regarding Gumri and Avalanche prone areas.
3	Drass to Kargil M/s Kalpataru Power Transmission Ltd.	April 2015 to Oct 2015	June 2015 to July 2017	21	May 2015 to June 2016	June 2015 to July 2017	13	Deviation from tower design and quantity as envisaged in LOA.

PGCIL stated (April 2020) that:

- The approval of detailed and check survey of the total line is not done in one go, as in the case of route alignment. It is done progressively in phased manner depending upon submission by the Contractor.

- During the execution of works, various problems were encountered like Right of Way (RoW) due to forest clearance, RoW due to land owners along the line, RoW due to Law and Order situation in the valley and change in alignment of line in Nilgrah (Baltal) area by Army and Amarnath Shrine Board.

- During finalization of cable route -II by Cable Corporation of India Limited, it was observed that route passed through rugged and barren terrain of Zojilla Pass. Due to non-feasibility of the cable route –II, the same was deleted from the scope of the Agency (Cable Corporation of India Limited). It was decided to lay overhead Transmission Line in the said section also and the same was included in the scope of Larsen & Toubro.

The Ministry endorsed (April 2021) the views of Management.

Reply of PGCIL/ Ministry is to be viewed against the following facts:

- The detailed and check surveys were completed with significant delays. Moreover, the fact that these surveys were to be done progressively, was a known fact when the company finalised its L2 schedule. Since foundation work for every portion of the transmission line could be started only after completion of detailed and check survey of that particular portion, delay in these surveys ultimately led to delay in execution of the contract and transmission line.

- Further, RoW issues should be identified while finalising the route for transmission line by conducting walk over survey and route alignment study so that these issues could be addressed timely i.e., prior to execution of the foundation work of the transmission line.

- During planning of transmission line, route alignment for laying underground cable should have been explored before awarding of contract for underground cable.

Recommendation No. 3: Modern surveying techniques including aerial survey should be used for timely mapping of entire route, so that all the inherent issues such as right of way, clearances, tower designing/ profiling etc., could be timely identified and resolved without hampering the projects timelines.

3.6.2.4 Delay in completion of bay at Alusteng Substation and consequent non-connection with the Transmission Line

The construction of 220 kV line bay at the Grid Station, Alusteng (along with 320 MVA, 220/132 kV and 100 MVA 132/33 kV Grid Substation Alusteng, Srinagar) was allotted to M/s Jyoti Structures Limited, Mumbai at allotted cost of ₹78.50 crore on turnkey basis in May 2008 and the time of completion of the project was 18 months from the date of issuance of Letter of Intent. The project cost was revised to ₹109.83 crore (₹5.54 crore departmental civil works and ₹104.29 crore on turnkey basis) in the year 2012.

Audit observed that a provision of ₹2.99 crore including Work Contract Tax (WCT) at the rate of 8.4 *per cent* of contract value was kept as a lump sum amount for the construction of RR masonry retaining walls in the Grid Station. The contractor, during the course of execution, had submitted the design/ drawings of retaining walls in stone masonry which was forwarded to the consultant, Central Electricity Authority (CEA) in 2009. CEA had rejected the proposal and advised Power Development Department (J&K) for execution of these walls in RCC given the seismic conditions of the valley and prevailing practice of construction of walls greater than 5 meter in height in RCC. As a result, there was an escalation of about ₹15.75 crore in the construction cost of retaining walls. The Power Development Department (J&K) had submitted modified proposals for review of the decision. CEA rejected these proposals as well on technical grounds and reiterated their earlier advice that masonry retaining structure of such heights was not an accepted practice and hence not recommended. The change of scope of construction of retaining walls in RCC instead of stone masonry had resulted in price escalation of equipment as per contract terms and conditions and provision for increase in WCT from 8.4 *per cent* to 10.5 *per cent*. The revised proposal for construction of RCC walls was approved by CEA and also by Administrative Department (Power Development Department) in September 2012 on the recommendation of the Contract Committee.

Audit also observed that the completion of the project had been delayed due to slow pace of work by the turnkey contractor and grant of frequent time extensions by the Department for the completion of the contract. Power Development Department (J&K), after several notices to the contractor, had finally invoked clause 28 of General Terms and Conditions of the Contract in February 2015, by virtue of which the balance and leftover works were to be executed at the risk and cost of the turnkey contractor. The leftover works were taken up departmentally and some works were allotted to the contractors. The project, however, still could not be completed, even after the termination of the contract in February 2015.

The line bay (220 kV) was reportedly kept ready for providing power supply to Ladakh Region in December 2019 after a considerable delay. No records were made available to Audit which could indicate as to whether all the requisite infrastructure was in place and completed for 220kV line bay at Alusteng Grid Station. Further, the item-wise physical and financial progress of the works of Grid Station was not maintained by the Department on a monthly/ yearly basis, in absence of which the year-wise physical and financial status of the 220 kV line bay could not be ascertained/ worked out. Expenditure of ₹92.25 crore was incurred on the project till September 2019. Thus, despite the changes in scope of work and subsequent approval from the concerned quarters, there has been abnormal delay of almost 10 years in the completion of the project and the 220 kV line bay as well which had led to delay in the connection of the transmission system with the Grid.

In reply (March 2020), JKPTCL, Kashmir attributed the delay to unrest in valley in 2016 and non-availability of funds during the year 2016-17 and 2017-18.

The reply is not tenable because it does not justify the delay of 10 years in execution of work.

3.6.3 Other reasons attributed to delay in completion of contracts

3.6.3.1 Drass to Kargil - M/s Kalpataru Power Transmission Ltd (TW 03)

During review of records of execution of the contracts, Audit observed that required clearance between Optical Ground Wire (OPGW) and top conductor was not achieved in the spans having length more than 500 meters. To resolve this issue, revised profile had to be drawn by the Contractor after lowering the conductor to the level so as to get the required clearance between OPGW and top conductor. Further, in order to achieve required clearance between OPGW and top conductor, ground cutting was required in two spans which could not be done due to heavy snowfall and the same had to be shifted to the next working season.

As per the contract, clearance from ground building etc., was prescribed in the scope of the contractor while doing detailed survey. However, required clearance of OPGW from top conductor was not included in the scope of contractor leading to delay on account of revision of drawings and subsequent approval of the same by PGCIL after completion of the detailed survey and the check survey. The above contract was completed with an overall delay of 21 months.

In addition to the above, delayed supply of Owner's Supply Material (OSM) (which was in the scope of PGCIL) and delay in finalization of aviation requirement also hampered the progress of execution of the transmission line.

PGCIL stated (April 2020) that:

- efforts were made to explore the possibility of stringing of conductor under reduced tension so as to have more sag of conductor to match the sag requirement of OPGW. Finally, revised profile of transmission line was cleared for construction at site in the month of June 2017 and the defence clearance was received in the month of July 2017, and

- the delay in supply of Owner's Supply Material (OSM) was due to closure of Srinagar Leh National Highway during winter months due to heavy snowfall and highly avalanche prone area (i.e., from November to June).

The Ministry endorsed (April 2021) the views of Management.

The reply is to be viewed against the fact that (a) if the required clearance of OPGW from top conductor was incorporated in the scope of contractor, the delay due to revision in the tower/ transmission line profile could have been avoided, and (b) closure of Srinagar Leh National Highway during winter months was known to the Company at the time of preparation of DPR, Feasibility study and the project implementation schedule.

3.6.3.2 Khaltsi to Leh - M/s KEC International Ltd (TW 05)

After completion of check survey on 16 August 2015 of a section of 66 kV Leh Kharu transmission line having total line length of 15.13 kms, PGCIL informed the contractor that the section was coming under the vicinity of flying zone and clearance to the location was not possible and it was proposed to divert the route. Hence, the contractor had to conduct check survey for the section again. Revised check survey was submitted on 01 June 2016 with increased line length from 15.13 kms to 16.19 kms, thereby losing around 10 months. Since detailed survey was conducted by the contractor under the supervision of PGCIL, the fact regarding vicinity of flying zone must have been already known to PGCIL at the time of detailed survey itself. Therefore, lack of coordination between PGCIL and the contractor regarding carrying out of detailed and check surveys led to avoidable delay in finalization of line length and route.

The contractor highlighted (10 June 2018) that the work was also delayed due to delay in clearance by PGCIL about change in tower design from single circuit to double circuit and delay in supply of 120 kilonewtons[10] insulator were also pending on the part of PGCIL. The above contributed to a delay of 10 months in execution of the work.

PGCIL stated (April 2020) that (a) keeping in view the geographical tough terrain of Ladakh Region the route along the flying zone was the only feasible route available and after hectic deliberations with Air Tariffic Control, PGCIL was allowed to lay the line along the foothill in the said area, (b) there was a change in tower design from single circuit to double circuit near Khaltsi and Phayang substation in order to resolve RoW issues raised by the landowners during construction of line. The Ministry endorsed (April 2021) the views of Management.

PGCIL/ Ministry's reply is to be viewed against the fact that PGCIL, after completion of detailed and check survey, informed that the said section was coming under the vicinity of flying zone and clearance of that location was not possible whereas the vicinity of flying zone should have been known to PGCIL at the time of conduct of detailed survey itself and the same should have been intimated to the contractor prior to conduct of check survey.

---

[10] ***The rating in kilonewtons refers to the mechanical load they can withstand, as the electrical lines are suspended from the tower by a string of these insulators.***

The fact remains that delay in clearance by PGCIL about change in tower design from single circuit to double circuit and delay in supply of 120 kilonewtons insulator contributed to the delay in completion of transmission line.

3.6.3.3 Delay in issue of notification for waiver of Entry Tax

As per the conditions stipulated by Expenditure Finance Committee at the time of appraising Srinagar Leh transmission line project (December 2012), all forms of State level taxes in respect of Srinagar Leh transmission system was to be waived off by the Government of J&K. For compliance of the above condition, notification for waiver of Entry Tax for execution of contracts was issued by Government of J&K in April 2017.

Contracts for execution of transmission line were awarded from the period October 2014 to October 2015 much before the notification for waiver of Entry Tax was issued. As a result, till April 2017 majority of the supply had been done and Entry Tax of ₹38 crore on the supplies related to Srinagar Leh transmission system had already been reimbursed to the contractors by PGCIL.

Audit observed that sufficient efforts were not made by PGCIL for early notification for waiver of tax. No correspondence between Power Development Department (J&K) and PGCIL was found in the records made available to Audit except for a direction by the Director (Projects) in the meeting dated 09 September 2015 to pursue the matter with Power Development Department (J&K) for waiver of tax, which was also not pursued.

PGCIL replied (April 2020) that the matter regarding signing of MoU was taken up with Power Development Department (J&K) and Ministry untiringly and MoU could be signed on 22 November 2016. It was only after signing of MoU that it was deliberated that Power Development Department (J&K) shall facilitate waiver of all forms of State level taxes/ Duties/ Entry Tax etc. from Government of J&K. The Ministry endorsed (April 2021) the views of Management.

Reply of PGCIL/ Ministry is not acceptable because at the time of appraising Srinagar Leh Transmission System (December 2013), Expenditure Finance Committee had mentioned that all forms of State level taxes in respect of Srinagar Leh transmission System should be waived off by the Government of J&K. Hence, on the basis of directions of Expenditure Finance Committee, PGCIL should have taken up the matter with Power Development Department (J&K) instead of waiting for signing of MoU.

3.7 Conclusion

With a view to have uninterrupted power supply in and around Ladakh area round the year and to ensure optimum utilisation of hydro potential in Jammu and Kashmir Region, connectivity of the Region with Northern Grid was envisaged in 2003 through a 220 kV Srinagar Leh Transmission System. The proposal, however, remained shelved until January 2014 when Government of India approved construction of this transmission system by PGCIL. The project was planned and implemented by PGCIL on behalf of Power Development Department (J&K) and commissioned in January 2019 with a delay of 27 months from the schedule date. Even after commissioning of the line, the downstream

transmission network, meant to serve as a link to the State transmission network, did not come up as Power Development Department (J&K) was unable to complete the same. As a result, some of the regions could not avail power through the transmission system and the envisaged benefits from the project remained unachieved.

Due to delay in taking decision for construction of the line, besides escalation of cost from ₹377.52 crore which later revised to ₹633.79 crore and finally approved in 2014 at an estimated cost of ₹1,788.41 crore, there was a generation loss of 1,602.64 MUs and an extra expenditure of ₹700.25 crore due to billing of deemed generation by Power Development Department (J&K). PGCIL did not ensure to conduct the prescribed studies before preparation of DPR to ensure adequacy of the system to fulfil the long-term power requirements of the Region in a reliable and secure manner.

The process of award of contracts and their execution by PGCIL also suffered from various inadequacies. Further, frequent revisions in line length, tower quantity and type of towers resulted in delay in completion of the project.

New Delhi
Dated: 31 March 2022

(R. G. Viswanathan)
Deputy Comptroller and Auditor General
(Commercial) and Chairman, Audit Board

Countersigned

New Delhi
Dated: 31 March 2022

(Girish Chandra Murmu)
Comptroller and Auditor General of India

ANNEXURES

Annexure-I

{As referred to in Para 3.5 and 3.6.2.3}

Details of time overrun and cost and scope variation in execution of the Contracts

Sl. No.	Package/contracts	Length of Trans. Line (in kms)/No. of Towers		Date of Award of work (NoA/ CA)	Party	Awarded value (₹ in crore)	Final amended cost (₹ in crore)	Cost variation (%age)	Scheduled completion date as per L2	Actual Completion as per TOC	Delay (in months)
		As per LOA	Actual								
1	Tower Package Alusteng (Srinagar) to Drass (Part-I)	Approx. 70Kms./231Nos.	Approx. 70Kms./261 Nos.	08 August 2014	M/s Gammon/ Transrail	204.75	211.43	3.26	31 December 2016	11 January 2019	25
2	Tower Package Alusteng (Srinagar) to Drass (Part-II)	Approx. 50Kms./169Nos.	Approx. 45.12Kms./164 Nos.	04 December 2014	M/s Larsen & Toubro	205.9	193.05	(-) 6.24	03 January 2017	20 November 2018	23
3	Tower Package Drass to Kargil	Approx. 60Kms./174 Nos.	Approx. 59.6Kms. /207 Nos.	31 December 2014	M/s Kalpataru Power Transmission Ltd.	229.23	179.46	(-) 21.71	31 January 2017	01 November 2018	21
4	Tower Package Kargil to Khalsti	Approx. 90Kms./261 Nos.	Approx. 96.6Kms./302 Nos.	22 October 2014	M/s Tata Projects Ltd.	253.12	192.51	(-) 23.94	21 January 2017	31 October 2017	9
5	Tower Package Khalsti to Leh	(220kV) Approx. 74Kms. /201 Nos. (LILO) Approx. 30Kms./130Nos.	(220kV) Approx. 61.5Kms. /211 Nos. (LILO) Approx. 17.19Kms. /98Nos.	25 September 2014	M/s KEC Ltd.	207.46	169.44	(-) 18.33	21 January 2017	11 November 2017	10

6	Substation package GIS 1	-	31 March 2015	M/s Hyosung with M/s KEC as associate	273.92	274.98	0.39	31 May 2017	31 January 2019	20
7	Substation package GIS 1	-	31 March 2015		262.10	254.43	(-) 2.93	31 May 2017	10 November 2017	5
8	Underground cable package	-	28 October 2015	M/s Cable Corporation of India Ltd.	106.23	53.80	(-) 44.65	28 October 2017	11 January 2019	14
9	Conductor package	-	06 October 2015	M/S Sturdy Industries	32.92	27.16	(-) 17.50	09 January 2017	03 March 2017	No delay
10	Insulator package	-	26 February 2015	M/S Aditya Birla Insulators	26.62	27.10	1.80	25 April 2017	05 September 2017	4
	TOTAL				**1802.25**	**1583.36**				

Annexure-II
{As referred to in Para 3.6.2.3}

Statement showing percentage variation in transmission line length, type and quantity of towers

Sl. No.	Transmission Line	Percentage variation in Line Length	Percentage variation in Tower quantity	Details of Variation in type and quantity of towers, transmission line length and concreting work
1	*Alusteng (Srinagar) to Drass (Part-I)* **M/s Gammon India Limited (now Transrail Lighting Limited)** *TW-01*	Remained same	(+) 13	There were reduction in A, C & D type of towers and increase in B type towers as compared to L2 schedule. Due to this, item-wise quantity varied in comparison with the approved Bill of Quantity. The Contractor also submitted that due to change in type and quantity of towers, material supply got delayed which consequently resulted in delay in execution of the contract.
2	*Drass to Kargil* **M/s Kalpataru Power Transmission Ltd** *TW-03*	(-) 0.67	(+) 20.34	**A.** The length of the transmission line portion reduced marginally from 60 km to 59.60 km, whereas, tower quantities was increased from 172 to 207 in two stages as detailed below: **(i)** **<u>First amendment (18 April 2016):</u>** Consequent upon finalization of detailed survey & check survey and other technical constraints, there was minor increase in the line length i.e., 60.85 kms from 60 kms (as stipulated in LoA), however, tower quantity increased from 172 nos. to 191 nos. Therefore, amendment for revised line length and quantity and type of towers had to be issued on 18 April 2016 (i.e., after 15 months from the date of notification of award of work, whereas, the overall completion schedule was 25 months). **(ii)** **<u>Second amendment (09 May 2017)</u>** Second amendment was issued to the contract on 09 May 2017 (i.e., after 28 months from the date of notification of award of work) whereby tower quantity was again increased to 203 nos. on 10 April 2018, and accessories in respect of 4 nos. of towers were also supplied by the Contractor due to which final

					tower quantity was further increased to 207. However, no justification for the above increases in tower quantities despite decrease in the length of transmission line to 59.60 km was found on records produced to audit. Thus, type and quantity of towers continuously varied from the type and quantity as stipulated in LoA and amendments for the same had to be issued upto 14 months beyond the scheduled completion date of the contract which raises doubt about correctness of different surveys taken up by PGCIL alongwith the executing agencies i.e., walk over survey, detailed survey and check survey. **B. <u>Inverse variation in quantity of tower and concreting work</u>** While the quantity of towers increased from 172 nos. to 191 nos. i.e., +11% as per amendment no. 1 to the contract (18 April 2016), concreting work (nominal concrete mix 1:1.5:3) against BoQ envisaged work of 6422 Cum. decreased substantially by 25 per cent to 4848 Cum. which contributed to the substantial decrease in erection cost by ₹11 crore. However, no justification regarding such inverse variation in supply and erection was found on record. Final executed work of concreting was 5585 Cum. (as per Fifth Amendment dated 09 July 2019) for 207 Nos. of towers against envisaged 6422 Cum. for 172 Nos. of towers as per approved BoQ which signifies that concreting work was estimated on a much higher range which raised doubt about accuracy of BoQ and needs justification.
3	*Khalsti to Leh***M/s KEC International Ltd.** *TW-05*	220kV line	(-) 16.90	(+) 5 for 220kV line	Line length in respect of 66kV LILOs varied in two stages as given below: (a) Line length decreased by 43.33 *per cent* i.e., from 30 kms as per LOA to 17.19 Kms., however, tower quantity decreased by 24.6 per cent i.e., from 130 Nos. as per LOA to 98 Nos.
		66kV LILO	(-)38.73	(-) 14 for 66kV LILO	

					(b) Line length increased by 7 *per cent* i.e., from 17.19 km to 18.38 Kms.and tower quantity increased by 14 per cent i.e., from 98 to 112 Nos. on 20 June 2018 (i.e., 44 months after award of LoA). These, prolonged and frequent changes in the line length and type of towers contributed to delay in execution of the work.
4	*Alusteng (Srinagar) to Drass (Part –II) & 66 kV D/C Drass to Bimbat (RGVVY)* **M/s Larsen &Toubro Ltd.** *(TW-02)*		(-) 11.76	(-) 3	**A.** Line length and quantity of towers varied in two stages as given below: (i) Line length was decreased to 44.15 Kms.against 50 Kms.as per LOA, while tower Nos. decreased to 160 against 169 envisaged in LOA. (ii) In March 2017, during detailed survey, line length was again changed from 44.15 Kms.to 45.12 Kms.and tower quantities changed from 160 to 164. In addition to the above, supply of 14 additional towers were also included in the scope of L&T, however erection of these towers was to be done by the respective transmission line contractors. The line was completed with delay of 23 months. **B.** The scope related to 2 Nos. of 66 kV Air Insulated Substation (AIS) line bays at 66/11kV Drass Substation of PDD was deleted since the location of 66/11 kV Substation of PDD was not finalized. Further 66 kV interconnection line between 220 kV Substation to 66 kV Substation of PDD was also deleted. Apart from the above amendments, proposal for Overhead transmission in place of underground cable between the section which was earlier awarded to M/s Cable Corporation of India considering the avalanche prone area, was also included in the scope of L&T.