Chapter-II

Audit of "Construction of new substations and augmentation of capacity of the existing substations by the Uttar Pradesh Power Transmission Corporation Limited"

Introduction

2.1 Transmission of electricity is defined as bulk transfer of power over long distances at high voltages, generally at 132 KV and above. Electric power generated at relatively low voltages in the power generating plants is stepped up to high voltage power before the same is transmitted through transmission lines. The substations (SSs) are facilities within the high voltage electric system (transmission system) used for stepping-up/stepping down voltages from one level to another and connecting the electric systems of the distribution companies (DISCOMs) with the generation systems. A robust and integrated power transmission system is therefore a pre-requisite for achieving the objective of ensuring universal access to reliable power supply[1].

2.2 In Uttar Pradesh, the management of the intra-state power transmission system and of the Grid operations are vested with the Uttar Pradesh Power Transmission Corporation Limited (Company). The Company was incorporated on 31 May 2004 under the Companies Act, 1956 as Uttar Pradesh Vidyut Vyapar Nigam Limited. It was later rechristened as Uttar Pradesh Power Transmission Corporation Limited on 13 July 2006. The Energy Department, Government of Uttar Pradesh (GoUP) is the administrative department of the Company.

Organisational set up

2.3 The Management of the Company is vested with a Board of Directors comprising members appointed by the State Government. The day-to-day operations are carried out by the Managing Director (MD) who is also the Chief Executive of the Company. He/she is assisted by six Directors[2] and a Company Secretary. For planning addition/augmentation of transmission systems, there are five Substations/Transmission Design Circles[3] (Design Circles) each headed by a Superintending Engineer at the Company Headquarters. These circles are engaged in designing of transmission projects, finalisation of contracts for procurement of material, and award of works for execution of the transmission projects with the approval of the Stores Purchase Committees[4].

Role of various wings in Project formulation and execution

2.4 The roles of various wings of the Company involved in project conceptualisation, approval and execution have been shown in the ***Appendix-2.1***.

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[1] Sustainable Development Goal 7.1 of United Nations

[2] Director (Operation), Director (Works and Projects), Director (Planning & Commercial), Director (State Load Dispatch Centre), Director (Finance) and Director (Personnel and Administration).

[3] (i) Electricity Substation Design Circle-I (ii) Electricity Substation Design Circle- II (iii) Electricity Transmission Design circle (iv) 765/400 KV Electricity Substation Design Circle (v) 765 & 400 KV Electricity Transmission Design Circle.

[4] Directors Store Purchase Committee (DSPC), Managing Directors Store Purchase Committee (MDPC) and Corporate Store Purchase Committee (CSPC) with the assigned financial limits of ₹ 1 to ₹ 10 crore, between ₹ 10 to ₹ 35 crore and above ₹ 35 crore respectively.

Audit Objectives

2.5 The audit was conducted to assess whether:

- projects were conceptualised properly and that the planning of the identified projects was adequate and carried out as per the set time frame;
- system of procurement of goods and services was economic and efficient;
- execution of projects was economical, efficient, and gave the desired results;
- fund management and monitoring mechanism for the implementation of the projects were efficient and effective.

Scope, Methodology and Audit Criteria

2.6 A Performance Audit (PA) of Uttar Pradesh Power Transmission Corporation Limited was included in the Report of the Comptroller and Auditor General of India (Commercial), Government of Uttar Pradesh for the year ending 31 March 2012. The Performance Audit report has not been discussed by the Committee on Public Undertakings (COPU) till date (August 2019).

The present audit was conducted from March 2018 to November 2018 to assess whether the projects were conceptualised properly with a view to evaluate the performance of the Company in conceptualising, planning and executing the construction/augmentation of substations on the basis of the documents/information maintained by the Company and its field units during 2013-14 to 2017-18, and to also ascertain whether the Company was able to achieve its targeted outcomes of facilitating transfer of power to the DISCOMs as per the demand without jeopardising the grid stability at any stage.

Audit explained the objectives of the audit to the Principal Secretary, Energy Department and the Management of the Company in an Entry Conference held on 5 October 2018. It examined records and related documents at the Company's Headquarters and in 42 units[5] out of its 171 field units (25 *per cent* approx.). Audit also held discussions with the Principal Secretary, Energy Department and the Management on the audit findings in an Exit Conference held on 01 May 2019. The reply of the Company (May 2019) and the Government (September 2019) to the draft report has been received and suitably incorporated.

The audit criteria were drawn from various documents[6] issued by the Ministry of Power, GoI, Central Electricity Authority (CEA), Uttar Pradesh Electricity Regulatory Commission (Commission) and the Company.

The details of total number of SSs constructed/augmented and number of SSs selected for test check are given in Table-2.1.

[5] Sample of 42 units was selected on Random Sample selection basis using IDEA Software. It was duly approved by the Nodal Statistical Officer (NSO).

[6] Provisions of National Electricity Policy and Plan, 2005 and 2016; Standards set in Perspective Plan and Project Reports of the Company; Standard procedures prescribed for award of contracts; Manual of Transmission Planning Criteria (MTPC), 2013 issued by the CEA; Directives/Norms/Guidelines issued by State Government/the Uttar Pradesh Electricity Regulatory Commission/Central Electricity Authority(CEA)/Ministry of Power (MoP); Report of the Task force constituted by the CEA/MoP, GoI on transmission projects, 2005; "Best Practices in Transmission" as recommended by the Committee constituted by the MoP, GoI, in 2001.

Table-2.1: Details of the SSs constructed/augmented and number of SSs selected for test check

Total SSs constructed/augmented by the Company during 2013-14 to 2017-18			Total SSs test checked (in 42 units)		
Nos.	**Capacity (in MVA)**	**Sanctioned Cost (₹ in crore)**	**Nos. (*per cent*)**	**Capacity (in MVA)**	**Sanctioned Cost ₹ in crore *(per cent)***
New SSs Constructed					
172	20,045	5,237.80	89 (52)	12,753	2,760.29 (53)
Augmented SSs					
486	23,637.50	2,610.75	180 (37)	5,661	1,471.90 (56)
Total					
658	43,682.50	7,848.55	269 (41)	18,414	4,232.19 (54)

The audit findings discussed subsequently are a result of our test check. The Company may assess, at its level, more cases of similar nature in its other units as well.

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

Financial Performance of the Company

Financial Status of the Company

2.7 The financial performance of the Company for the last five years ending 31 March 2018 is depicted in Table-2.2 below:

Table-2.2: Details showing the financial performance of the Company

(₹ in crore)

Particulars	2013-14	2014-15	2015-16	2016-17	2017-18
Share Capital (including Application Money)	6,636.59	8,641.20	10,091.20	11,786.20	12,494.42
Gross Block of Fixed Assets related to transmission network[7]	10,278.94	10,898.29	13,352.56	18,245.92	22,623.98
Capital WIP	2,395.29	2,811.35	3,070.08	6,897.76	6,144.66
Loans	6,258.09	6,439.39	7,838.67	9,432.85	10,762.29
Interest	501.55	394.99	534.20	654.28	945.58
Depreciation	403.40	500.87	569.32	754.86	955.15
Turnover	1,655.87[8]	1,304.91	1,682.64	1,759.51	2,069.41
Net Profit/(Loss)	321.39	(71.87)	(27.13)	(38.05)	(367.20)

Source: Annual Accounts of the Company

During the last five years ending March 2018, the Company had invested an amount of ₹ 17,788.43 crore[9] in capital assets for strengthening its transmission networks. The above investment was mainly financed by share capital and loans which have increased substantially during the last five years.

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[7] Land; Building; Other Civil Works; Plant and Machinery; and Lines, Cables Networks etc.

[8] It includes an amount of ₹ 581.18 crore (effect of increase in transmission revenue for the year 2008-09 to 2011-12) in light of revised tariff on trued up basis as per UPERC order dated 01 October 2014 *(**Source:** Note 16 of the Annual Accounts of the Company for the year ended 31st March 2014).*

[9] Gross Block of Fixed Assets as on 2017-18 i.e. ₹ 22,623.98 crore Plus Capital WIP as on 31 March 2018 i.e. ₹ 6,144.66 crore minus Gross Block of Fixed Assets as on 31 March 2013 i.e. ₹ 8,563.67 crore minus Capital WIP as on 31 March 2013 i.e. ₹ 2,416.54 crore.

The main reasons for substantial increase in losses during 2017-18 were heavy outflows on account of interest payments and depreciation during the given years.

Physical performance of the Company

2.8 The physical performance of the Company is given below:

(i) The physical performance of the Company as a whole for the last five years ending 31 March 2018 is detailed in ***Appendix-2.2*** and summarised below in Table-2.3 below:

Table-2.3: Details showing the physical performance of the Company

Particulars/Years	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Number of substations (at the end of the year)	360	377	416	448	498	532
Transmission capacity of all categories of substations (in MVA) (at the end of the year)	58,650	63,614	68,543	76,482	88,847	1,02,333
Length of transmission lines (in ckm) (at the end of the year)	26,674.12	27,628.03	29,016.99	30,624.43	33,061.25	36,152
Actual Power Transmitted on UPPTCL Network (in MUs)	73,897.66	77,760.69	82,413.86	89,819.49	1,01,694.51	1,14,321.13

Source: Information provided by the Company

During 2013-14 to 2017-18, the Company constructed 172 new substations (SSs) of 20,045 MVA capacity and augmented the capacity of existing 486 SSs by 23,638 MVA as detailed in ***Appendix-2.2***. As a result, transmission capacity increased by 74 *per cent*, length of transmission lines increased by 36 *per cent* and actual power transmitted increased by 55 *per cent*.

Further, construction of 93 new substations of 26,125 MVA capacity and capacity augmentation of 86 existing SSs by 5,889 MVA were in progress at the end of 2017-18**.**

(ii) Transformation Capacity[10] of the Company vis a vis that of DISCOMs

Para 3.7 of the Manual of Transmission Planning Criteria (MTPC), 2013 of CEA provides that the transmission utility shall be responsible for meeting requirements of the DISCOMs. The SSs of 132 KV of the Company have direct interface with the 33KV SSs of the DISCOMs.

The Company had invested ₹ 17,788.43 crore during the period from 2013-14 to 2017-18 for augmenting/expanding its transmission systems. Against this expenditure, at an aggregate level, it was noticed that as on 31 March 2013, the total transformation capacity of 132 KV SSs of Company was 26,590 MVA against the transformation capacity of 27,981 MVA of DISCOMs (33/11 KV SSs and 66/11 KV SSs), which was 95 *per cent* of transformation capacity of the DISCOMs. However, given the scale of expenditure incurred, the transformation capacity of the Company as on 31 March 2018, stood at 44,423 MVA (at its 132 KV SSs) which was 102 *per cent* of the transformation capacity of DISCOMs at 43,706 MVA (33 KV SSs and 66 KV SSs).

[10] Transformation capacity for transmission utility is the capacity of stepping up/steeping down of the voltage.

Transmission Capacity[11] of the Company vis a vis energy available (total generation in the State plus import) in the State

2.9 National Electricity Policy, 2005 provides that the transmission network expansion should be planned and implemented keeping in view the planned increase in generation and anticipated power evacuation and transmission needs.

The year wise status of total energy available (total generation in the State plus import) and transmission capacity[12] of the Company is depicted in Table-2.4 below:

Table-2.4: Status of transmission capacity

Year	Transformation Capacity at 220 KV SSs (in MVA)	Transmission capacity in MU (MVA*0.9*365 days* 24 hours/1000)[13]	Total Energy Available at Bus Bar (total generation in the State plus imported) (in MU)	Percentage of transmission capacity over the total energy available
1	2	3	4	5 (3/4*100)
2012-13	22,050	1,73,842.20	77,301.13	225
2013-14	23,570	1,85,825.88	82,712.73	225
2014-15	25,210	1,98,755.64	87,197.75	228
2015-16	28,070	2,21,303.88	93,099.16	238
2016-17	30,700	2,42,038.80	1,06,061.73	228
2017-18	35,430	2,79,330.12	1,19,051.44	235

Source: Information provided by the Company

Thus, during last six years the transmission capacity of the Company ranged from 225 *per cent* to 238 *per cent* of the energy available in the State, which was adequate to transmit the available energy to the DISCOMs.

Audit Findings

The Audit findings are discussed in the succeeding paragraphs:

Substations completed and Work-in-Progress during 2013-14 to 2017-18

2.10 Out of 172 completed new SSs (capacity- 20,045 MVA) during 2013-14 to 2017-18, 62 new substations having capacity of 8,895 MVA were planned (approved by Transmission Works Committee) during 2013-14 to 2017-18. Out of 486 existing SSs which were augmented (capacity- 23638 MVA) during 2013-14 to 2017-18, 297 SSs were planned during 2013-14 to 2017-18. The remaining 110 new substations having capacity of 11,150 MVA and augmentation of 189 SSs having capacity of 9,721 MVA were planned before 2013-14.

The status of the construction of new SSs and augmentation of existing SSs planned during 2013-14 to 2017-18 is summarised in the Table-2.5.

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[11] The transmission capacity for transmission utility means the capacity of wheeling of energy from generating utility to distribution utility using its own transmission network.

[12] 220 KV SSs are intermediaries SSs which are connected from all the SSs (higher viz-a-viz. lower voltage SSs). Hence, the transformation capacity of 220 KV SSs have been taken for calculation of the transmission capacity of the Company.

[13] As per the standard formula for conversion of MVA into million units.

Table-2.5: Details of construction of new SSs and augmentation of existing SSs

Year	Details of new SSs				Details of augmentation of existing SSs			
	No. of SSs planned	Capacity of planned SSs (in MVA)	Status of planned SSs (in No.)		No. of SSs planned	Capacity planned (in MVA)	Status of SSs planned (in No.)	
			Completed	WIP			Completed	WIP
2013-14	14	1,440	12	2	38	2,083	38	NIL
2014-15	52	12,118	29	23	28	1,389	27	1
2015-16	34	7,556	20	14	142	6,626	135	7
2016-17	21	7,394	1	20	94	4,629	84	10
2017-18	34	6,512	NIL	34	81	5,080	13	68
	155	**35,020**	**62**	**93**	**383**	**19,807**	**297**	**86**

Source: Information provided by the Company

The above depicts that out of 155 SSs planned (Sanctioned Cost ₹ 9,954.31 crore) for construction during the period of audit, only 62 SSs (Sanctioned Cost ₹ 2,655.79 crore) could be completed. Construction of 93 SSs (Sanctioned Cost ₹ 72,98.52 crore) was in progress (March 2018). Similarly, out of 383 SSs planned for augmentation (Sanctioned Cost ₹1,940.31 crore), 297 SSs were augmented (Sanctioned Cost ₹ 1,425.16 crore) and augmentation of 86 SSs (Sanctioned Cost ₹ 515.15 crore) was in progress.

Out of 179 SSs (New SSs-93 and Augmentation of existing SSs-86) which were in Work in Progress (WIP), 47 SSs (New SSs-39 and Augmentation of existing SSs-8) which were planned upto 2015-16, could not be completed even after a lapse of two years. Capacity wise detailed position of the SSs planned, SSs completed and those which were work-in-progress as on 31 March 2018 has been given in ***Appendix-2.3.*** Reasons for delay in their completion are discussed in the succeeding paragraphs no. 2.22, 2.23, 2.24 and 2.25.

Project planning

2.11 Planning wing of the Company, headed by the Chief Engineer (Planning), is the nodal wing for the formal planning and approval for the transmission projects. The Detailed Project Reports (DPRs) of new projects for the construction of new substations/augmentation of the existing substations (SSs) are sent by field units to the Director (Operations). After initial scrutiny at the Director (Operations) level, the projects are put up by Planning wing to Transmission Works Committee (TWC) for approval.

2.12 As required by the Electricity Act[14], 2003, the Company prepares Five Year Plans (FYP) for capacity additions and obtains the approval of the same from the Central Electricity Authority (CEA). Though the 11th and 13th FYPs were approved by the CEA, the approval of 12th FYP (2012-13 to 2016-17) was not accorded by the CEA except for the power evacuation projects. During 2012-13 to 2016-17 the Company took up the Grid Strengthening Transmission projects in the Company's TWC on a case to case basis. Further, the Company did obtain the approval of the CEA separately in respect of 400 KV and 765 KV SSs constructed during 12th FYP period.

[14] As per Section-39 of the Electricity Act, 2003 read with the 'Approved Procedure for Grant of the Connectivity to the Intra State Transmission System' of UPERC, the State Transmission Utility are required to prepare the intra state transmission plan in coordination with the CEA.

2.13 The Company did not have any Project Planning and Management Manual (Manual) to guide its planning process. Absence of the Manual led to adhoc decision making in planning and execution of various projects as discussed in the subsequent paragraphs no. 2.16, 2.17 and 2.18.

The Company stated (May 2019) that as it is following Manual of Transmission Planning Criteria (MTPC), 2013 of CEA, hence it was not desirable to frame its own planning manual. The fact remains that lack of any laid down policy or procedure resulted in a situation where Company's policy in planning new Projects is not documented. In the Exit Conference, the Principal Secretary, Energy Department, GoUP directed the Company to prepare the Manual and get the same approved by the Board.

Deficient planning in construction of new substations

2.14 For construction of the SSs, the Company was required to assess the anticipated load growth on a realistic basis by confirming the same with the user utility i.e. the DISCOMs instead of assessing the growth in the connected load on its own, prior to taking up the project.

Audit noticed that due to deficient planning, the Company constructed SSs without carrying out a proper load assessment. The findings of Audit in respect of the units audited on a test check are discussed below:

(i) SSs became overloaded within a year of commissioning

The MTPC provided that the maximum load of any SS should not exceed 80 *per cent* of the installed capacity. Thus, in view of the provisions of MTPC, the existing transmission projects need to be reviewed on a continuous basis, and additional system planned to augment the system, and also provide for redundancy wherever required.

Out of 89 new SSs test checked, the Company constructed 11 SSs during the period from 2013-14 to 2017-18 without realistically assessing the future load growth. The assessment of future load growth was not supported by concrete data. Nor was it confirmed by the DISCOMs. Hence, these SSs were overloaded within a year of their commissioning/augmentation as detailed in ***Appendix-2.4.*** The position of these SSs is summarised in the Table 2.6 below:

Table-2.6: Details of new SSs overloaded within a year of construction

Capacity of SSs	No. of cases	Sanctioned Cost (₹ in crore)	Percentage of connected load against 80 *per cent* of the installed capacity
220 KV	2	142.12	113 to 125
132 KV	9	177.42	102 to 281

Source: Information provided by the Company

It is evident from the above that the percentage of connected load ranged between 102 to 281 *per cent* within a year of commissioning of these SSs, which indicated improper planning on part of the Company. Following case analysed by Audit brings out the lapses in planning:

Audit noticed that the construction of 220 KV SS, Neebkarori, Farrukhabad (Electricity Transmission Division-Fatehgarh) was approved (January 2015) by the TWC at an estimated cost of ₹ 107.13 crore. The proposed capacity of the SS was 200 MVA (2*100 MVA). Audit noticed that at the time, the proposal for the 220 KV new SS was considered and approved

(January 2015), the capacity of 132 KV SSs to be fed from the proposed SS was already 223 MVA[15]. This was overlooked by the TWC indicating poor groundwork and planning.

The Company stated (March 2019) that commissioning for transmission elements generally takes three to five years. It also informed that adequate additional capacity has been approved for the substations. The fact that the above mentioned substations became overloaded within a year of its construction/augmentation, indicates that the TWC had failed to assess the demand projections realistically.

(ii) Other overloaded SSs

Audit further noticed that connected load of 29 SSs of 132 KV and five SSs of 220 KV exceeded 80 *per cent* of the installed capacity as detailed in ***Appendix-2.5***. The position of the overloaded SSs is summarised in the Table-2.7 below.

Table-2.7: Details of SSs overloaded against 80 *per cent* of the installed capacity

Capacity of SSs	Total No. of SSs overloaded	No. of SSs overloaded over and above 80 *per cent* of the installed capacity		
		25 to 50 *per cent*	50 to 100 *per cent*	100 *per cent* & Above
132 KV SSs	29	14	11	4
220 KV SSs	5	3	2	NIL
Total	**34**	**17**	**13**	**4**

Source: Information provided by the Company

Despite the overloading of the above mentioned 34 SSs, the Company failed to review the system and to plan for the augmentation of these SSs or to explore the possibility of construction of new SS to alleviate the situation. The failure in augmentation of the overloaded SSs led to load shedding and poor quality of voltage. The stability of the transmission protection system and grid discipline were also put at risk.

The Company stated (March 2019) that connected load is not the criteria for transmission planning. Overloading of 220 KV and 132 KV SSs are instead seen in real time. However, new SSs/increasing capacity of some of the SSs were planned to avoid any overloading. The reply is not acceptable as MTPC provides for considering connected load and not the real time overloading as a factor in transmission planning. The fact remains that the SSs were overloaded.

(iii) Creation of the idle capacity in the SSs

(a) 132 KV SSs need to be planned as per the requirement projected by the DISCOMs since these SSs are directly connected with 33 KV SSs of the distribution networks of the DISCOMs. It is therefore necessary that the capacity of the 132 KV new SSs should be proposed as per the requirements of the DISCOMs. Out of 89 new SSs test checked, audit noticed that the Company constructed three SSs of 132 KV with a sanctioned cost of ₹ 90 crore at much higher capacity than the requirement. This resulted in creation of idle capacity in the concerned SSs which could not be utilised even after two years of their commissioning as shown in the Table-2.8.

[15] 132 KV Kannauj-103 MVA, Kaimganj-40 MVA and Neebkarori-80 MVA.

Table-2.8: Statement showing creation of idle capacity of SSs

Sl. No.	Name of Division	Name of SS	Capacity (in MVA)	Expected Load at the time of approval of TWC (in MVA)	Connected load (in MVA)	Date of Commissioning (DOC)	Sanctioned Cost (₹ in crore)
1	ETD-II, Prayagraj	132 KV, Salaya Khurd	80	25	20	28.10.2016	42.00
2	ETD-I, Varanasi	132 KV, Kursato	80	35	20	23.11.2016	31.00
3	ETD, Bahraich	132 KV, Begampur	80	35	30	17.01.2017	17.00
Total			**240**	**95**	**70**		**90.00**

Source: Information provided by the Company

(b) The construction of 132 KV SS by Transmission Company should be synchronised with availability/construction of downstream 33 KV SS by the concerned DISCOMs. Audit, however, noticed that two SSs[16] of 132 KV of 80 MVA capacity were commissioned in December 2016 and June 2017 respectively at a total cost of ₹ 45.43 crore but these could not yet be connected due to delay in construction of respective 33 KV SSs by the DISCOM[17]. As a result, these SSs could not be put to commercial use as no load could be connected on these SSs till date (November 2018). This not only resulted in blockade of funds of ₹ 45.43 crore but also led to a loss of wheeling charges of ₹ 9.59 crore[18] in one year alone. This indicates lack of synchronisation between the Transmission Utility and the DISCOM.

The Company stated (May 2019) that the transmission SSs were created as per the existing load, DISCOM load assessment and their capacity of SSs to be connected as per DPR. Hence, there was no failure at the Company level. The fact remains that the above mentioned SSs were either overloaded or had idle capacity which indicated, flawed planning process.

(iv) Installed capacity of the SSs beyond the maximum permissible limit

The Manual on Transmission Planning Criteria, 2013 (MTPC) of the Central Electricity Authority stipulates the permissible maximum capacity for different SSs i.e., 320 MVA for 220 KV and 150 MVA for 132 KV SSs.

Audit noticed in the selected units that in two 220 KV SSs[19], the permissible levels of maximum capacity was exceeded during the period from December 2016 to May 2019.

Similar observation was also made at the para no. 2.1.28 in the Performance Audit of UPPTCL, featured in Audit Report of the Comptroller and Auditor General of India (Public Sector Undertakings) for the year ended 31 March 2012, Government of Uttar Pradesh. However, the irregularity still persists.

[16] Rani Ki Sarai and Bindawal Jairajpur of Azamgarh District each of the capacity of 40 MVA at the cost of ₹ 31.50 crore and ₹ 13.93 crore respectively.

[17] Purvanchal Vidyut Vitran Nigam Limited.

[18] 80 MVA* 80 *per cent* *0.9* 24 hrs *365 days *₹ 0.19/1000 = ₹ 9.59 crore (wheeling charges at the rate of ₹ 0.19 per unit).

[19] 220 KV SSs: Rewa road (520 MVA) and Barahuwa (520 MVA).

Recommendation*: *The Company should have a Project Planning and Management Manual in place. It should have a long term planning for the transmission projects with due consideration of future requirements.

Contract and Procurement Management

2.15 As per the practice adopted, the Company first assesses the quantity of the major items required for all approved projects and invites tenders separately for each major item. Further, due to large quantities of purchases, the Company generally distributed the tendered quantity among the qualified bidders by making counter offers to them at the approved lowest rate of Corporate Store Purchase Committee (CSPC).

The Company did not lay down any purchase policy/procurement manual nor did it prepare any periodic procurement plan. Against the requirement of material for new projects (SSs), augmentation of existing SSs and Operation & Maintenance (O&M) works, the Company procured the same in an ad-hoc manner through open tenders. The deficiencies in respect of contract and procurement management are discussed in the succeeding paragraphs:

Procurement of material without synchronisation with erection activities

2.16 To minimise the cost of transmission system, the supplies of materials should be received from suppliers at the time of actual requirements at the site and should also be synchronised with the erection activities. Otherwise, the material supplied by the suppliers would remain lying idle leading to blockage of funds with associated holding costs. Since, the Company avails 70 *per cent* of the project cost in form of loans from REC/PFC at the prevailing rates (ranging from 10.50 *per cent* to 12.5 *per cent*) of interest, the associated holding costs are substantial.

Audit noticed that the Company, while procuring the major materials i.e. transformers and conductor, did not take into account the actual site requirements. Further, procurements were not synchronised with the erection activities. In 32 cases in 14 field units[20] out of 42 test checked units, audit noticed that supply of material valued at ₹ 85.26 crore was received by the field units much before the projected utilisation of these materials during the period from 2013-14 to 2017-18. In 16 cases, the material was not put to use for the period up to six months; in five cases, the material was not used for a period from six to twelve months while in 11 cases; the material was lying unused for a period of more than 12 months before its utilisation. As a result, the material was not put to use for a period ranging between one month to thirty-eight months (after allowing three months as lead period) as detailed in ***Appendix-2.6***. The payments for these materials were made by the Company to the supplier firms immediately after receipt of the supply.

[20] Electricity Transmission Division (ETD)-Mau; ETD-Gorakhpur; ETD-Aligarh; ETD-II Varanasi; ETD-II Agra; ETD-Azamgarh; ETD-Behraich; ETD-Banda; ETD-Faizabad; ETD-I Lucknow; ETD-II Allahabad; ETD-II Kanpur; ETD-III Varanasi and ETD-Sitapur.

Procurements made without ensuring synchronisation with erection activities led to an avoidable burden of payment of interest of ₹ 5.45 crore[21]. There was a strong possibility that the quality of material procured but lying idle could also deteriorate due to passage of time.

The Company stated (May 2019) that in some cases, a mismatch between supply of materials and erection occurs due to some unforeseen reasons, and if it is felt that the allotted material cannot be used for long, diversion of the same to some other projects is considered. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as the major categories of material i.e. Transformers and Conductors valued at ₹ 85.26 crore were lying unutilised for periods ranging from one month to thirty eight months, indicating that these were not redeployed.

Procurement of transformers from Turnkey Contractors (TKCs)

2.17 Best Practices in Transmission Systems (BPITS) notified by MoP, GoI stipulated procurement practices of material and works for substations and transmission lines. Para 5 (i) of BPITS stipulated that SSs may be packaged for turnkey execution except that transformer/reactors may be procured separately and erected by turnkey contractor.

Audit noticed that during 2013-14 to 2017-18, in case of 116 SSs contracted out on turnkey basis, the Company awarded 102 SSs (88 *per cent*) excluding the supply of transformers while in case of 14 SSs (12 *per cent*) it awarded construction work including the supply of transformers. On further scrutiny of these 14 SSs awarded on turnkey basis (including the supply of transformers), audit noticed the following:

(i) In four cases of construction of 220 KV SSs, the cost of transformers supplied by the turnkey contractors were higher by 24 *per cent* to 68 *per cent* in comparison to the transformers of the same capacity which were purchased directly by the Company during the same period. This resulted into loss of ₹ 15.64 crore as detailed in the ***Appendix-2.7.***

The Company stated (May 2019) that rates in both procurements cannot be compared as the payment terms are different in both the procurements. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as the Company was well aware of the rate of transformers before finalisation of the turnkey contracts and examination by Audit revealed that the transformers supplied by the turnkey contractors were very expensive (24 *per cent* to 68 *per cent*) than the transformers of the same capacity which were purchased directly by the Company. This huge variation in the price cannot be justified on the grounds of different terms of payment.

(ii) In four cases, a payment of ₹ 8.56 crore was made to the TKCs for supply of transformers 28 months to 41 months before their actual erection leading to loss of interest of ₹ 1.73 crore as detailed in Table-2.9.

[21] Calculated at the rate of 10.50 *per cent* being the lowest rate for 70 *per cent* of the value of the material till November 2018 after allowing three months' period as lead time for erection.

Table-2.9: Details of payment made to TKCs for procurement of transformers much before erection

Name of TKCs/Project	Number and Capacity of transformers	Date of Supply/Erection	Value (₹ in crore)	Payment made to the TKCs (70 *per cent* of the value of supply)	Period for which the transformers were lying unutilised after leaving three months as lead period (in Months)	Loss of interest ₹ in crore (calculated at the rate of 10.5 *per cent* on 70 *per cent*[22] of the payment made to TKCs)
M/s CGL/220 KV Sirathu	160 MVA	October 2011/June 2014	4.70	3.29	28	0.56
M/s CGL/220 KV Sirathu	160 MVA	October 2011/July 2015	4.70	3.29	41	0.83
M/s PME/132 KV Sarai Akil	20 MVA	November 2012/July 2015	1.42	0.99	28	0.17
M/s PME/132 KV Sarai Akil	20 MVA	November 2012/July 2015	1.42	0.99	28	0.17
Total			**12.24**	**8.56**		**1.73**

Source: Information provided by the Company

The Company stated (May 2019) that due to delay in construction of SSs, erection of transformers was delayed. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as these projects were awarded on a turnkey basis, hence, the TKCs (contractor) were well aware of the delay, if any, of the project. Hence, the TKCs should have synchronised the supply of the transformers with the actual requirement at the site.

Thus, the Company followed the recommendation of BPITS in 102 cases (88 *per cent*) but deviated in 14 cases (12 *per cent*) without any reason on records which resulted in avoidable extra expenditure of ₹ 17.37 crore due to inclusion of supply of transformers in turnkey contracts.

The Company stated (May 2019) that it is not mandatory to exclude transformers in turnkey contracts and therefore the same were included to avoid delays in some turnkey contracts. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as the Company followed BPITS in 102 cases (88 per cent) and there was no delay in completion of these projects due to delayed supply of transformers.

Failure to enforce vital clause of contract

2.18 As per clause contained in the "Instructions to the tenderers", if the quantity of the equipment ordered remains unsupplied within scheduled delivery period and upto to the finalisation of the new tender and price of the equipment falls in new tender, then the contractor will reduce the price of the equipment to the level of new tender price. This vital clause of contract should be enforced for securing the financial interests of the Company. However, this clause was not observed as brought out in the following paragraph.

For procurement of transformers, the Company invited various tenders during the period 2013-14 to 2017-18. Audit noticed that during the currency of the earlier tenders, the rates finalised in the subsequent tenders were found lower than the rates of earlier tenders. In order to avail the benefit of fall in price, the Company should have enforced the above mentioned clause of the contract by insisting that the balance quantity of the earlier tender be supplied at the rates

[22] Being the portion of loan in the total cost of the project.

in the subsequent tenders. Failure to do so led to avoidable extra expenditure of ₹ 2.77 crore as detailed in Table-2.10 below:

Table-2.10: Details of Transformers procured at the rate of earlier tender instead of subsequent tender

Capacity of transformers	Earlier tender no.	Tendered qty. (No.)	Rate ₹ in crore (per no.)	Qty. balance to be procured against earlier tender	Subsequent tender no.	Tendered qty. (No.)	Rate ₹ in crore (per no)	Difference (₹ in crore)	Extra expenditure (₹ in crore)
63 MVA	ESD/377	22	1.87	7	ESD/403	35	1.79	0.08	0.56
63 MVA	ESD/403	35	1.79	11	ESD/426	42	1.72	0.07	0.77
40 MVA	ESD/376	28	1.51	12	ESD/430	25	1.39	0.12	1.44
Total				**30**					**2.77**

Source: Information provided by the Company

Moreover, in all the cases, the firms in both the earlier and subsequent tenders were the same. Similar observation was also made in ***Paragraph 2.1.18*** in the Performance Audit of UPPTCL, featured in Audit Report of the Comptroller and Auditor General of India (Public Sector Undertakings) for the year ended 31 March 2012, Government of Uttar Pradesh.

The Government/Company stated (September 2019) that in case of 23 transformers final inspection was offered by the firms after the finalisation of the next tender. Therefore, an amount of ₹ 2.09 crore is required to be recovered from the concerned firms. Necessary action will be taken to recover the same. The fact remains that recovery is yet to be done.

Undue favour to contractor by violating clause of contract

2.19 The Company awarded (November 2010) tender for the work of Supply, Erection, Testing & Commissioning of 400 KV DC line in two packages[23] to a contractor for total contracted value of ₹ 90.96 crore and ₹ 205.94 crore respectively. However, due to poor progress and on account of reluctance of the contractor, the agreement was terminated (May 2014) by the Company.

Audit noticed that clause 19.1 of Special Terms and Condition of the contract provided that the contractor was required to furnish a Performance Bank Guarantee (PBG) for 10 *per cent* of the value of the contract for correct quality and satisfactory performance of the works which shall be valid after 12 months from the date of taking over of the plant. Thus, the contractor was required to submit a PBG of ₹ 29.69 crore i.e. 10 *per cent* of total cost (₹ 90.96 crore + ₹ 205.94 crore).

Audit further noticed that instead of getting the full 10 *per cent* bank guarantee from the contractor as PBG, the Transmission Design Circle deducted the PBG at the rate of 10 *per cent* from the running bills of the contractor without any reason on record. As a result, at the time of termination of agreement, only ₹ 18.37 crore was available for forfeiture against the required amount of ₹ 29.69 crore.

Thus, the contractor was extended an undue benefit of ₹ 11.32 crore (₹ 29.69 crore - ₹ 18.37 crore).

[23] 400 KV DC Banda-Orai for 100 KM under package-1 and 400 KV DC Banda-Allahabad for 200 KM under package-2.

The Government/Company accepted (September 2019) the audit observation and stated that now PBG is being deposited within 30 days of the issuance of the LOI without which no bill for the payment is processed. Although the observation is accepted but the reply is silent about recovery of loss of ₹ 11.32 crore. Moreover, the reply also does not address the action taken against the officials who allowed the relaxation to the contractor in deposit of the PBG upfront in violation of the provision of the agreement.

Non-lifting/return of transformers damaged under guarantee period

2.20 As per agreement made with the supplier of the transformers, the supplied transformers were covered under a guarantee of 60 months from the date of energisation or 66 months from the date of supply of the transformers, whichever is earlier. Audit noticed that 15 transformers of 63 MVA valued at ₹ 24.75 crore which were damaged under guarantee period of 60/66 months, were not lifted by the supplier despite passage of one year to five years. Now the transformers have been categorised as defective. Further, one 132/33 KV transformer of 63 MVA damaged under guarantee period in Electricity Transmission Division (ETD), Banda was lifted by the firm (October 2017) but was not returned after repairs till date (November 2018).

The Company stated (May 2019) that a bill amounting to ₹ 5.20 crore has been withheld, ₹ 1.80 crore Bank Guarantee (BG) had been encashed and BG amounting to ₹ 13.64 crore was available with the Company and repairing of these damaged transformer shall be done from this amount. The Government also endorsed (September 2019) the reply of the Company. The fact remains that the transformers were not got repaired till date and BG has not been encashed. Moreover, the amount available with the Company is not adequate to cover the damage loss. Thus, the failure to take due cognisance of the contract terms deprived the Company to recover the damage loss adequately.

Recommendations: The Company should have a Purchase Policy/ Procurement Manual in place. It should have a procurement plan in synchronisation with the execution of the projects. It should put in place a mechanism to ensure the strict compliance of provisions of the contracts.

Award and execution of project

2.21 A transmission project consists of three components viz. the substation, the feeder lines of SS and outgoing lines to feed other ransmission/distribution SSs. The Company designed packages for implementation of transmission projects and allotted these to different turnkey contractors (TKCs) for execution of works of new SS. Apart from this, new SSs were also constructed departmentally. The work of augmentation of existing SSs has been executed departmentally.

For award of the projects, the Company invited open tenders and issued letter of intents (LOI) to the turnkey contractors/firms (L-1 bidder) after approval of the Corporate Store Purchase Committee (CSPC). After the issuance of LOI, the works were got executed by the concerned Electricity Transmission Divisions of the Company.

The deficiencies noticed in the award of projects and their execution are discussed below:

Delay in completion of projects

2.22 For the purpose of project implementation and execution, the Task Force constituted in February, 2005 by the Central Electricity Authority (CEA), Ministry of Power, Government of India had suggested that major reduction in project implementation schedule is possible by undertaking various preparatory activities (viz. surveys, design & testing, processing for forest & other statutory clearances, tendering activities etc.) in advance/parallel to project appraisal & approval phase and go ahead with construction activities once Transmission Line Project sanction/approval is received to complete within the targeted period of 24 months. In line with the suggestions of the Task Force, the Company adopted the target of project completion in the time schedule of 12 months, 18 months and 24 months from the date of award of work for 132 KV, 220 KV and 400 KV SSs respectively. However, the Company had not fixed any time schedule for the completion of the work of augmentation of the existing SSs. Therefore, Audit considered the targeted time schedule in such cases as six months.

The summarised position of delay in 72 out of 100 new SSs planned during 2013-14 to 2015-16[24] and 93 SSs out of augmentation of 302 SSs planned during 2013-14 to 2016-17[25] has been depicted in Table-2.11:

Table-2.11: Details showing the position of delay during 2013-14 to 2017-18

(in months)

Capacity of SSs	No. of cases	Total Delay in months beyond 24/6 months from the date of TWC for New SSs/Augmentation of SSs	Delay at different stages		
			Delay in award of work (leaving two/one months from the date of TWC for new SSs/Augmentation of SSs)/ (No. of cases)	Delay in handing over of clear site (leaving one month from the date of award)/ (No. of cases)	Delay in execution by the contractor (beyond scheduled date of completion as per agreement)/ (No. of cases)
Details regarding New SSs					
132 KV	48	1 to 35	3 to 45/(28)	1 to 21/(16)	2 to 21/(20)
220 KV	22	1 to 37	2 to 21/(19)	1 to 9/(12)	4 to 22/(7)
400 KV	2	6 to 20	10 and 14/(2)	19 and 36/(2)	Both the works are still WIP
Total	**72**				
Details regarding Augmentation of SSs					
132 KV	56	7 to 28	1 to 28/(49)	-	1 to 17/(39)
220 KV	31	8 to 33	5 to 30/(24)	-	1 to 19 (20)
400 KV	6	8 to 23	13 to 16/(4)	-	3 to 11/(5)
Total	**93**				
Grand Total	**165**				

Source: Information provided by the Company

There was a delay of one to thirty seven months in construction/augmentation of SSs awarded during the audit period. The main reasons for the delay, as noticed by Audit, were non-execution of parallel activities, delay in identification and acquisition of land, negligence in the execution of civil work and poor performance of the firms. Due to delay in construction of new SSs/augmentation of existing SSs, the intended benefits of improving the

[24] Considering the targeted period of 24 months for completion of new SSs from the date of approval of TWC, the projects planned till 2015-16 have been analysed for delay.

[25] Considering the targeted period of six months for completion of augmentation of SSs from the date of approval of TWC, the projects planned till 2016-17 have been analysed for delay.

supply voltage, reducing the load on existing SSs was also delayed. It also indicates that review mechanism is not effective.

The Company stated (May 2019) that the main reasons for delay in award of work after the approval of TWC were obtaining approval from Board of Directors, Appraisal Committee, Energy Task Force and the Cabinet. Regarding delay in execution of the contract, it was stated sometimes delays occurred due to reasons beyond the control and shifting of lines passing through the substation land. The Government also endorsed (September 2019) the reply of the Company. The fact remains that delays in awarding of the contracts after the TWC approval ranged up to 45 months. Similarly, delays in execution ranged up to 22 months. This indicates that compliance with the recommendation of the Audit for timely completion of the planned projects as given in the Performance Audit of UPPTCL, featured in Audit Report of the Comptroller and Auditor General of India (Public Sector Undertakings) for the year ended 31 March 2012, Government of Uttar Pradesh has not been acted upon.

A few cases of inordinate delay in respect of construction of SSs and lines (started/executed during our audit period) are discussed below:

132 KV GI substation, Hanuman Setu, Lucknow

2.23 The TWC approved (March 2011) the construction of 2 x 40 MVA (capacity enhanced to 2 x 63 MVA in July 2012) 132 KV Gas Insulated substation (GIS) along with associated 132 KV underground lines. However, the clear site could be handed over to the contractor only in July 2017. The new firm started the work of construction from July 2017 which is still in progress (May 2019). For feeding of the SS, underground cable work of 93 km (out of total 107.90 km) was completed in October 2012 at a cost of ₹ 134.66 crore.

This SS was planned (March 2011) to feed five SSs[26] of 33/11 KV. However, even after lapse of more than seven years, the SS is still not completed and the intended 33/11 KV SSs were being fed from three[27] other 132 KV SSs. Moreover, the Company did not report any unfavourable supply (quality and quantity) of power due to non-completion of the aforementioned 132 KV SS. Notwithstanding the above fact, the construction of the SS is being carried out even after more than seven years of the approval of TWC without any mechanism of the review of the current requirement by the TWC.

The Company stated (May 2019) that the construction work of 132 KV Hanuman Setu is in progress and is expected to completed by June 2019. The Government also endorsed (September 2019) the reply of the Company.

Construction 220 KV SS, Bhelupur, Varanasi

2.24 For smooth and proper power supply in Varanasi city, TWC approved (September 2007) 220 KV SS, Bhelupur and its associated lines at the abandoned land of old power house of Bhelupur at an estimated cost of ₹ 214.93 crore. The SS was to be constructed departmentally with feeder line of five KM underground 220 KV Cable (from Samne Ghat to Bhelupur SS) and 220 KV Sahupuri-Samne Ghat line and was scheduled for completion in August 2009. The work of 220 KV underground cabling work was completed in March 2013 with construction cost of ₹ 67.57 crore. For completion of

[26] Ekka Stand, Lucknow University, Residency, Darul Shafa and Hanuman Setu.
[27] Mehtab Bag, Martinpurwa and Gomti Nagar.

220 KV Sahupuri-Bhelupur line (Feeder line), the Company failed to obtain necessary permission from MoEF, GoI timely due to which the SS could be energised in May 2016 after the lapse of seven years from the scheduled date completion period. Further, an amount of ₹ 67.57 crore incurred on 220 KV underground cable work also remained blocked from March 2013 to April 2016.

This SS was planned (September 2007) to feed eight SSs[28] of 33/11 KV. However, the SS could not be energised for nine years from the approval of TWC and the intended 33/11 KV SSs were being fed from three[29] other 132 KV SSs. Due to delayed energisation of the SS, the supply voltage of the concerned areas remained affected. Notwithstanding with the fact of huge delay of seven years, no approval of TWC for the current requirement was obtained to revalidate the justification of construction of the SS.

The Company stated (May 2019) that the delay occurred as many clearances were required from different departments. It further stated that TWC regularly reviews approved works and cancels/modifies them accordingly as per requirement. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as TWC reviews only those cases in which modifications are required based upon proposals sent by the field offices for such modifications.

400 KV GIS, Hardoi Road, Lucknow

2.25 In order to strengthen power management in the city of Lucknow, TWC approved (July 2014) construction of new 400 KV SS, Hardoi Road, Lucknow and associated lines at an estimated cost of ₹ 245 crore. The objective of the proposed SS was to cater the transformation capacity of 33 KV SSs of Lucknow Electricity Supply Administration (LESA) of 2,200 MVA by March 2015. The existing transformation capacity for the area including the augmentation plan of the Company was 2,186 MVA.

For the construction of SS, the Company issued (January 2017) Letter of Intent (LOI) to a firm for a contracted value of ₹ 176.63 crore. However, the Company could finalise the clear site for the SS from the district administration in May 2017 and could hand over the site to the firm after the completion of civil works in September 2018 i.e. four years after the approval of the TWC.

Thus, it is evident from the above that although the construction of 400 KV SS was proposed to cater the electricity demand of the city of Lucknow by the year 2015, yet the construction of SS commenced after three years (September 2018) from the year of anticipated demand.

The Company stated (May 2019) that the delay in finalising the land was due to delay in availability of suitable land from the district administration and necessary permissions from the Mining Department for soil filling. The Government also endorsed (September 2019) the reply of the Company. Thus, the very purpose of strengthening of the power management of the city of Lucknow was not fulfilled even after three years.

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[28] Bhadaini, Sankuldhara, Beniya Bag, Bhelupur, Kabir Nagar, Godowlia, Sigra and Vidyapeeth.

[29] Manduadeeh, Cantt and Sarnath.

Due to inability of the Company in providing clear site, getting timely clearances from MoEF, GoI, delays in issue of LOI and delayed start of civil works in case of above SSs, there were time over runs ranging from two years to seven years (up to May 2019). These delays also led to blockage of totalling funds of ₹ 202.23 crore (₹ 134.66 crore in underground cable work of 132 KV Hanuman Setu SS and ₹ 67.57 crore in underground cable work of 220 KV Bhelupur SS) along with avoidable burden of interest of ₹ 109.67 crore[30] on the Company. This indicates that the Company failed to review inordinately delayed projects or address the constraints delaying these projects.

SSs completed but lines not completed and vice-versa

2.26 A transmission project consists of three components viz. the substation, the feeder lines of SS and outgoing lines to feed other transmission/ distribution SSs. The delay in completion of any component of the project leads to non-utilisation of the entire transmission project and also results in blockade of funds expended on the unutilised components. Thus, the construction activities of these three components should be synchronised in such a way that the entire component is completed simultaneously.

Audit noticed that in case of four transmission projects, SSs and lines valuing ₹ 200.08 crore were completed but related components of these SSs and lines were still incomplete as detailed in the Table-2.12 below:

Table-2.12: Details of completed and not completed components of the SSs and lines as of November 2018

Sl. No.	Name of completed component	Date of completion	Cost of completed component (₹ in crore)	Name of incomplete component	Period the component was unutilised till November 2018 (in months)	Loss of interest (₹ in crore calculated at the rate of 10.5 *per cent* on 70 *per cent* of the cost for unutilised period)
1	220 KV SS Bhadaura, Ghazipur	April 2018	47.94	220 KV Sarnath-Sahupuri feeder Line	9	2.64
2	220 KV SS Awas Vikas Lucknow	April 2018	45.42	Feeder line	9	Deposit work
3	132 KV Sangipur-Lalganj downward line	May 2017	4.01	220 KV SS Sangipur and its feeder line	18	0.44
4	400 KV DC Meja-Rewa road feeder line	January 2018	102.71	400/132 Masauli Allahabad SS	10	6.29
Total			**200.08**			**9.37**

Source: Information provided by the Company

Completed components of four projects valuing ₹ 200.08 crore were lying unutilised for the period ranging from nine months to eighteen months. Due to non-utilisation of the completed components, funds of ₹ 200.08 crore remained blocked which also led to avoidable payment of interest of ₹ 9.37 crore. Besides, due to delay/non construction of the related

[30] ₹ 84.84 crore in case of Hanuman Setu SS (calculated at the rate of 10.50 *per cent* on ₹ 134.66 crore for six years) and ₹ 24.83 crore in case of Bhelupur SS (calculated at the rate of 10.5 *per cent* on ₹ 67.57 crore for three years six months).

components, the intended benefits of improving the supply voltage and reducing the load on existing SSs is also delayed.

The Company accepted the fact and stated (May 2019) that the execution of related components was still in progress due to various reasons and efforts are being made to complete them. The Government also endorsed (September 2019) the reply of the Company.

Deficiency in award and execution of work of power evacuation system

2.27 The Report of the Committee for the Best Practices in Transmission System (BPITS) prepared by the CEA, MoP, Government of India recommended that long term transmission plans should be evolved for evacuation of power and also for minimisation of transmission cost and loss.

For evacuation of power from three units (3 x 660 MW) of Lalitpur Thermal Power Project (LTPP), scheduled to be commissioned in December 2015, June 2016 and December 2016 respectively, one 765 KV SS, two 400 KV SSs and associated lines (Transmission system) were to be constructed by the Company. The Company executed (04 March 2014) an agreement with Power Grid Corporation of India Limited (PGCIL) for the construction of transmission system under "Element-1"[31] and "Element-2"[32] at an estimated cost of ₹ 2,236.83 crore and consultancy charge of ₹ 279.61 crore with a completion schedule of 27 months and 33 months respectively on the grounds of ensuring timely completion and on account of insufficient staff and experience with the Company. Audit noticed the following deficiency in award and execution of the contract with PGCIL:

2.27.1 Non provision of liquidated damages

Paragraph 204 (xvi) of the General Financial Rules provides that all contracts shall contain a provision for recovery of liquidated damages for defaults on the part of the contractor. As per clause 10.1 of the agreement, the completion schedule of transmission system of LTPP was to be 27 months for "Element-1" i.e. May 2016 and 33 months for "Element-2" i.e. November 2016.

Audit noticed that the Company, while executing the agreements with all other contractors, incorporated the appropriate clause of liquidated damages (LD) which stipulated that if the contractor shall fail in the due performance of his contract within time fixed by the contract or any extension thereof, the contractor agrees to accept a reduction of the contract price by half *per cent* per week subject to a maximum of 10 *per cent* reckoned on the contract value. However, the Company did not incorporate the relevant clause of LD in the agreement executed with PGCIL. The Company could, therefore, not deduct the LD despite delayed completion of all the works of "Element-1 and 2" (which were not extended) as detailed in Table-2.13.

[31] Element-1: 765 KV SS, 765 KV line-Circuit-I, 400 KV SSs and 400 KV line- circuit-I.
[32] Element-2: 765 KV line-Circuit-II and 400 KV lines circuit-II.

Table-2.13: Details of liquidated damages to be deducted (Element wise)

Element	Name of work	Amount charged by PGCIL (₹ in crore)	Schedule date of completion	Actual date of completion	Delay (in weeks)	Penalty to be deducted at the rate 0.5 *per cent* per week (₹ in crore)
Element-1	765 KV circuit-I	741.50	May 2016	October 2016	16	59.32
Element-1	400 KV Lines	458.86	May 2016	October 2017	64	45.88
Element-1	765/400 KV SS, Agra	372.95	May 2016	September 2016	12	22.38
Element-1	400/220 KV SS, Mathura	117.36	May 2016	April 2017	40	11.74
Element-1	400/132 KV GIS SS, Agra	167.67	May 2016	July 2017	48	16.77
Element-2	765 KV circuit-II	597.66	November 2016	April 2017	20	59.76
Total		**2,456.00**				**215.85**

Source: Information provided by the Company

Due to deficiencies in the agreement, the Company failed to deduct LD of ₹ 215.85 crore against the executed work of ₹ 2,456.00 crore by PGCIL despite delays ranging from 12 weeks to 64 weeks in the completion of works.

The Company stated (May 2019) that PGCIL has kept the provision of LD deduction in contracts awarded by it to various firms and deducted LD amount shall be transferred to UPPTCL at the time of final reconciliation of accounts. The Government also endorsed (September 2019) the reply of the Company. The reply of the Company is general and does not specify the amount of LD received so far against ₹ 215.85 crore LD due for the work which has since been completed in October 2017.

Misappropriation of Material by the Contractor

2.28 As per the practice prevailing in the Company, the work of construction of lines of various capacities are awarded to the Turnkey Contractors (TKCs) along with the supply of tower parts, nuts & bolts, and associated materials. The materials supplied by the TKCs are received by the respective divisions and subsequently issued to the TKCs for use in erection works. However, conductor, earth wire and insulators are to be supplied to the TKCs by the Company itself which procures these components directly from the manufacturers. Since the TKCs were supplied with almost all the material at the start of the work without any synchronisation with the progress of the work and without any bank guarantee for the value of material, the Company's financial stake is at risk in the instances of premature termination of the agreements.

Two cases of misappropriation of the material by the TKCs following termination of agreement are discussed below:

(i) The Company executed (April 2011) an agreement with M/s Hythro Power Corporation Limited, Gurgaon (Contractor) for construction of various 132 KV and 220 KV Single Circuit/Double Circuit (SC/DC) lines for a contracted value of ₹ 73.24 crore (₹ 51.55 crore for supply and ₹ 21.69 crore

for erection). As per the terms of the agreement, all the line material (excluding conductor and earth wire) was to be supplied by the Contractor. The conductor and earth wire were supplied by the Company to the Contractor.

Audit noticed that huge quantity of line materials was supplied by the Contractor and the Company made payment for the same during 2011-12 and 2012-13. Further, during the same period, the Company also issued ACSR[33] Panther conductor to the Contractor without ensuring the progress of the work as on the date of issue. Due to poor progress, and lackluster performance of the Contractor, the Company terminated (June 2015) the agreement of the Contractor and asked for appointment of his representative for verification of material instead of taking back the entire material immediately. Since, huge quantity of supplied line material by the Contractor and conductor issued by the Company was lying in the stores of the Contractor, hence, instead of asking for appointment of representative by the Contractor, the Company was required to take over the stores of the Contractor immediately after the termination of agreement. The Company failed to act promptly in taking the possession of stores of the Contractor which led to misappropriation of material valuing ₹ 10.03 crore by the Contractor as detailed in the Table-2.14 below:

Table-2.14: Details of materials issued, utilised and not returned

Sl. No.	Name of material	Qty. issued to Contractor	Qty. used and returned by Contractor	Balance qty. not returned	Value of balance quantity (₹ in crore)
1	Tower parts (in MT)	2,223.65	1,500.55	723.10	6.50
2	ACSR Panther conductor (in KM)	685.60	378.95	306.65	3.53
Total					**10.03**

Source: Information provided by the Company

The Company has not taken any legal action for recovery of the material.

The Government/Company stated (September 2019) that an amount of ₹ 23.87 crore being the retention money/PBG had been forfeited. Further, a new clause has been introduced that at no point of time, the material costing more than 250 *per cent* of the PBG will be provided to the TKCs. The reply is not acceptable as the PBG is taken to ensure adherence with the quality and performance parameters of the contract. There was no provision in the agreement to safeguard the financial interest of the Company for material issued to the Contractor. Hence, the agreement was deficient to that extent. The reply does not address the action taken against the officials responsible for framing the deficient agreement.

(ii) The Company awarded (November 2010) tender for the work of Supply, Erection, Testing & Commissioning of 400 KV DC line in two packages[34] to the Maharashtra Power Transmission Structure Private Limited (Contractor) for total contracted value of ₹ 90.96 crore and ₹ 205.94 crore respectively. As per the agreement, all the required material for

[33] Aluminium Conductor Steel Re-enforced.

[34] 400 KV DC Banda-Orai for 100 KM under package-1 and 400 KV DC Banda-Allahabad for 200 KM under package-2.

construction of line (excluding ACSR Moose conductor, earth wire and OPGW[35]) was to be supplied and erected by the Contractor. For construction of line, Moose conductor and earth wire were to be provided by the Company to the Contractor.

Audit noticed that almost all the material required for construction of line which was supplied by the Contractor was paid for by the Company and issued to him. Out of this stock, the Contractor used some material. But, due to poor progress and on account of reluctance of the Contractor, the agreement was terminated (May 2014) by the Company. Since, all the materials including ACSR Moose conductor and earth wire had already been supplied by the Company by the termination date, and were in the custody of the Contractor, hence, to avoid the misappropriation of Company's materials, the Company was required to act promptly and take back the materials lying in the possession of the Contractor. Instead, the Company wasted 30 months in asking the Contractor for reconciliation of the stores. After passage of more than 30 months, the Company started (December 2016) to take over the stores of the Contractors and found that a huge quantity of material valuing ₹ 21.28 crore was missing as per details given in the Table-2.15:

Table-2.15: Details of materials issued, utilised and not returned

Sl. No.	Name of material	Quantity issued to Contractor	Quantity used and returned by Contractor	Balance quantity not returned	Value of the balance quantity (₹ in crore)
1	Tower parts & Nut bolts (in MT)	5,660.54	3,560.05	2,100.49	19.03
2	ACSR Moose conductor & Earth wire (in KM)	913.44	823.04	90.40	1.26
3	Insulator (in No.)	39,400	28,509	10,891	0.99
Total					**21.28**

Source: Information provided by the Company

The Company stated (May 2019) that a claim worth ₹ 134.05 crore has been lodged against the Contractor which includes cost of material not returned. The Government also endorsed (September 2019) the reply of the Company.

Thus, due to failure of the Company in instituting a mechanism to safeguard its financial interest before issue of material to the Contractor and inaction on part of the Company in taking back the store material, immediately after the termination of the contract, the material worth ₹ 31.31 crore was misappropriated by the defaulting contractors. It also indicates weak Internal control.

Time and cost overrun due to delayed termination of agreement

2.29 The Company executed (June 2010) two agreements with two contractors for contracted values of ₹ 201.30 crore and ₹ 218.04 crore for construction of 765 KV line from Anpara to Jhusi (segment-1) and from Jhusi to Unnao (segment-2) respectively with completion schedule of 24 months i.e. up to February 2012.

Audit noticed that against the completion schedule up to February 2012, Segment-2 was completed in December 2017 with cost of ₹ 348.38 crore. However, the work of Segment-1 had been disrupted from May 2014 due to

[35] Optical Fibre Ground Wire.

non-obtaining of timely clearance from MoEF, GoI. The clearance from MoEF could be obtained by the Company in June 2016. However, even after the MoEF clearance, the contractor did not start the work in right earnest. The Company, instead of terminating the agreement, issued several notices to the contractor and finally terminated the agreement only in July 2018 (after lapse of two years after MoEF clearance was obtained) and awarded (September 2018) the balance work to other contractor for the contract value of ₹ 93.98 crore.

Audit further noticed that the Company had released payment of ₹ 238.95 crore to the first contractor against awarded value of ₹ 201.03 crore and awarded the balance work to the other contractor for ₹ 93.98 crore. Thus, there was a cost overrun of ₹ 30.93 crore (₹ 238.95 crore + ₹ 93.98 crore - ₹ 302 crore including 50 *per cent* positive variation in BOQ of 201.30 crore). Further, due to non-completion of segment-1 of the line, the completed segment-2 valuing ₹ 348.38 crore was also lying idle since December 2017 and expenditure incurred of ₹ 348.38 crore on segment-2 also remained blocked resulting in loss of interest of ₹ 36.58 crore[36].

The Company stated (May 2019) that notices were issued and efforts were being made to handhold the firm to somehow make it execute its assigned work. The Government also endorsed (September 2019) the reply of the Company. The fact remains that delay of two years in termination of the contract was not justified.

Payment to contractor without receipt of material by Electricity Transmission Division Banda

2.30 For construction of 400 KV DC Quad Banda-Allahabad Line, M/s Maharashtra Power Transmission Structures Limited (Firm) submitted a bill for supply of tower material of 206.718 MT valuing ₹ 1.32 crore in Electricity Transmission Division (ETD)-II, Kanpur, receipt of which was recorded (July 2012) in the Measurement Book of the Junior Engineer (JE) of ETD-II, Kanpur. However, the division did not make the payment.

In the meantime, the firm submitted the same bill to ETD-Banda without actual supply of material. Audit noticed that the JE ETD-Banda recorded (September 2012) the receipt of material and the division released (January 2013) the payment without actual receipt of material.

Thus, with the connivance of the officials of ETD, Banda, the division made payment of ₹ 1.32 crore towards purchase of material which was not actually received by the Division. Although the above matter came to the notice of the Company in November 2013, no action has been taken against the concerned officials.

The Government/Company stated (September 2019) that no double payment was made to the firm. It further stated that care has been taken to ensure that this type of incident does not recur. Further, instruction has been issued to examine the matter and take necessary action. The fact remains that no disciplinary action was taken against the concerned officials of ETD-Banda

[36] Calculated at the rate of 10.5 *per cent* (being the lowest rate of interest of loan taken from REC by the Company during 2013-14 to 2017-18) per annum for one year.

for recording the receipt of material without receiving and releasing payment without actual receipt of material. It also indicates lack of internal controls that could have detected and prevented such instances.

Recommendations: The Company should initiate all parallel activities relating to implementation of the project to avoid delay in its completion. It should have a review mechanism to revalidate the justification of the construction of substations which were inordinately delayed. It should devise and implement contract conditions in the manner to safeguard the financial interest of the Company.

Fund Management

2.31 For the construction of transmission projects, the Fund Wing of the Company draws loans from REC/PFC for the portion of 70 *per cent* and avails the equity from the State Government for the balance 30 *per cent* portion. The loans and equity were drawn against the liability of the payment to be made during the year. The Wing was overall responsible for financial linking of the procurement and project packages and raising of funds from Financial Institutions as per requirement to avoid the burden of interest.

The deficiencies noticed in the funds management are discussed below:

Failure in obtaining the funds against the works under deposit head

2.32 As per the practice prevailing in the Company, the works under deposit head were executed after receiving the full cost of estimates from the user utility. Any increase/decrease in the cost of the work was also receivable from/payable to the user utility after preparation of executed estimate[37]. The cases where the Company executed the works under deposit head without receiving full cost of estimates and failed to recover the amount till date are discussed below:

The Company constructed two 220 KV SSs, one for CG City (Lucknow Development Authority), Lucknow which was completed in March 2018 and the another for Awadh Vihar Yojna (Awas Evam Vikas Parishad), Lucknow which was under progress (92 *per cent* completed as on May 2018) under deposit head without receipt of full estimated cost of ₹ 99.92 crore and ₹ 112.08 crore respectively. The Company could recover only ₹ 57.86 crore and ₹ 60 crore from Lucknow Development Authority and Awas Evam Vikas Parishad respectively. Thus, due to execution of work without obtaining full deposit amount under deposit head, an amount of ₹ 94.14 crore remained unrecovered till date.

The Company (May 2019) stated that reminders/letters were being sent for deposit of the balance amount. The Government also endorsed (September 2019) the reply of the Company.

Failure to obtain grant from GoI under PSDF Scheme

2.33 The Ministry of Power, GoI, approved (January 2014) the scheme for transmission system strengthening work under Power System Development Fund (PSDF). As per the scheme, the works were funded as grant for 90 *per cent* or 75 *per cent* on case to case basis. Accordingly, the Company

[37] Executed estimates have been prepared after the execution of work to assess the actual cost of the work done.

prepared two estimates for the 'Up-gradation of protection and control system' (₹ 279.19 crore) as well as work of 'Re-conductoring of various lines' (₹ 80.00 crore). The Company sent (November 2014) these two proposals to MoP, GoI for funding under PSDF scheme. However, the Company issued (March 2015 and August 2015) LOIs of ₹ 90.23 crore[38] without waiting for the formal sanction of the MoP, GoI under PSDF Scheme. The MoP, GoI sanctioned the above works for ₹ 282.94 crore[39] in May 2015 and March 2016. However, MoP, GoI did not fund LOIs which were issued by the Company before the sanction of the estimates by the MoP, GoI. Thus, the Company could not receive the grant of ₹ 69.21 crore[40] due to its hasty decision in issuing of LOIs before formal sanction of these works under PSDF Scheme by MoP, GoI. The works are being financed internally now.

The Company stated (May 2019) that it was not aware of the fact that grant would not be given if LOI had been issued before sanction. The Government also endorsed (September 2019) the reply of the Company. The reply is not acceptable as issue of LOIs before sanction of the Scheme was against the common financial prudence.

Non-disposal of old/damaged transformers

2.34 In para no. 2.1.52 in the Performance Audit of UPPTCL, featured in Audit Report of the Comptroller and Auditor General of India (Public Sector Undertakings) for the year ended 31 March 2012, Government of Uttar Pradesh, it was stated the Company did not dispose damaged and uneconomical transformers.

Audit further noticed that in five units out of 42 test checked units, 11 old/damaged and uneconomical transformers of various capacities were lying for disposal for periods ranging from one year to twelve years. Despite the passage of time from one to twelve years, no pursuance regarding disposal of these old/damaged transformers has been done by the Company which led to blockage of funds of ₹ 7.70 crore (40 *per cent* of the cost of new transformer).

The Company stated (May 2019) that tender for disposal of these transformers is under process. The Government also endorsed (September 2019) the reply of the Company.

Monitoring Mechanism

Internal Audit

2.35 Since, the Company did not have its own Internal Audit Wing, they instead, appointed empanelled Chartered Accountant (CA) firms to do the work. It was observed that the Internal Audit Reports did not include detailed technical audits or comments upon propriety of expenditure. Further, no mechanism was created within the Company to review and pursue compliance with the Internal Audit observations. As a result, the overall internal audit mechanism was ineffective.

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[38] ₹ 10.23 crore for Up-gradation of protection and control system in March 2015 and ₹ 80.00 crore for Re-conductoring of various lines in August 2015.

[39] Up-gradation of protection and control system for ₹ 202.94 crore and Re-conductoring of various lines for ₹ 80.00 crore.

[40] ₹ 9.21 crore (90 per cent of ₹ 10.23 crore) plus 60.00 crore (75 per cent of ₹ 80.00 crore).

The Company stated (May 2019) that due to shortage of regular employees, required strength of Internal Audit wing of the Company remains to be built up. The Government also endorsed (September 2019) the reply of the Company. The fact remains that the internal audit mechanism was not effective.

2.36 An effective monitoring mechanism plays a vital role in efficient implementation and execution of the projects as well as in efficient operation of the transmission system.

Audit noticed that the Management had failed to take necessary steps in planning of new SSs or augmentation of old SSs, for reviewing inordinately delayed projects, making critical procurements in synchronisation with project execution and in ensuing recovery of the amounts from both the contractors and clients as discussed in earlier paragraphs. These were largely due to deficient monitoring on part of the Management.

The Company stated (May 2019) that the reasons for inordinate delay were generally beyond control and due to unforeseen circumstances. The Government also endorsed (September 2019) the reply of the Company. However, no evidence of any proactive steps taken by the Management were evident during the course of Audit.

Recommendations: The Company should strengthen its fund management and monitoring mechanism. The Company should have its own Internal Audit Wing.

Conclusions:

The conclusions with respect to Audit objectives are as follows:

1. In the absence of Project Planning and Management Manual, the projects were not being conceptualised properly. The planning of the identified projects was inadequate resulting in substations becoming overloaded within one year of commissioning on one hand and creation of idle capacity in other substations on the other hand.

(Paragraphs 2.13 and 2.14)

2. The Company neither prepared a Purchase Policy/Procurement Manual nor put in place a mechanism for planning procurement in synchronisation with project execution. It also failed to ensure the compliance of the vital clauses of the contract. The *ad-hoc* system of procurement of goods and services resulted in extra expenditure of ₹ 36.91 crore and fund amounting to ₹ 24.75 crore remained blocked.

(Paragraphs 2.15 to 2.20)

3. The Company failed to execute most of the projects within the set time frame. It did not have a mechanism to review the justification of construction of inordinately delayed projects. Instances of deficiencies in award and execution of contracts and deficiencies in agreements were noticed. The Company incurred extra expenditure and suffered loss of interest of ₹ 433.71 crore. An amount of ₹ 750.69 crore of the Company also remained blocked. The Company also lacked any formal review

mechanism for monitoring projects that could help it in identifying potential bottlenecks and taking corrective action.

(Paragraphs 2.21 to 2.30)

4. Imprudent fund management by carrying out deposit works without receipt of full estimated cost of the works and issue of Letter of Intents (LoIs) before sanction of projects under Power System Development Fund Scheme of Ministry of Power, Government of India resulted in loss of ₹ 69.21 crore and blockade of funds of ₹ 94.14 crore. The Company did not have its own Internal Audit Wing resulting in ineffective internal audit mechanism.

(Paragraphs 2.31 to 2.35)