CHAPTER II

Performance Audit relating
to Government Companies

Performance Audit relating to Government Companies

2.1 Power Transmission Utility- Rajasthan Rajya Vidyut Prasaran Nigam Limited

Executive Summary

Transmission of electricity and grid operations in Rajasthan are managed and controlled by Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPNL). As on 31 March 2012, RRVPNL has 418 GSSs with capacity of 42972.50 MVA and transmission lines of 28363.28 CKM capable of transmitting 17425 MVA at 220 KV annually. During the period 2007-12, RRVPNL constructed 115 GSSs (7250 MVA) and 233 lines (7308.33 CKM), besides augmenting the existing capacity by 10533 MVA. Transmission of electricity increased from 34519.12 Million Units (MUs) in 2007-08 to 47977.61 MUs in 2011-12, registering an increase of 38.99 per cent during five years ending March 2012. The turnover of RRVPNL in 2010-11 was ₹1652.55 crore, which was equal to 5.48 per cent of the State PSUs and 0.51 per cent of the State Gross Domestic Product respectively. RRVPNL employed 9157 employees as on 31 March 2012.

Planning and Development

RRVPNL achieved the targeted addition for EHT GSS and EHT lines during 2007-08 to 2011-12. In case of EHT lines the actual addition was 7308.33 CKM (105.38 per cent) against the targets of 6935 CKM. Voltage-wise capacity additions planned and actual performance there against revealed that actual addition was 27 GSSs including up-gradation of 13 GSSs of 132 KV to 220 KV category against planned addition of 31 GSSs of 220 KV during 2007-12.

Project Management of Transmission System

RRVPNL did not follow the recommendations of the Task Force Committee and projects were awarded to the contractors without undertaking preparatory activities. Consequently the problems viz. ROW, requirement of forest clearance, hassle free availability of land etc. were identified at a later stage and the projects were completed with a delay ranging between 2 and 64 months. Consequently funds of ₹56.40 crore remained blocked without yielding any benefit and RRVPNL was deprived of envisaged energy savings in terms of reduction in system and transmission losses of 2055.79 LUs valuing ₹66.25 crore besides avoidable interest burden of ₹2.16 crore on the amount deposited with JDA for unsuitable land. The planning of RRVPNL was not commensurate with the generation plans and it could not complete the power evacuation systems even with the leverage available due to delay in commissioning of projects by RRVUNL and RWPL.

Performance of transmission system

Though the annual peak demand (4995.96 MVA) at the end of March 2007 was already on lower side in comparison to the installed transmission capacity of 7283.50 MVA, yet RRVPNL continued to add the transmission capacity through augmentation of GSSs and lines. RRVPNL could not adhere to the Standards of Performance Regulations 2004 issued by RERC. The transmission losses during 2007-08 to 2011-12 were ranging between 5.57 and 6.20 per cent against CEA norms of four per cent. Value of transmission loss suffered by DISCOMs in excess of the target limits fixed by RERC was 3594.598 MUs valued at ₹1105.82 crore.

Grid Management

RRVPNL failed to maintain Grid discipline and drew power below 49.2 Hz and NRLDC issued 65 'C' type messages to RRVPNL during July 2009 to March 2012.

Disaster Management

RRVPNL did not implement the DMP broadly. Vulnerable centres having highest risk were also not identified and comprehensive state-wide drills were never carried out to test the capabilities.

Energy Accounting and Audit

Against 0.2s accuracy class of meter prescribed under RERC (Metering) Regulations 2007 as minimum acceptable specification for interface and energy accounting and audit, only 71 GT points were provided 0.2s class meters while 57 and 14 GT points were provided with 0.5 and

1.0 class meters respectively. Further, of 494 TD points only 176 points were provided with 0.2s class meters while 266 and 39 TD points were provided with 0.5 and 1.0 class meters respectively.

Financial Management

The financials of RRVPNL deteriorated during 2008-10 as the total cost per unit was more than the realization. The interest cost which increased by 107.17 per cent during 2007-11 also affected the profitability of RRVPNL. RRVPNL filed ARR with RERC with the delay ranging between 29 days and 116 days during 2007-12 which consequently delayed the approval from RERC. Delay in implementation of RERC tariff order resulted in recovery of transmission charges by RRVPNL either at the rate of previous year or provisional rate. This caused loss of interest of ₹ 4.22 crore on delayed recovery of transmission charges during 2009-10 and 2010-11 for delay in filing of ARR. Further, there was no proper system of accounting of deposit works and the final account of deposit work was also not finalised within the stipulated period. RRVPNL incurred excess expenditure of ₹ 948.61 crore than the capital investment approved by the State Government during 2007-08 to 2011-12 except 2010-11. As a result RRVPNL was deprived of the 20 per cent equity portion of the excess expenditure amounting to ₹ 195.72 crore. Further, RRVPNL did not claim incentive of ₹ 30.20 crore for availability of transmission system beyond 98 per cent during truing up of ARR of 2008-09 and 2009-10.

Material Management

The stores though maintained higher closing stock in terms of month's consumption during 2007-08, 2009-10 and 2010-11 it neither conducted any ABC analysis nor fixed any level for material requirement. Further, poor co-ordination between the executing department and procurement led to non-utilisation of transformers and advance procurement of conductor.

Conclusions and Recommendations

Plans for capacity additions/augmentation were not prepared keeping in view the peak demand and existing transmission capacity and hence, extra/idle transmission capacity increased over the years. RRVPNL could not adhere to the norms/criteria stipulated by RERC/CEA regarding operation and maintenance of transmission system. RRVPNL could not complete transmission projects within scheduled completion period due to deficient planning and non-adherence to recommendations of Task Force Committee on Project Management. Transmission losses were in excess than fixed by CEA/RERC. The capital investments did not contribute to effective reduction in transmission losses during the review period and the losses stood at 6.20 per cent against the norms of 4 and 4.2 per cent of CEA & RERC respectively. There was mismatch in commissioning of transmission projects with generation projects. RRVPNL did not implement the Disaster Management Plan at Grid Sub-Stations and vulnerable centres having highest risk were also not identified and comprehensive state-wide drills were never carried out to test the capabilities. RRVPNL could not file ARR in scheduled time and did not claim incentive for enhanced availability of transmission system than targeted. The capital expenditure was incurred in excess to the amount approved by RERC/Government. There were instances of improper material management as higher level of inventory was kept, material was procured in advance of requirement and bays remained idle for considerable period of time. The review contains seven recommendations which include preparation of plans for capacity additions/augmentation keeping in view the peak demand and existing transmission capacity; adherence to the recommendations of Task Force Committee on Project Management and take effective steps to ensure completion of transmission projects in scheduled time; adherence to norms/criteria stipulated by RERC/CEA regarding Operation and Maintenance of transmission system; completion of transmission system with commissioning of generation projects; implementation of Disaster Management Plan broadly; mechanism for timely submission of ARR to RERC; to keep the Capital expenditure as per plan approved by RERC/Government; and to analyse and monitor inventory level.

Introduction

2.1.1 With a view to supply reliable and quality power to all by 2012, the Government of India (GOI) prepared the National Electricity Policy (NEP) in February 2005. The NEP lays emphasis on the requirement of adequate and timely investment in transmission sector besides efficient and coordinated action to develop a robust and integrated power system for the country. It also recognized the need for development of National and State Grid with the co-ordination of Central/State Transmission Utilities. Transmission of electricity and grid operations in Rajasthan are managed and controlled by Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPNL) which is mandated to provide an efficient, adequate and properly coordinated Grid management and transmission of energy. RRVPNL came into existence as a part of power sector reforms in Rajasthan under which the erstwhile Rajasthan State Electricity Board was unbundled into five[1] companies. It was incorporated on 19 June 2000 under the Companies Act 1956, and acts under administrative control of the Energy Department, Government of Rajasthan (GOR).

The Management of the RRVPNL is vested in a Board of Directors comprising seven members appointed by the State Government. The day-to-day operations are carried out by the Chairman and Managing Director who is Chief Executive of the RRVPNL, with the assistance of Director (Operations), Director (Technical), Director (Finance), Secretary (Administration) and Company Secretary.

Area of operation and Transmission network

2.1.2 For smooth functioning and to carry out the operations efficiently, RRVPNL has divided its area of operation into three[2] zones headed by Zonal Chief Engineers and nine[3] transmission and construction circles (TCC) headed by Superintending Engineers under them. During 2007-08, 34519.12 Million Units (MUs) of energy was transmitted by RRVPNL which increased to 47977.61 MUs in 2011-12, registering an increase of 38.99 *per cent* during 2007-12. As on 31 March 2012, RRVPNL had a transmission network of 28363.28 Circuit Kilometer (CKM) and 418 Grid Sub-Stations (GSSs) with an installed capacity of 42972.50 Mega Volt Ampere (MVA), capable of transmitting 17425 MVA at 220 KV annually. During the period 2007-12, RRVPNL constructed 115 GSSs[4] (7250 MVA) and 233 lines (7308.33 CKM), besides augmenting the existing capacity by 10533 MVA.

The turnover of RRVPNL in 2010-11[5] was ₹ 1652.55crore, which was equal to 5.48 *per cent* of the State PSUs and 0.51 *per cent* of the State Gross

1 Rajasthan Rajya Vidyut Utpadan Nigam Limited, Rajasthan Rajya Vidyut Prasaran Nigam Limited, Jaipur Vidyut Vitran Nigam Limited, Jodhpur Vidyut Vitran Nigam Limited and Ajmer Vidyut Vitran Nigam Limited.

2 Jaipur, Jodhpur and Ajmer.

3 TCC-I, II,V and VI under Jaipur Zone, TCC-IV, VIII and IX under Jodhpur Zone and TCC-III and VII under Ajmer Zone.

4 It includes 14 upgraded GSS *i.e.* one 220 KV GSS to 400 KV GSS at Barmer and thirteen 132 KV GSS to 220 KV GSS.

5 The accounts of RRVPNL for the year 2011-12 have not been finalised (October 2012).

Domestic Product respectively. It employed 9157 employees as on 31 March 2012.

Scope of Audit

2.1.3 The present Performance Audit conducted during January 2012 to May 2012 covers performance of RRVPNL during 2007-08 to 2011-12. Audit examination involved scrutiny of records of different wings at the Head Office, Store at Jaipur, State Load Dispatch Centre (SLDC). In addition, out of three Zones, Jaipur Zone and out of four TCCs under it, three TCCs (I, II and V) were selected for detailed study and analysis based on the performance and execution of maximum capital expenditure and maximum number of completion of GSSs and Transmission lines during the review period in comparison to other two Zones. Out of 49 GSSs (3100 MVA) and 94 lines (1996.33 CKM) completed during 2007-12 in Jaipur Zone, 13 GSSs of 1452.50 MVA (46.85 *per cent*) and 31 lines admeasuring 1485.58 CKM (74.42 *per cent*) were selected for detailed examination. Besides, 16 GSSs (10295 MVA) and 13 lines (995.76 CKM) which were in progress as on 31 March 2012 were also examined.

Audit Objectives

2.1.4 The objectives of the performance audit were to assess whether:

- Perspective Plan was prepared in accordance with the guidelines of the NEP/Plan and Rajasthan Electricity Regulatory Commission (RERC) and assessment of impact of failure to plan, if any;
- Operation and maintenance of transmission system was carried out in an economical, efficient and effective manner;
- The transmission system was developed and commissioned in an economical, efficient and effective manner;
- Disaster Management System was set up to safeguard operations against unforeseen disruptions;
- Effective failure analysis system was set up;
- Effective and efficient Financial Management system with emphasis on timely raising and collection of bills and filing of Aggregate Revenue Requirement (ARR) for tariff revision in time was setup;
- Efficient and effective system of procurement of material and inventory control mechanism was set up;
- Efficient and effective energy conservation measures were undertaken in line with the National Electricity Plan (NEP) and established Energy Audit System; and
- There was a monitoring system in place to review existing/ongoing projects, take corrective measures to overcome deficiencies identified and respond promptly and adequately to Audit/Internal audit observations.

Audit Criteria

2.1.5 The source of audit criteria was the following:

- Provisions of National Electricity Policy/Plan and National Tariff Policy;
- Perspective Plan and Project Reports of RRVPNL;
- Standard procedures for award of contracts with reference to principles of economy, efficiency, effectiveness, equity and ethics;
- ARR filed with RERC for tariff fixation, Circulars, Manuals and MIS reports;
- Manual of Transmission Planning Criteria (MTPC);
- Code of Technical Interface (CTI)/Grid Code consisting of planning, operation, connection codes;
- Directions from GOR/Ministry of Power (MoP);
- Norms/Guidelines issued by RERC/Central Electricity Authority (CEA);
- Report of the Committee constituted by the MoP recommending the "Best Practices in Transmission";
- Report of the Task force constituted by the MoP to analyse critical elements in transmission project implementation; and
- Reports of Regional Power Committee (RPC)/State Load Dispatch Centre (SLDC).

Audit Methodology

2.1.6 Audit followed the following mix of methodologies:

- Review of Agenda notes and minutes of RRVPNL/Board/RPC/SLDC, annual reports, accounts and regional energy accounts (REA);
- Scrutiny of loan files, physical and financial progress reports;
- Analysis of data from annual budgets and physical as well as financial progress with completion reports;
- Review of tariff fixed by RERC;
- Scrutiny of records relating to project execution, procurement, receipt of funds and expenditure; and
- Interaction with the Management during entry and exit conference.

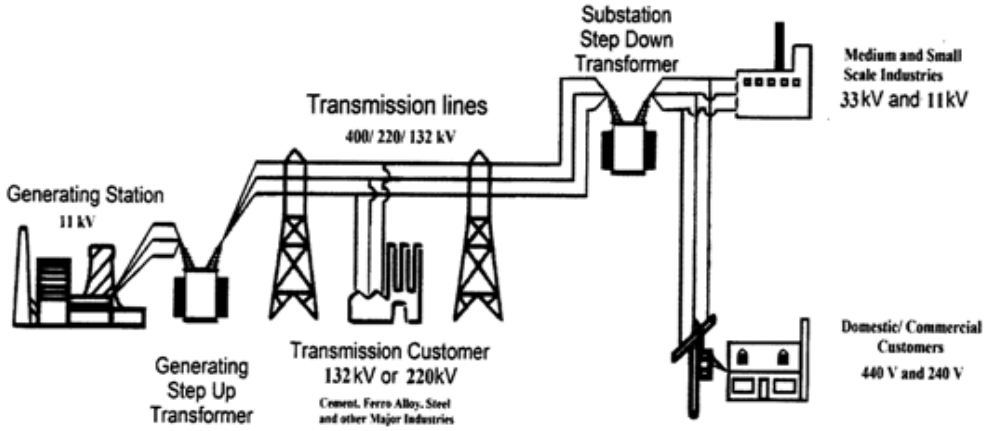
The methodology adopted for attaining audit objectives with reference to audit criteria consisted of explaining audit objectives to top management, scrutiny of records at Head Office and selected units, interaction with auditee entity personnel, analysis of data with reference to audit criteria, raising of audit queries, discussion on audit findings with Management and issue of draft Performance Report to Management/Government for comments.

Brief description of transmission process

2.1.7 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 power plants is stepped up to high voltage power before it is transmitted to reduce the loss in transmission and to increase efficiency in the Grid. GSSs are facilities within the high voltage electric system used for stepping-up/ stepping down voltages from one level to another, connecting electric systems and switching equipment in and out of the system. The step up transmission GSSs at the generating stations use transformers to increase the voltages for transmission over long distances.

Transmission lines carry high voltage electric power. The step down transmission GSSs thereafter decreases voltages to sub transmission voltage levels for distribution to consumers. The distribution system includes lines, poles, transformers and other equipment needed to deliver electricity at specific voltages.

Every transmission system requires a sophisticated system of control called Grid management to ensure balancing of power generation closely with demand. A pictorial representation of the transmission process is given below:



Audit Findings

2.1.8 We explained the audit objectives to the RRVPNL during an 'Entry Conference' held on 09 April 2012. Subsequently, audit findings were reported to the RRVPNL and the State Government in July 2012 and discussed in an 'Exit Conference' held on 31 October 2012. The Exit Conference was attended by Secretary to the Government (Department of Energy) and Chairman and Managing Director of RRVPNL. RRVPNL/State Government replied (November 2012) to audit findings. The replies have been considered while finalising this Performance Audit Report. The audit findings are discussed in subsequent paragraphs.

Planning and Development

National Electricity Policy/Plan

2.1.9 The Central Transmission Utilities (CTUs) and State Transmission Utilities (STUs) have the key responsibility of network planning and development based on the National Electricity Plan in coordination with all concerned agencies. At the end (March 2007) of 10th Plan, the transmission system in the country at 765/HVDC/400/230/220/KV stood at 1.98 lakh CKM of transmission lines which was planned to increased to 2.93 lakh CKM by end (March 2012) of 11th Plan. The National Electricity Plan assessed the total inter-regional transmission capacity at the end of 2006-07 as 14100 MW and further planned to add 23600 MW in 11th plan bringing the total inter-regional capacity to 37700 MW.

In Rajasthan, RRVPNL is responsible for planning and development of the intra-state transmission system. Assessment of demand is an important pre-requisite for planning capacity addition. Five year plans followed by annual plans in terms of capacity addition and financials are prepared in accordance with the budgetary capital outlay decided by the State Government. The five year plans and annual plans are submitted to the State Government and RERC.

RRVPNL's transmission network at the beginning of 2007-08 consisted of 317 Extra High Tension (EHT) GSSs with a transmission capacity of 25189.50 MVA and 21054.95 CKM of EHT transmission lines which increased to 418 EHT GSSs with a transformation capacity of 42972.50 MVA and 28363.28 CKM of EHT transmission lines at the end of March 2012.

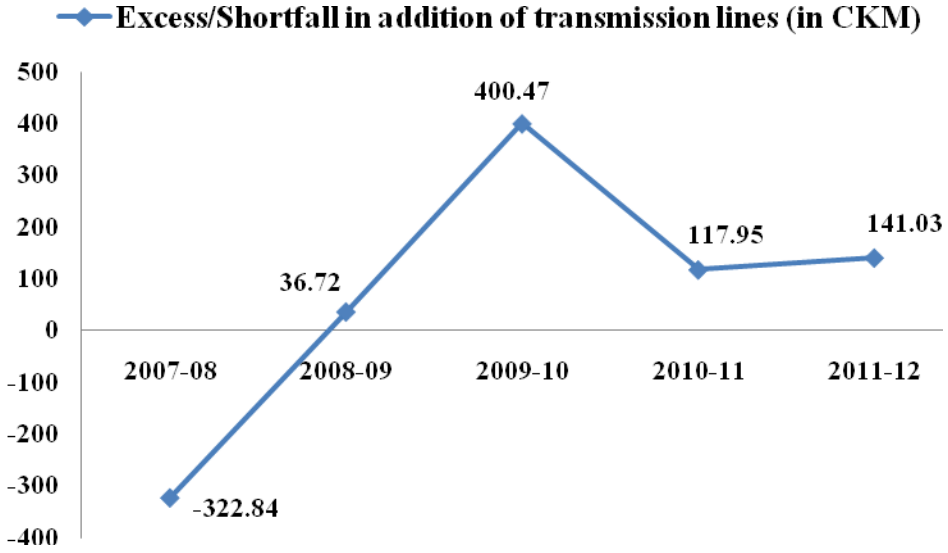
Transmission network and its growth

2.1.10 The transmission capacity of RRVPNL at EHT level during 2007-08 to 2011-12 is given below. The particulars of voltage-wise capacity additions planned, actual additions and shortfall in capacity addition during the review period are given in **Annexure-7.**

Sl. No.	Description	2007-08	2008-09	2009-10	2010-11	2011-12	Total
A.	**Number of GSSs**						
1	At the beginning of the year	317	331	346	365	393	
2	Additions planned during the year	15	17	23	30	30	115
3	Added during the year	15	17	23	32	28	115
4	GSSs upgraded during the year	1	2	4	4	3	14
5	Total GSSs at the end of the year (1+3-4)	331	346	365	393	418	-
6	Excess/(Shortfall) in additions (3-2)	-	-	-	2	(2)	-
B.	**Transformers Capacity (MVA)**						
1	Capacity at the beginning of the year	25189.50	26102.50	28802.50	32589.00	38293.50	
2	Additions/augmentation planned for the year	1200.00	1600.00	2620.00	3180.00	3000.00	11600.00
3	Capacity added during the year	913.00	2700.00	3786.50	5704.50	4679.00	17783.00
4	Capacity at the end of the year (1+3)	26102.50	28802.50	32589.00	38293.50	42972.50	
5	Excess/(Shortfall) in additions/augmentation (3-2)	(287.00)	1100.00	1166.50	2524.50	1679.00	6183.00
C.	**Transmission lines (CKM)**						
1	At the beginning of the	21054.95	22017.11	23453.83	25204.30	27172.25	

	year						
2	Additions planned during the year	1285.00	1400.00	1350.00	1850.00	1050.00	6935.00
3	Added during the year	962.16	1436.72	1750.47	1967.95	1191.03	7308.33
4	Total lines at the end of the year (1+3)	22017.11	23453.83	25204.30	27172.25	28363.28	
5	Excess/(Shortfall) in additions (3-2)	(322.84)	36.72	400.47	117.95	141.03	-

It may be seen from above that RRVPNL achieved the targeted addition for EHT GSS and EHT lines. In case of EHT lines the addition against the targets of 6935 CKM during 2007-12, the actual addition was 7308.33 CKM (105.38 *per cent*). The achievement in the targets of EHT GSS increased the transformer capacity by 153.30 *per cent* against planned additions during the same period. Scrutiny of Voltage-wise capacity additions planned and actual performance there against, however, revealed that against planned addition of 31 GSSs of 220 KV during 2007-12, actual addition was 27 GSSs including up-gradation of 13 GSSs of 132 KV to 220 KV categories. RRVPNL, however, could not achieve the targets of capacity addition in 400 KV lines and there was shortfall of 50.39 CKM during 2007-12.



We observed that achievement of targets was mainly due to construction and achievement in excess of the targets of augmentation of 132 KV GSS and lines which were constructed/ augmented as per the plans submitted by DISCOMs.

The Government accepted the fact of shortfall in achievement of targets for 220 KV GSS and 400 KV line and also stated that the shortfall of four number of GSSs was due to deferment of 220 KV GSS keeping in view the over achievement of target for 132 KV GSS.

The under-utilisation/idle capacity is discussed in subsequent paragraphs.

Project Management of Transmission System

2.1.11 A transmission project involves various activities from concept to commissioning. Major activities in a transmission project are (i) Project

formulation, appraisal and approval phase and (ii) Project Execution Phase. For reduction in project implementation period, the Ministry of Power, Government of India constituted (February 2005) a Task Force on transmission projects with a view to:

- analyze the critical elements in transmission project implementation;
- implementation from the best practices of CTU and STUs, and
- suggest a model transmission project schedule for 24 months' duration.

The Task Force suggested and recommended (July 2005) the following remedial actions to accelerate the completion of transmission systems.

- Undertake various preparatory activities such as surveys, design & testing, processing for forest & other statutory clearances, tendering activities etc. in advance/parallel to project appraisal and approval phase and go ahead with construction activities once Transmission Line Project sanction/approval is received;
- Break-down the transmission projects into clearly defined packages such that the packages can be procured & implemented requiring least coordination & interfacing and at same time it attracts competition facilitating cost effective procurement; and
- Standardise designs of tower fabrication so that 6-12 months can be saved in project execution.

We noticed that RRVPNL did not follow the recommendations of the Task Force Committee. Various preparatory activities such as surveys, design and testing, processing for forest & other statutory clearances which were essential for timely completion of the project were not undertaken. The activities pertaining to survey, design etc. were included in the scope of the work of contractors and consequently the problems *viz*. Right of Way (ROW), requirement of forest clearance, hassle free availability of land *etc*. were identified at a later stage and the projects were substantially delayed. In some cases there was mis-match in construction of GSSs and lines which resulted in non-utilisation of created infrastructure due to non-completion of the other supplementary activities. Notwithstanding the elaborated guidelines given by the Task Force Committee for timely completion of the projects, RRVPNL did not timely execute several GSSs and Lines during 2007-12 as detailed below:

Capacity in KV	Total No. Constructed		Total No. constructed in Jaipur Zone		No. test checked by Audit		Delay in construction (Numbers)		Time overrun[6] (range in months)	
	GSS	Line	GSS	Line	GSS	Line	GSS	Line	GSS	Lines
400	5	16	1	6	1	6	1	6	9	4 to 23
220	27	76	14	28	6	13	4	9	2 to 16	5 to 64
132	83	141	34	60	6	12	5	9	1 to 27	2 to 36
Total	**115**	**233**	**49**	**94**	**13**	**31**	**10**	**24**	**1 to 27**	**2 to 64**

The GSS and lines constructed in Jaipur Zone during review period and delay observed in completion is given in **Annexure-8**.

6 Test checked in audit

Government stated that recommendations of Task Force Committee were not mandatory; however, RRVPNL generally followed the recommendations of Task Force Committee. It further stated that separate contract for survey work would not be feasible in view of time consuming and ROW problem during execution. The fact remained that RRVPNL did not comply with the recommendations of Task Force Committee which were to be followed for efficient project management.

Some of the cases highlighting delay in projects due to improper project management planning and non-follow up of the recommendations of the task force committee observed during test check of records are as below:

Name of project/ scheme/ work	**Scheduled / (actual completion date)**	**Delay and reasons for delay**	**Loss due to delay**
Rajwest – Jodhpur 400 KV DC line and 400 KV bay at Jodhpur	March 2009 (March 2010) November 2009 (June 2012) (Line charged at 220 KV till completion of 400 KV bay)	12 months due to delay in approval of L2 network by RRVPNL and survey work, profiling, route alignment, tower supporting work by firm. Placement of order for 400 KV bay (May 2009) after scheduled completion date of line work and lack of co-ordination between contractor of bay work and RRVPNL.	RRVPNL constrained to evacuate power from lower voltage which would increase transmission losses.
The Government stated that delay was due to ROW problem, theft of tower and line material. It further stated that available system was sufficient to evacuate the power. The reply was not convincing as delay occurred due to improper planning and lack of various preparatory project activities.			
Evacuation system for wind farm generation at Barmer/ Jaisalmer	March 2009 and October 2009 (October 2010 and November 2011)	Delay ranging between 12 and 32 months due to delay in preparatory activities, borlong of foundation work, stub-setting etc.	936.54 LU (₹ 27.91 crore)
The Government stated that delay was due to ROW problem, theft of tower and line material and extremely difficult terrain which were beyond control. The reply was not convincing as delay occurred due to improper planning and lack of various preparatory project activities.			
220 KV Bassi - Heerapura line	November 2003 (September 2005) (Line could not be interconnected with existing line till June 2008)	There was delay of 22 months in scheduled completion due to delayed/ non-providing of line material by RRVPNL to contractor and PLCC equipment at 400 KV GSS Bassi.	207.90 LU (₹ 6.20 crore)
The Government did not furnish specific reply on this issue.			
132 KV GSS PWD Bungalow Jaipur	July 2009 (January 2012)	There was delay of 30 months. The reasons were delay in handing over of site (10 months), initiation of work by contractor (4 months) and non-availability of testing equipment at contractor's end.	91.78 LU (₹ 2.74 crore)
220 KV GSS	October 2009	There was delay of 16 months	

Indira Gandhi Nagar, Jaipur	(February 2011)	from scheduled completion. The delay was mainly in approval of layout and drawings, delay in nominating inspecting officers by RRVPNL (9 months) and non follow up of testing schedule due to non-availability of testing facilities at contractor's end (7 months).	354.21 LU (₹ 10.56 crore)
Government stated that both the GSS were based on GIS technology which was new. Comparison of actual saving in losses with envisaged saving in scheme was impossible. The reply is not convincing as the technical and financial viability of any scheme is based on savings in losses and improvement in technical parameters which needs to be adhered to.			
132 KV GIS GSS New Jhotwara along with LILO of existing 132 KV VKIA-Vaishali Nagar to new Jhotwara	132 KV GSS July 2009 (November 2010) LILO line June 2010 (yet to be completed)	The delay was of 16 months in completion of GSS. GSS subsequently could not be commissioned (September 2012) even after lapse of 22 months in the absence of completion of line work attributable to failure of RRVPNL in resolving ROW problem and change of contractor	98.32 LU (₹ 3.80 crore)
The Government stated that delay was mainly attributed to severe ROW problems at site. Facts remained that the RRVPNL failed to take necessary action to avoid ROW problem as per Task Force recommendations to undertake various preparatory activities in advance/parallel to project appraisal/approval.			
132 KV GSS Mayla (Ramganj Mandi) including construction of 33 KV bays.	October 2008 (March 2009) 33 KV bay completed in December 2009	Power from the GSS could not be drawn till December 2009 due to non-completion of bay and other related work.	35.83 LU (₹ 1.39 crore)
The Government stated that bays were completed in May 2009 but were not utilized by Discoms. The reply is incorrect as bay work for drawal of power was completed in December 2009.			
220 KV GSS Bundi	March 2012 (Not completed upto September 2012)	Feasibility Report prepared in January 2010 but GSS could not be commissioned till September 2012 due to delay in identification of proper land, non-completion of foundation for transformer and incorrect soil resistivity data.	System losses of 10.97 LUs per annum till completion of GSS.
Government stated there was no relation between foundation work of transformer and soil resistivity data. The balance work was withdrawn from the contractor due to delay in construction work of GSS. The reply of Government was not correct as defective/delayed planning in identification of land/placement of order and incorrect data of soil resistivity which needed to decide the strength of foundation for transformer, led to delay in completion of GSS at Bundi.			
132 KV GSS Khandar and 132 KV LILO from Sawai Madhopur-Sheopur line	September 2007 (February 2008) April 2007 (July 2008)	Delay of 15 months due to delayed approval of route alignment, lack of co-ordination with contractor and slackness of the contractor in construction and supply of material.	The Project did not mention envisaged savings of energy.
The Government stated that the construction work and supply of material was awarded on			

turnkey basis to the same firm. The route alignment for GSS was approved without any delay after submission of the same by contractor. The reply was not correct as the contract was awarded in August 2006 with scheduled completion in April 2007. However, the route alignment was approved in February 2007 which indicated slackness on the part of RRVPNL.			
220 KV GSS Gangapur city and associated four lines	June 2012 (Not completed up to September 2012) March to October 2011 (Two lines were completed in June/ July 2012 and two are yet to be completed – September 2012)	There was delay of 11 months up to September 2012. The delay was mainly in finalisation of lay out by RRVPNL.	129.03 LU (₹ 5.78 crore) up to September 2012
The Government stated that delay was procedural and the work order for GSS against Central labour rate contract (CLRC) could hardly be placed which took time as no contractor was ready to take work on CLRC. The work of associated lines was awarded to separate contractors which executed the work as per their available resources. The fact was that improper co-ordination led to delay in completion of GSS and associated lines thereby depriving RRVPNL of envisaged benefits.			
132 KV GSS Baroli	March 2009 (January 2012)	Delay of 33 months due to inability of RRVPNL to complete civil and electrical work despite purchase of transformer in April 2010.	46.42 LU (₹ 1.79 crore)
The Government stated that GSS was commissioned in February 2011 and charged on low voltage level at 33 KV due to non-completion of associated lines. The fact of commissioning of GSS was not in consonance with the monthly progress report of RRVPNL which stipulated commissioning date as January 2012. Further, charging of GSS at low voltage would have added to transmission losses.			
132 KV GSS Bapawar	March 2011 (Not completed up to September 2012)	The land was allotted during the year 2000, but GSS could not be completed due to delay in finalisation of lay out plan and non-availability of approach road in rainy season.	55.08 LU (₹ 2.48 crore) up to September 2012
The Government stated that the Board approved the scheme in 2010 but encroachments delayed the finalisation of electrical layout and construction activities. The reply was not convincing as despite award of land in the year 2000, RRVPNL could not ensure removal of encroachments which delayed construction activities.			
132 KV GSS Atru and 132 KV Kawai-Atru line	March 2009 (December 2010)	Due to belated award of contract for construction of line in May 2009, delay in applying for clearance from forest and Power Telecom Coordination Committee (PTCC) and non-coordination with contractor. This attributed the project was delayed by 21 months.	65.91 LU (₹ 2.56 crore)
The Government stated that the approval of forest clearance and PTCC case was delayed as the contractor started the work very late. The Management did not indicate the delay attributed on its part for awarding the contract and belated applying for forest clearance and PTCC after awarding the contract for line.			

132 KV SC line from 220 KV GSS Jhalawar to 132 KV GSS Bhawani Mandi	December 2007 (January 2008 and August 2009)	Delay of 19 months due to non-availability of railway clearance, tower material and resistance from cultivators and awarding of contract initially to a contractor which had submitted the incorrect profile of location and made incorrect survey.	34.75 LU (₹ 1.04 crore)
The Government accepted the facts.			
220 KV GSS Lakhesra	-	Improper land was identified initially by RRVPNL which was under nallah, existing temple, cremation ground and encroached by public which resulted in belated refund (October 2012) of ₹ 14.40 crore deposited (March 2011) with Jaipur Development Authority (JDA). Thus the project was delayed by more than three years.	Loss of interest of ₹ 2.16 crore for 18 months on refund amount of ₹ 14.40 crore
The Government stated that the amount had been received from JDA and alternate land was taken into possession by RRVPNL at Goner. However, the laxity on the part of RRVPNL in identification of land at Lakhesara resulted in blocking of funds for 18 months causing interest burden on RRVPNL.			
400 KV GSS Chomp	Not yet started	Possession of land could not be taken due to indecision on the part of RRVPNL for the ownership of land proposed. ₹ 15.40 crore deposited (February 2011) with JDA for allotment of land against the demand of ₹ 16.17 crore even though Whole Time Directors (WTD) accorded approval for deposit of full amount. The land was not acquired in the absence of decision to acquire the same in the name of subsidiary company. This resulted in blocking of ₹ 15.40 crore for 19 months upto September 2012.	-
The Government stated that the possession of the land could not be taken due to non-receipt of clearance for allotment of land by JDA in favour of Pinkcity Transmission Service Company Limited (Subsidiary of RRVPNL). The fact remained that indecision by RRVPNL about the ownership of allottee, at initial stage, not only resulted in blocking of funds but also delayed the project			
400 KV SC line from Dholpur Gas Thermal Power Station to Heerapura and 400 KV bay at Heerapura	November 2006 (February 2008) 400 KV bay was completed in May 2010	Due to delay by contractor in submission of drawings, design data and other documents, clearance from Ministry of Environmental and Forests, Railway and Aviation, the line was completed (February 2008) but could be utilized on full load, after delay of 27 months, in May 2010 after completion of 400 KV bay.	Penalty of ₹ 6.51 crore imposed on contractor for delay of 435 days in completion of line was waived by the RRVPNL.

The Government stated that there was delay for want of mandatory clearances from various departments and part of the line was commissioned on 220 KV voltage on 12 December 2007. The reply was not convincing as RRVPNL applied for clearances after delay of about 12 months from awarding of the contract which ultimately delayed the line work.			
400 KV Chhabra-Bhilwara line and Chhabra-Hindaun line	December 2008 (September 2010) December 2008 (April 2010)	Due to lack of preparatory activities, non-adherence of stringing schedule, non-availability of forest clearance, the lines could be completed with delay of 21 and 16 months respectively.	-
Government stated that forest clearance was involved in one section of lines which was received in December 2009. Both lines were completed before commercial operation of Unit-II of Chhabra TPS. The fact was that the lines were belatedly completed which deprived the envisaged benefits of commercial operation of unit-I.			
132 KV SC VKIA- Pratap Steel line	Work was awarded in January 2008 but not yet completed (September 2012)	Awarding of work without conducting proper line route survey, change in design of towers and refusal by contractor to work on revised design delayed the project.	-
The Government replied that the delays were due to non-availability of ROW, change in tower specification and due to space constraints. The reply was not convincing as the RRVPNL did not adhere to the recommendations of Task Force Committee for carrying out preparatory activities before execution of project.			
400 KV GSS Merta and 400 KV bay	Commissioned in June 2012	Due to lack of coordination between RRVPNL and contractor, delay in supplies by RRVPNL and short deployment of manpower by contractor, the GSS could be commissioned in June 2012. However, the RRPVPL procured power transformer in December 2008 prior to commissioning of transmission line (August 2010) and GSS (June 2012).	Transformer valuing ₹ 12.13 crore and 400 KV SC Jodhpur-Merta line valuing ₹ 44.27 crore could not be utilized for 41 months and 22 months respectively.
Government attributed the reasons for delay due to writ petition filed and Gurjar agitation. The reply was not correct since the delivery of transformer was received by RRVPNL prior to commissioning of line and GSS, as stated above. This had no relation with Gurjar agitation.			

Thus, improper planning and non-follow up of the recommendations of the Task Force Committee led to substantial delay in execution of above mentioned projects and consequently funds amounting to ₹ 56.40 crore remained blocked without yielding any benefit. RRVPNL was also deprived of envisaged energy savings in terms of reduction in system and transmission losses of 2055.79 LUs valuing ₹ 66.25 crore besides avoidable interest burden of ₹ 2.16 crore on the amount deposited with JDA for unsuitable land.

Mismatch between Generation Capacity and Transmission facilities

2.1.12 National Electricity Policy 2005 envisaged augmentation of transmission capacity keeping in view the planning of new generation capacities by generation companies to avoid mismatch between generation

capacity and transmission facilities. The transmission facilities to be provided by RRVPNL to match the generation plans of Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) and Rajwest Power Limited (RWPL) could not be provided in time due to delay in execution of transmission evacuation works. This resulted in mismatch between generation capacities and transmission facilities and consequent evacuation of power with the existing and already overloaded transmission lines.

We observed that in the following five out of the seven projects test checked during audit, RRVPNL could not complete the transmission network to match the generation plans of RRVUNL and RWPL.

Sl. No.	Project	RRVUNL/RWPL Generation Plans		RRVPNL's plan	Result of mismatch
		Schedule date of commissioning	Actual date of commissioning		
1	250 MW, Unit-6, SSTPS, Suratgarh	14 October 2008	29 August 2009	400/220 KV GSS at Bikaner and associated lines were completed between March 2010 and February 2011 against the scheduled completion date of October 2009.	RRVPNL was constrained to evacuate power from existing 220 KV systems for 18 months.
2	250 MW, Unit-1, CTPP, Chhabra	2 September 2008	30 October2009	The works for power evacuation system were completed during February 2009 to July 2011 against scheduled completion during December 2008 to October 2009.	RRVPNL was constrained to evacuate power from existing 220/132 KV systems.
3	250 MW, Unit-2, CTPP, Chhabra	2 December 2008	4 May 2010		
4	125 MW, Unit-2, GLTPP, Giral	15 June 2008	28 December 2008	220 KV two S/C Giral-LTPS-Barmer line completed in October 2009. 220 KV S/C Giral-LTPS-Baltoo and 220 KV Baltoo-Balotra lines were completed in October/November 2009 respectively.	RRVPNL was constrained to evacuate power from existing 220/132 KV systems for 18 months.
5	Unit 1 to 4 of 125 MW each of Rajwest LTPS at Barmer	April 2009 to October 2009	November 2009 to December 2011	400 KV D/c line from Rajwest LTPS-Jodhpur completed in February 2010 instead of schedule commissioning of March 2009.	The 400 KV line was charged on low voltage of 220 KV.

RRVPNL could not provide the power evacuation system in time to RRVUNL and RWPL despite the fact that RRVUNL and RWPL commissioned the generation projects beyond scheduled date. This indicated lack of planning of RRVPNL to commensurate with the generation plans and even it could not complete the power evacuation systems during the leverage available beyond scheduled commissioning of projects by RRVUNL and RWPL.

We further observed that:

- The works for power evacuation system[7] planned for two projects of 250 MW each at Chhabra Thermal Power Station were completed with delay ranging between 9 and 34 months against scheduled completion dates envisaged in work orders. Delay was attributable to delay in initiation of tender process, completion of civil works, delay in awarding erection works, right of way problems, delay in applying for forest clearance and non-receipt of forest clearance in time.

The Government stated that 220 KV S/C Chhabra TPS- Kawai-Baran-Dahra line with 220 KV Kawai GSS & 220 KV Baran GSS and one circuit of 400 KV D/C Chhabra TPS-Dahra line (Charged on 220 KV) were constructed before the synchronization date of unit #1 at Chhabra TPS. The fact remained that the transmission facilities were not ready for synchronization and RRVPNL was constrained to evacuate power from existing 220 KV systems. The Government also stated that the unit-1 of Chhabra TPS was commissioned on 11 June 2010 which was not correct as it was commissioned on 30 October 2009.

- There was gross mismatch in planning of construction of 400 KV D/C transmission line from Rajwest LTPS to Jodhpur and 400 KV Bay at Jodhpur end envisaged for power evacuation from Rajwest LTPS (unit I to IV) at Barmer as work order for construction of Bay was placed in May 2009 after two months of scheduled completion date (March 2009) of line. Further, the line could be completed (February 2010) with delay of 11 months against scheduled completion in March 2009 and the construction of bay was completed in June 2012. This was due to lack of co-ordination between RRVPNL and the contractor, delay in supplies by RRVPNL and shortage in manpower deployed by the contractor. Resultantly, line was connected through 220 KV Dhorimana bay.

The Government replied that due to delay on part of contractor 220 KV Rajwest LTPS- Dhorimanna line could not be commissioned on time and 400 KV DC Rajwest LTPS-Jodhpur line was charged on 220 KV voltage level. The reply was not convincing in view of the fact that power was evacuated through the existing 220 KV system as the transmission facilities were not ready for synchronization.

7 400 KV Chhabra TPS-Bhilwara line, 400 KV S/C Chhabra TPS-Hindaun line,400/220 KV GSS Hindaun, 220 KV Chhabra TPS-Jhalawar line, 400/220 KV 315 MVA GSS Bhilwara, LILO of 400 KV Dholpur-Heerapura line at Hindaun end, 220 KV D/C Hindaun (400 KV)-Hindaun Line (220 KV), 220 KV S/C Hindaun (400 KV)-Mandawar line, LILO of 220 KV S/C Bhilwara-Pali line at GSS Bhilwara, LILO of 220 KV S/C Bhilwara-Bali line at GSS Bhilwara and 220 KV GSS Kawai.

- RRVPNL despite aware of the fact that 250 MW unit-VI at Suratgarh was scheduled to be commissioned in October 2008, belatedly awarded (April 2008) contract for construction of 400/220 KV GSS at Bikaner with scheduled completion in October 2009. Further, the other works[8] relating to power evacuation system from this unit were completed with a delay ranging between five and 18 months from the schedule date of commissioning of the unit.

The Government stated that the existing evacuation system was adequate to evacuate the total available generation from Suratgarh TPS. The reply put a question on need of extra evacuation system for STPS Unit-6 since the entire evacuation could be managed through existing system.

As regards GLTPP, the Government stated that the unit #1 of GLTPP was not generating to its full capacity therefore the existing system was sufficient to evacuate the generation for both units. The reply was not convincing as the power was evacuated through the existing 220 KV system for 18 months. The fact, however, remained that the transmission facilities were not ready for synchronization.

Construction of GSSs and lines without assessing load requirements

2.1.13 For construction of a GSS and line, the load growth and anticipated increase in future demand along with permissible limits of voltage regulations are required to be considered mandatory, prior to taking up of the project, so that unnecessary expenditure can be avoided. The load forecasts for the proposed new schemes should also consider the anticipated physical and financial benefit to be derived.

RRVPNL constructs transmission system on the basis of the proposals of Distribution Companies (DISCOMs) *i.e.* Jodhpur Vidyut Vitran Nigam Limited (JdVVNL), Ajmer Vidyut Vitran Nigam Limited (AVVNL) and Jaipur Vidyut Vitran Nigam Limited (JVVNL). The proposals of DISCOMs are analysed keeping in view the techno-economic considerations which are based on RERC (Investment Approval) Regulations 2006.

We observed that in following two cases RRVPNL constructed GSS and lines without carrying out load flow study:

(I) Based on the revised (July 2005) proposal of JdVVNL for construction of 132 KV GSS at Khajuwala and 132 KV Khajuwala-Gharsana line with envisaged load of 17.45 MVA and annual energy savings of 26.806 LUs (₹ 1.04 crore), RRVPNL completed the project by October 2008 and September 2008 respectively at the cost of ₹ 14.60 crore.

We, however, noticed that RRVPNL before construction of the project did not estimate the probable load. RRVPNL also did not consider the financial viability of the project in terms of net present value of all the benefits accruing during the estimated life span (25 years) of the project which as per RERC guidelines indicated loss of ₹ 2.41 crore. Further, against the envisaged load of 17.45 MVA, the actual load during 2009-10, 2010-11 and 2011-12 was 9.50 MVA, 5.63 MVA and 7.31 MVA respectively.

8 400 KV S/C Suratgarh TPS-Bikaner line, LILO of 220 KV S/C Bikaner-Nagaur line and LILO of 220 KV S/C Bikaner-Sri Dungargarh line.

We observed that the RRVPNL besides violation of RERC guidelines of financial prudence in construction of transmission system had put additional burden of ₹ 10.02 lakh[9] towards operation and maintenance (O&M) charges on the consumers of DISCOMs during 2009-10 and 2010-11 and will continue till the GSS assumes envisaged load as the O&M charges of the GSS are debited to DISCOMs in the ARR.

The Government replied that the projection of load at the proposed 132 KV GSS was done as per the forecast by the DISCOMs and even the actual load recorded at the GSS was regulated by the DISCOMs. Therefore, RRVPNL had no control on the actual load recorded at the GSS. It further stated that it was technically feasible to construct GSS being the remote and border area and for feeding uninterrupted power supply to Indira Gandhi Nahar Project (IGNP) and Public Health and Engineering Department (PHED). The reply was not convincing as the GSS was not a deposit work and solely dedicated for PHED and IGNP. Further, financial prudence was overlooked in construction of GSS as it indicated a negative net present value and the GSS remained underutilized during 2009-12.

(II) RRVPNL constructed (January 2008) 132 KV GSS Kanwari at a cost of ₹ 3.49 crore on the proposal (February 2006) of JVVNL which envisaged 31.50 MVA load and annual energy savings of 28.82 LUs valuing ₹ 1.11 crore. We noticed that after construction of the GSS, it never achieved the envisaged load and the peak load was 5.09 MVA, 6.2 MVA, 7.43 MVA and 10.69 MVA during 2008-09, 2009-10, 2010-11 and 2011-12 respectively, which was much below than the envisaged load.

We also observed that the decision of construction of GSS Kanwari was in violation of clause 1.3 (1) (i) of RERC (Investment Approval) Regulations 2006) which provided that 'in rural area, distance between new 132 KV GSS from existing GSS should normally be not less than 30 Kms, unless load concentration so warrants'. In the instant case, 220 KV GSS (200 MVA) Jhalawar and 132 KV GSS (37.50 MVA) Bhawani Mandi were 20 Kms away from Kanwari and the transformers installed there had not achieved installed capacity. Further, both the GSSs were capable of further augmentation upto 400 MVA and 150 MVA respectively as prescribed under clause 3.6.1 of the said regulations, in case of concentration of load.

Thus, construction of new GSS at Kanwari without any requirement was contrary to the guidelines of RERC which led to blocking of funds of ₹ 3.49 crore along with additional burden of ₹ 24.04 lakh[10] on the consumers of DISCOMs towards O&M charges of GSS during 2008-12. This burden would continue till actual requirement of new GSS at Kanwari arose as the O&M charges of the GSS were debited to DISCOMs in the ARR.

The Government stated that the technical parameters for the proposal were as per guidelines of RERC. The reply was not convincing as the criteria of distance from nearby GSS set by RERC was not followed and the option to augment nearby GSSs *i.e.* Bhawani Mandi and Jhalawar up to permissible

9 (Envisaged load - Actual maximum load during three years) X 3 years X ₹ 42000.

10 (Envisaged load - Actual maximum load during four years) X 4 years X ₹ 42000.

limit was not exercised. Besides, the actual load was far below the envisaged load.

Performance of transmission system

2.1.14 Supply of quality power with minimum interruptions depends on efficient maintenance of its EHT transmission network. In the course of operation of GSSs and lines, the supply-demand profile within the constituent sub-systems is identified and system improvement schemes are undertaken to reduce line losses and ensure reliability of power by improving voltage profile. These schemes are for augmentation of existing transformer capacity, installation of additional transformers, laying of additional lines and installation of capacitor banks. The performance of RRVPNL as regards O&M of the system is discussed in the subsequent paragraphs.

Transmission capacity

2.1.15 RRVPNL constructs lines and GSSs at different EHT voltages to evacuate power from Generating Stations and to meet the load growth in different areas of the State. A transformer converts alternate current (AC) voltage and current to a different voltage and current at a very high efficiency. The voltage levels can be stepped up or down to obtain an increase or decrease of AC voltage with minimum loss in the process. The evacuation is normally done at 220 KV GSSs. The transmission capacity (*i.e.* total transmission capacity at 220 KV transformers) created vis-à-vis the transmitted capacity (peak demand met) at the end of each year by RRVPNL during five years ending March 2012 are as follows:

Transmission capacity (in MVA)				
Year	**Installed**	**After 30 *per cent* margin**	**Peak demand including non-coincident demand**	**Excess/shortage (3-4)**
(1)	**(2)**	**(3)**	**(4)**	**(5)**
2007-08	10605	7423.50	5620.20	1803.30
2008-09	11705	8193.50	6162.62	2030.88
2009-10	12805	8963.50	6928.28	2035.22
2010-11	15255	10678.50	7517.17	3161.33
2011-12	17425	12197.50	7681.81	4515.69

The table above indicates that the overall transmission capacity of RRVPNL was always in excess of the peak demand in every year. In comparison to peak demand, the excess capacity was 32.09 *per cent* in 2007-08 and increased to 58.78 *per cent* in 2011-12. The existing transmission capacity excluding 30 *per cent* towards redundancy worked out to an excess of 4515.69 MVA at the end of March 2012 which worked out to ₹ 158.05 crore (₹ 3.50 crore per 100 MVA PTR based on latest purchase order of January 2010) which was passed on to the consumer. We noticed that even though the annual peak demand (4995.96 MVA) at the end of March 2007 was already on lower side related to the installed transmission capacity of 7283.50 MVA[11] but RRVPNL continued to add through augmentation of GSSs and lines as discussed in preceding paragraphs. Existence of extra/idle capacity in the transmission network and

11 70 *per cent* of total transmission capacity (10405 MVA) in March 2007.

prevalence of overloads, high voltages on certain places reflects unscientific planning in creation of transmission network.

The Government accepted the fact of higher capacity and stated that GSSs were augmented on recording of 75 *per cent* of transformer capacity on the GSS and the allowed redundancy and spare constraints were essential to maintain system reliability/stability. However the reply was in deviation to the recommendation of working group on power for 11th plan stipulating 30 *per cent* margin of transmission capacity.

Sub-stations

Adequacy of Sub-stations

2.1.16 Manual on Transmission Planning Criteria (MTPC) issued by CEA prescribes maximum permissible capacity of 1000 MVA for 400 KV GSS, 320 MVA for 220 KV GSS and 150 MVA for 132 KV GSS. Maximum capacity for different GSSs in Rajasthan prescribed under clause 3.6.1 of RERC (Investment Approval) Regulations 2006 is 1000 MVA for 400 KV GSS, 400 MVA for 220 KV GSS and 150 MVA for 132 KV GSSs. Further, clause 1.3 (Annexure-I) of the said regulations also provides that the dedicated transmission system shall conform the requirement of design criteria.

Our scrutiny however revealed that RRVPNL did not adhere either to guidelines of MTPC or RERC and maximum capacity levels as on March 2012 at 400 KV GSS Heerapura, 220 KV GSS at Khetrinagar, Bhilwara and Heerapura were 1065 MVA, 455 MVA, 420 MVA and 520 MVA respectively which were in excess of the prescribed limits. Further four numbers[12] of 132 KV GSSs also exceeded the permitted level of 150 MVA.

Clause 5.3 (b) of RERC (Rajasthan Electricity Grid Code) Regulations 2008 provides that in all GSSs of 132 KV and above, at least two transformers shall be provided. It further provides that on 132 KV GSS where it is possible to arrange alternative supply at 33 KV within five minutes of outage of 132 KV transformers, then the provision of one transformer may be considered acceptable in first phase. In existing GSSs where only one transformer exists, second transformer shall be installed as per investment plan in phased manner. A provision of two transformers shall be kept while designing a new 132 KV GSS.

We observed that RRVPNL, in contravention to the said guidelines did not provide two transformers at 64 GSS of 132 KV as on March 2012. Further, the investment plans of RRVPNL also did not include provision of additional transformer at five 400 KV GSSs and 12 GSSs of 220 KV.

The Government stated that MTPC issued by CEA were not mandatory in nature and marginal deviations were on account of prevailing field conditions. It was also stated that existing transformers were being replaced by higher capacity transformers. In case of installation of second transformer, it was stated that based on the load growth/recorded (about 75 *per cent)* on first transformer, second transformer would be commissioned. Simultaneous

12 132 KV GSS Chambal (180 MVA), 132 KV GSS Jawahar Nagar (175 MVA), 132 KV GSS VKIA at Jaipur (175 MVA) and 132 KV GSS Kota Industrial Area, Kota (158 MVA).

installation of two transformers may result in un-utilised capacity especially in remote/rural/desert areas of the State. However, the fact was that RRVPNL did not follow the MTPC issued by CEA.

Voltage management

2.1.17 Clause 5 of the MTPC stipulates maintenance of steady state voltage limits to provide quality power and to reduce the transmission losses. Further, Clause 5.2 (s) of Indian Electricity Grid Code Regulations 2010 (Grid Code) also stipulates that all users *viz.* RLDC, SLDC STUs, CTU and NLDC shall take all possible measures to ensure that the grid voltage always remain within the permissible operating range. The maximum and minimum voltage level prescribed by MTPC and Grid code for different category GSSs and actual voltage level maintained by RRVPNL in Jaipur Zone during 2007-12 is as below:

Category of GSS	Minimum/Maximum level prescribed by MTPC and Grid Code	No. of GSSs of rated capacity	No. of GSSs where voltage level not maintained	Minimum/maximum voltage recorded on the transformer
400 KV	380/420	2	2	365/440
220 KV	198/245	29	23	117/250
132 KV	122/145	125	110	93/148

It could be seen that to maintain the prescribed level of voltage as in case of 400 KV GSS none of the transformers were within prescribed range while in case of 220 KV and 132 KV GSS, 79 *per cent and* 88 *per cent* respectively of the transformers did not maintain the prescribed level. The variation in minimum and maximum level at 400 KV was ranging between 3.95 and 4.76 *per cent* while in case of 220 KV and 132 KV GSS the same was ranging between 40.91 and 2.04 *per cent* and 23.77 and 2.07 *per cent* respectively.

The Government replied that due to deviation in the State generation and allocation from Central Generators against the presumed condition, the voltage profile of a region was affected and when the reactive power balance was not maintained, the voltage of STS would be high or low. The maximum and minimum voltages recorded at the GSSs were at a particular instant of time which were normally temporary in nature and could not be adjusted instantaneously. Since the system had the capabilities to withstand marginal deviation for short period of time the reactive compensation was carried to normalize the voltage. However, as stated above, there had been significant deviation in actual voltage recorded at various GSSs of RRVPNL from the limits prescribed by MTPC/Grid Code. Besides, there should not be any fluctuation in the voltage, if there had been system of capabilities of reactive compensation as stated by Government.

EHT lines

2.1.18 Permissible line loading limit depend on many factors such as voltage regulation, stability and current carrying capacity (thermal capacity) etc. As per MTPC permissible line loading cannot normally be more than the Thermal Loading Limit (TLL). The TLL limits the temperature attained by the energized conductors and restricts sag and loss of tensile strength of the lines. The TLL limits the maximum power flow of the lines. As per MTPC the

maximum TLL of ACSR[13] MOOSE 520 sq. mm, ZEBRA 420 sq. mm and PANTHER 210 sq. mm conductor used at 400 KV, 220 KV and 132 KV line respectively at 45°C ambient temperature is 595 ampacity (amps), 546 amps and 366 amps respectively.

The following table depicts load on various categories of lines of Jaipur Zone during 2007-12.

Type of conductor	TLL (in Amps)	Total no. of feeders	No. of feeders where Amps recorded more than TLL	Maximum Amps recorded
Zebra	546	82	45	787
Panther	366	303	104	600

It could be seen that out of 385 feeders having various types of conductor, 149 (38.70 *per cent*) feeders were having load more than the prescribed limit. The maximum recorded Amps on ZEBRA and PANTHER conductor at various feeders was 144 and 164 *per cent* respectively against the prescribed limit. Excess loading of the lines beyond capacity would cause voltage fluctuations, higher transmission losses and frequent interruptions/breakdowns.

The Government stated that MTPC guidelines must be kept in mind while planning/operation of the transmission system but not mandatory. It further stated that the peak load was not continuous and for a short duration. The TLL depended on various factors and accordingly the transmission line could also be loaded to TLL for a specific period without observing any contingency/outage in the system. The fact remained that feeders/lines were considerably overloaded in contravention to the prescribed TLL limits.

Bus Bar Protection Panel (BBPP)

2.1.19 Bus bar is used as an application for interconnection of the incoming and outgoing transmission lines and transformers at an electrical GSS. BBPP limits the impact of the bus bar faults on the entire power network which prevents unnecessary tripping and selective to trip only those breakers necessary to clear the bus bar fault. As per Grid norms and Best Practices in Transmission System, BBPP is to be kept in service for all 400 KV and 220 KV SSs to maintain system stability during Grid disturbances and to provide faster clearance of faults on 400 KV and 220 KV buses. Our scrutiny revealed that as on 31 March 2012 though BBPPs were installed at all the nine 400 KV GSSs but BBPP at 400 KV GSS Bikaner and Surpura were out of service since October 2011 and December 2011 respectively. Further, out of 89 feeders of 220 KV at 400 KV GSS and 220 KV GSS, BBPPs were installed only at 24 feeders out of which nine BBPPs were not in use since October 2006/February 2012 due to non-operational/defective bays, defects in communication scheme and extension of 220 KV switchyards.

The Government while accepting the fact of non-installation of BBPPs replied that the tenders for purchase of BBPPs had been opened and were under evaluation. The defective BBPPs at 400 KV GSSs had been rectified and were working satisfactorily. The fact remained that BBPPs were not installed at all the feeders.

13 Aluminum Conductor Steel Reinforced.

Maintenance

Working of hot lines division/sub divisions

2.1.20 Regular and periodic maintenance of transmission system is of utmost importance for its un-interrupted operation. Apart from scheduled patrolling of lines following seven techniques are prescribed in the Report of the Committee for updating the Best practices of Transmission in the country for maintenance of lines:

- Hot Line Maintenance
- Hot Line Washing.
- Hot line Puncture Detection of Insulators.
- Preventive Maintenance by using portable earthing hot line tools.
- Vibration Measurement of the line.
- Thermo-scanning.
- Pollution Measurement of the equipment.

The hot line technique (HLT) envisages attending to maintenance works like hot spots, tightening of nut and bolts, damages to the conductor, replacement of insulators etc. of GSSs and lines without switching off. This includes thermo scanning of all the lines and GSSs towards preventive maintenance. HLT was introduced in India in 1958. We observed that RRVPNL did not establish any hot line division/sub-division till March 2012 to maintain the above stated maintenance of transmission system.

The Government accepted the fact and stated that RRVPNL was also intending to establish hot line division/sub-division.

Transmission losses

2.1.21 While energy is carried from the generating station to the consumers through the Transmission & Distribution (T&D) network, some energy is lost in this process which is termed as T&D loss. Transmission loss is the difference between energy received from the generating station/Grid and energy sent to DISCOMs. While CEA has prescribed a maximum of four *per cent* norms for transmission losses, RERC has also approved target limits for maintaining the transmission loss for each financial year. The details of transmission losses from 2007-08 to 2011-12 in comparison of CEA and RERC norms is given below:

Particulars	**Unit**	**Year**				
		2007-08	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Power received for transmission	MUs	36716.712	38870.717	44204.831	47210.456	51125.858
Net power transmitted	MUs	34519.118	36460.397	41500.721	44580.726	47977.608
Actual Transmission loss	MUs	2197.594	2410.320	2704.110	2629.730	3148.250
	Percentage	5.99	6.20	6.12	5.57	6.16
Target Transmission losses per the CEA norm	Percentage	4.00	4.00	4.00	4.00	4.00
Target Transmission loss as per RERC norms	Percentage	4.40	4.40	4.40	4.40	4.20
Transmission loss in	MUs	582.059	700.008	759.097	552.470	1000.964

Particulars	Unit	Year				
		2007-08	2008-09	2009-10	2010-11	2011-12
excess of RERC norms (Valued at average cost of power purchase by DISCOMs)	Rate per unit (in ₹)	3.28	3.16	3.04	2.98	2.98[14]
	₹ in crore	190.92	221.20	230.77	164.64	298.29

The transmission losses in RRVPNL during 2007-08 to 2011-12 were always more than the prescribed norms of CEA and targets fixed by RERC. Against CEA norms of four *per cent* the transmission losses were ranging between 5.57 *per cent* (2010-11) and 6.20 *per cent* (2008-09). During the period 2007-08 to 2011-12 value of transmission loss in excess (3594.598 MUs) of the RERC target limits was ₹ 1105.82 crore which was suffered by DISCOMs due to in-efficiency of RRVPNL.

We observed that RRVPNL incurred capital expenditure of ₹ 7286.25 crore during 2007-12 on system improvement with the objective to supply quality and reliable power and to reduce transmission losses. However, the investments/investment plans did not effectively contribute reduction of losses as there was no major reduction in transmission losses during 2008-09 to 2011-12. In-efficiency of RRVPNL to maintain transmission losses within prescribed limits of RERC put an additional burden on DISCOMs and consequently on consumers.

We further observed that RERC while issuing (August 2009) Multi Year Tariff (MYT) order directed RRVPNL to undertake detailed system study to identify and priortise transmission schemes that could reduce congestion/improve system parameters/reduce transmission losses and submit the same to RERC during annual performance review for 2009-10. RRVPNL, however, did not adhere to the directions and no such study was undertaken and submitted to RERC to ensure commitment for reduction in transmission losses.

The Government stated that there could not be uniform norms of T&D losses for whole country as losses depends on transmission system corresponding to geographically area, load center/load pattern and location of generating station. In Rajasthan transmission system was relatively larger and the losses included in the above table were inclusive of losses outside the state whereas RERC gave yearly targets only for losses within state. It further stated that the transmission losses within state were slightly higher than the target set by RERC but were on reducing trend. The fact, however, remained that the transmission losses were higher than the norms fixed by CEA/RERC. The Government also stated that RRVPNL had already undertaken detailed system study as per RERC directions but the same was not found submitted to RERC on record.

Transmission standards of performance

2.1.22 RERC issued (July 2004) 'Transmission Licensee's Standards of Performance Regulations 2004' (Performance Standards) for providing an efficient, reliable, coordinated and economical system of electricity supply and transmission by RRVPNL. The objectives of the performance standards were:

14 In absence of average cost of power purchase for the year 2011-12, transmission losses have been valued at the cost of 2010-11.

- To ensure that the Grid Performance meets a minimum standard which is essential for the user's system demand and the equipment function properly;
- To enable the users to design their systems and equipment to suit the electrical environment that they operate in;
- To enhance the quality standards of the State Transmission System in order to move towards standards stipulated in or established under the authority of National and State Acts and Rules in the short term and gradually moving towards international standards in the long term;
- To provide quality of power at the interface point of 33 KV and 11 KV lines emanating from wind farm or other generating stations and terminating at RRVPNL EHV GSS.

The performance standards were to be implemented in three stages *i.e.* (i) Preliminary Stage- one year immediately following approval of these standards, (ii) Transition Stage-Time period spreading upto two years after preliminary stage (iii) Final Stage- Period after expiry of Transition Stage.

Analysis of the records, however, revealed that the performance of RRVPNL towards achieving/adhering the standards prescribed was not as per RERC guidelines. Our scrutiny revealed that:

- Voltage unbalance in various categories of transformers was always more than the prescribed level[15] of RERC during 2007-08 to 2011-12. Against prescribed level of two *per cent* for 400 KV, the voltage unbalance during 2007-12 was ranging between 2.70 and 21.69 *per cent.* In case of 220 KV and 132 KV the voltage unbalance was ranging between 4.54 and 7.28 *per* cent and 4.02 and 15.80 *per* cent respectively. Further, in case of 33 KV and 11 KV, the same was ranging between 5.17 *per cent* and 35 *per cent* and 3.37 and 12 *per cent* respectively against the prescribed limit.
- The performance standards prescribed that the current unbalance should not be more than three *per cent* and would apply on all the feeders of voltage class emanating from sub-station taken as group. We noticed that RRVPNL did not measure the current unbalance on the feeders till 2010-11 in absence of which the performance could not be measured. The current unbalance on various feeders during 2011-12 was as below:

Feeder	**400 KV**	**220 KV**	**132 KV**	**33 KV**	**11 KV**
Current Unbalance (Percentage)	13.09	12.24	17.44	16.94	14.94

- Harmonics affect system operation and life of the equipments. The performance standards prescribed that Total Harmonic Distortion (THD) should not exceed one *per cent* at the inter-connection point of EHV system in final phase. The measurement was to be taken at 10 minutes interval and should last for one week per site. It was also prescribed that wherever THD exceeds the limit or individual

15 220 KV and above- two *per cent* and below 220 KV- three *per cent.*

harmonics exceeds 0.5 *per cent*, RRVPNL should measure harmonics with and without load/generating stations to ascertain the origin. We however, noticed that the instrument having provision for reading harmonics was not installed by RRVPNL till March 2011 and in absence of this the effects of harmonics on the life of instruments could not be commented. During 2011-12, THD was 4.70 *per cent.*

The Government stated that the voltage imbalance was due to imbalance of load at interconnection point with DISCOM. RRVPNL was not able to comply with this requirement of Regulation. It further stated that it had tried to identify equipment which could carry out the measurement as required by the Commission. However, Multi Function Meters were being installed to collect THD data.

Voltage Variation Index (VVI)

2.1.23 VVI represents the degree of voltage variation from nominal value over a specified period of time. RERC prescribed that VVI on annual basis shall not exceed the limit of one *per cent* for voltage levels of 220 KV, 132 KV and 66 KV and in respect of 400 KV nominal voltage the VVI shall not exceed 1.125 *per cent.* The performance of RRVPNL there against is as under.

(Figures in percentage)

Nominal Voltage (KV)	Target	2007-08		2008-09		2009-10		2010-11		2011-12	
		higher voltage	lower voltage	higher voltage	lower voltage	higher voltage	lower voltage	higher voltage	lower voltage	higher voltage	lower voltage
400	±1.125	3.06	1.42	2.29	0.94	1.71	1.24	2.36	1.74	3.35	0.65
220	±1	3.20	1.83	3.75	1.76	1.83	1.08	3.55	2.79	3.27	1.92
132	±1	1.52	3.21	3.29	3.48	1.16	1.41	1.91	2.51	1.59	2.26
33	±1	2.6	2.37	3.49	2.85	1.38	1.30	1.93	2.09	1.72	1.92
11	±1	2.12	2.20	3.27	2.23	1.22	1.08	1.91	1.56	1.50	1.48

It could be seen that the performance of RRVPNL towards adhering the VVI norms of RERC was inferior.

As per clause 11 of the Standard Performance Regulations, an Annual Review Committee was to be formed by RRVPNL and its recommendations were to be submitted to RERC for approval. We noticed that RRVPNL did not form the committee to review the annual performance towards implementation of the performance standards prescribed by RERC.

The Government replied that voltage variation in 400/220/132/33/11 KV system could not be controlled as these were interrelated and connected to regional grid. It further stated that the performance was reviewed every month by protection wing/protection committee constituted under REGC. However, nothing was found on record about formation of committee as well as annual review as per SOP prescribed by RERC.

Grid Management

Maintenance of Grid and performance of SLDC

2.1.24 Transmission and Grid Management are essential functions for smooth evacuation of power from generating stations to the DISCOMs/consumers. Grid Management ensures moment-to-moment power balance in the interconnected power system to take care of reliability, security, economy and efficiency of the power system. Grid management in India is carried out in

accordance with the standards/directions given in the Grid Code issued by CEA. The Rajasthan State Load Despatch Centre (RSLDC), Heerapura, Jaipur, a constituent of Northern Region Load Despatch Centre (NRLDC), New Delhi came into existence (December 2004) to ensure integrated operation of power in the State. The operations of RSLDC are controlled and managed by RRVPNL. RSLDC is assisted by four [16] Sub/Area Load Despatch Centres (Sub-LDCs/ALDCs) for data acquisition/transfer and supervisory control of 400/132 KV GSSs equipments. The RSLDC levies and collect such fees and charges from the generating companies and licensees engaged in intra-state transmission of electricity as specified by the RERC.

Infrastructure for load monitoring

2.1.25 Remote Terminal Units/Sub-station Management Systems (RTUs/SMSs) are essential for monitoring the efficiency of the transmission system and loads during emergency in load despatch centres as per the Grid norms for all GSSs. We observed that out of 418 GSSs of 400/220/132 KV and 11 generators as on March 2012, only 71 GSSs (17 *per cent*) and eight (73 *per cent*) of generators were provided with RTUs for recording real time data for Efficient Energy Management System. Further, though the Sub-LDCs and RSLDC were integrated among themselves but none of the four Sub-LDCs had any data storing or back up facilities.

The Government replied that RRVPNL had ordered for procurement, installation and commissioning of 70 RTUs and the work was in progress. It further stated four Sub-LDCs were interconnected to SLDC, Heerapura and the data of four Sub-LDCs was being stored at Sub-LDC level as well as SLDC, Heerapura. The fact remains that all the GSSs and generators will still remain without RTUs even after new order of 70 RTUs. As regards data storing facility at Sub-LDC level is not in consonance with the reply (May 2012) given by Superintending Engineer (SCADA) which stated that the provision of data storing/back up facilities had been included in ULDC phase-II, scheduled to be completed by the end of year 2013.

Grid discipline by frequency management

2.1.26 Indian Electricity Grid Code provides that SLDCs shall take all possible measures to ensure that the grid frequency always remains within the 49.5 –50.2 Hz band to ensure efficient functioning and to prevent sudden collapse of the Grid. Keeping in view the safety of Grid, RERC also issued (May 2008) Grid Code, clause 11.3 of which provides that all the constituent members of the Grid are expected to maintain a system frequency between 49 and 50.5 Hertz (Hz). However, due to various reasons such as shortages in generating capacities, high demand, Grid indiscipline in maintaining load generation balance, inadequate load monitoring and management, Grid frequency goes below or above the permitted frequency levels. To enforce the Grid discipline NRLDC issues three (A, B, C) types of violation messages. 'A' type message is issued when the frequency is less than 49.2 Hz and over-drawal is more than 50 MW or 10 *per cent* of schedule whichever is less while 'B' type message is issued when frequency is less than 49.2 Hz and over-drawal is between 50 and 200 MWs for more than ten minutes or 200 MW for

16 Heerapura, Ratangarh, Bhilwara and Kota.

more than five minutes and 'C' type messages are of serious nature and are issued 15 minutes after the issue of 'B' type message when frequency continues to be less than 49.2 Hz and over drawal is more than 100 MW or ten *per cent* of the schedule, whichever is less.

We noticed that NRLDC issued 65 'C' type messages to RRVPNL during July 2009 to March 2012. Prior to July 2009 there was no system in force to record the violation messages. Failure of RRVPNL to maintain Grid discipline led to penalty of ₹ 6 lakh by CERC in May 2009.

The Government stated that the management of load as per schedule was primarily the responsibility of distribution licensee and as soon as a message was received from NRLDC, SLDC took immediate action and directed the distribution licensee to restrict drawal as per schedule. It further stated that an appeal was filed in APTEL wherein the order of CERC imposing penalty of ₹ 5 lakh, against penalty of ₹ 6 lakh, was set aside.

Planning for power procurement

2.1.27 RRVPNL draws long term supply plan taking into account the contracted generation capacity, allocation from central sector and future committed projects and evolve net additional requirement of power in consultation with the DISCOMs. It also draws day-ahead plan for assessing its day to day power requirement. The details of total requirement of the State, total power supplied and shortage of power for the five years 2007-08 to 2011-12 are given below:

(Figures in MUs)

Sl. No.	Particulars	2007-08	2008-09	2009-10	2010-11	2011-12
1	Total power requirement	37386	38453	44542	46592	51900
2	Total power supplied[17]	34519	36460	41501	44581	47978
3	Power short supplied	2867	1993	3041	2011	3922
4	Percentage of shortage	7.67	5.18	6.83	4.32	7.56

Against total power requirements of State the actual supply was ranging between 92.33 *per cent* and 95.68 *per cent*. The shortfall in supply though reduced to 5.18 *per cent* and 4.32 *per cent* in 2008-09 and 2010-11 respectively but again increased to 7.56 *per cent* in 2011-12, almost equal to the level of 2007-08.

The gap in demand and supply position leads to variation between actual generation/ or actual drawal and scheduled generation or scheduled drawal which is accounted through Unscheduled Interchange (UI) charges, worked out by RSLDC for each 15 minutes time block. UI charges are levied for the supply and consumption of energy in variation from the pre-committed daily schedule. This charge varies inversely with the system frequency prevailing at the time of supply/consumption. Hence it reflects the marginal value of energy at the time of supply. The levying of UI charges acts as a commercial deterrent to curb over drawals from Central Generating Stations (CGS) during low frequency conditions.

17 Including generation, short and long term purchases and drawal from Central Generating Stations.

During 2007-08 to February 2012, RRVPNL paid UI charges valuing ₹ 3624.02 crore[18]. The UI drawals during this period were as high as ₹ 9.20 per unit.

The Government while accepting the facts and figures stated that the financial liability of UI charges lies on distribution licensees.

Disaster Management plan

2.1.28 Disaster Management Plan (DMP) aims at mitigating the impact of major break down in the transmission system and restoring it in the shortest possible time. As per the Report (2002) of the Committee on 'Best Practices in Transmission System in the Country's, DMP should be set up by all power utilities for immediate restoration of the transmission system in the event of a major failure. DMP is to be carried out by deploying Emergency Restoration System, DG sets, vehicles, fire-fighting equipments, skilled and specialised manpower. It aims at carrying of mock drills for starting up generating stations operations during black start[19]. Disaster Management Centre, NLDC, New Delhi acts as Central Control Room in case of disasters. As a part of disaster management programme, RRVPNL carried out mock drills quarterly at GSSs to meet crisis/disaster situations.

We noticed that the co-ordination committee of power sector companies of Rajasthan approved (May 2009) DMP, which *inter alia* considered necessary various actions and facilities as preventive/mitigation measures to minimize the impact of disaster and crisis.

2.1.29 We observed that RRVPNL did not implement the DMP broadly as mobile DG sets, synchronoscopes and vehicles in good condition were not available at centralized location for immediate mobilisation of manpower and material to provide relief and to meet the need of dewatering pumps. Further, vulnerable centres having highest risk were also not identified. Besides these, neither fire alarms and extinguishing systems were installed at all places nor periodically comprehensive state-wide drills were carried to test the capabilities.

The Government stated that the Disaster Management Plan was being implemented. RRVPNL had made necessary arrangements at some important sub-stations. The fact remained that the Disaster management Plan approved (May 2009) by the RRVPNL was yet to be implemented fully (September 2012).

Energy Accounting and Audit

2.1.30 Energy accounting and audit is a necessary and crucial step towards assessment and reduction of transmission losses. The transmission losses are calculated from the Meter Reading Instrument (MRI) readings obtained from Generation to Transmission (GT) and Transmission to Distribution (TD) Boundary metering points. As on March 2012 there were 649 interface boundary metering points between GT (155) and TD (494). It was noticed that against 0.2s accuracy class of meter prescribed under RERC (Metering)

18 2007-08 - ₹ 725.53 crore, 2008-09 – ₹ 720.24 crore, 2009-10 – ₹ 468.73 crore, 2010-11 – ₹ 898.01 crore and 2011-12, upto February – ₹ 811.51 crore.

19 The procedure necessary to recover from partial or a total black out.

Regulations 2007 as minimum acceptable specification for interface and energy accounting and audit meters only 71 GT points were provided 0.2s class meters while 57 and 14 GT points were provided with 0.5 and 1.0 class meters respectively. Further, of 494 TD points only 176 points were provided with 0.2s class meters while 266 and 39 TD points were provided with 0.5 and 1.0 class meters respectively. The remaining 13 GT and 13 TD points were not provided with meters of any type.

A further analysis of annual statistical statements of TCC-I revealed that out of 25 GSS as on March 2012, no meters were provided on three, two and 11 GSSs during 2009-10, 2010-11 and 2011-12 respectively. Besides this, meters on eight GSSs were defective in 2009-10 and 2010-11 and were showing 100 *per cent* losses. The transmission losses recorded on the metered GSSs ranged between 0.07 and 3.47 *per cent*, 0.04 and 7.*51 per cent* & 0.17 and 3.30 during 2009-10, 2010-11 and 2011-12 respectively.

Thus, progress of RRVPNL towards measurement of transmission losses was not satisfactory as all the GT and TD points were not provided with meters/prescribed accuracy class of meters. Further, non-replacement of defective meters and usage of different accuracy class meters at input and output points led to un-realistic recording of transmission losses at GSSs. Besides this, RRVPNL was not having system of recording feeder wise losses on monthly basis and appraising the same to the higher authorities.

The Government accepted that at few points either meters were not installed or meters of other than 0.2s class were installed. In such cases energy readings were obtained from meters installed on transformers operating in parallel. It further stated that purchase of meters/obtaining energy data from meters on BOT basis was in progress. However the fact remained that due to non-installation of 0.2s class meters on all metering points and non-replacement of defective meters, energy recorded by RRVPNL could not be termed as accurate.

Financial Management

2.1.31 One of the major objectives of the National Electricity Policy 2005 was to ensure financial turnaround and commercial viability of Power Sector. Since reconstruction of the erstwhile Rajasthan State Electricity Board in 2000, RRVPNL was preparing accounts on 'No Profit and No Loss' basis till 2007-08 as per the financial reconstructing plan approved by the State Government. The 'No Profit and No Loss' basis system did not depict the true financial position of RRVPNL and as a result the Comptroller and Auditor General of India gave 'not true and fair' certificate on the accounts of RRVPNL for the year 2007-08. RRVPNL subsequently started to maintain accounts on 'Generally Accepted Accounting Principles' (GAAP) from 2008-09 onwards.

The financial position of RRVPNL during four[20] years ending March 2011 is as under.

20 Final accounts for the year 2011-12 were not finalised during the course of performance audit.

(₹ in crore)

Particulars	2007-08	2008-09	2009-10	2010-11
A. Liabilities				
Paid up Capital	939.00	1104.00	1344.00	1744.00
Reserves & Surplus (including Capital Grants)	132.71	208.10	197.45	210.14
Borrowings (Loan Funds)	3502.68	4569.76	5228.64	6037.84
Current Liabilities & Provisions **(CL)**	994.79	1969.55	2766.14	3293.43
Total Liabilities	**5569.18**	**7851.41**	**9536.23**	**11285.41**
B. Assets				
Gross Block	4482.22	5326.75	6396.32	8285.71
Less: Depreciation	1677.69	1786.01	1923.88	2150.73
Net Fixed Assets**(NFA)**	**2804.53**	**3540.74**	**4472.44**	**6134.98**
Capital Works-in-Progress **(CWIP)**	656.46	1317.72	1552.07	1314.90
Investments	0.66	0.34	0.25	0.35
Current Assets, Loans and Advances **(CA)**	2089.56	2121.21	1828.36	2196.43
Miscellaneous Expenditure	17.97	10.63	6.40	4.18
Accumulated Losses	-	860.77	1676.71	1634.57
Total Assets	**5569.18**	**7851.41**	**9536.23**	**11285.41**
Debt Equity Ratio[21]	**3.73:1**	**4.14:1**	**3.89:1**	**3.46:1**
Profit before Tax	**0.80**	**(859.91)**	**(815.94)**	**42.15**
Interest (net of IDC[22] **capitalised)**	**203.13**	**307.68**	**344.57**	**421.02**
Profit before interest and tax	**203.93**	**(552.23)**	**(471.37)**	**463.17**
Capital Employed[23]	**4556.00**	**5065.81**	**5193.87**	**6511.21**
Return on Capital Employed (Percentage)[24]	**4.48**	**(10.90)**	**(9.08)**	**7.11**

It could be seen that after framing financial statements on the basis of GAAP from 2008-09 onwards RRVPNL incurred losses during 2008-09 and 2009-10 which accumulated to ₹ 1634.57 crore by the end of March 2011. Further, the profits of ₹ 42.15 crore reflected in 2010-11 was also consequent to an adjustment of prior period item (Employee cost of ₹ 208.26 crore). The analysis of financial position of RRVPNL revealed the following:

- Debt-Equity ratio though decreased from 3.73:1 in 2007-08 to 3.46:1 in 2010-11 but the same was higher in 2008-09 (4.14:1) and 2009-10 (3.89:1) indicating increased dependence of RRVPNL on borrowed funds which increased (172.38 *per cent*) from ₹ 3502.68 crore to ₹ 6037.84 crore during 2007-11.
- Capital employed increased by 42.92 *per cent* during 2007-11 but return on capital employed was negative during 2008-09 and 2009-10. This was mainly due to recognition of employees' liability in 2008-09 and implementation of sixth pay commission recommendations.
- Addition in fixed assets and capital works in progress during the review period was more than the equity contributed by State Government and long term borrowings. This showed short-term borrowings were utilised for creating capital assets which indicated

21 Borrowings (Loan funds) / Paid up Capital.
22 Interest during construction.
23 Net Fixed Assets + Capital Works in Progress + Current Assets, Loans and Advances – Current Liabilities and Provisions + Provision for Gratuity.
24 Profit before interest / Capital employed X 100.

imprudent financial management and RERC had also disallowed capitalisation of interest on short term borrowings used for capital assets in ARR/truing up.

The details of working results like revenue realization, net surplus/loss and earnings and cost *per* unit of transmission are given below:

(₹ in crore)

Sl.No	Description	2007-08	2008-09	2009-10	2010-11
1	**Income**				
1.1	Revenue from sale of power	153.38	179.94	229.56	248.59
1.2	Revenue (transmission and SLDC charges)	723.26	840.68	1107.34	1387.46
1.3	Other income including Interest/Subsidy, Turnkey Contracts and Prior Period Income	44.61	349.30	88.89	298.69
Total Income		**921.25**	**1369.92**	**1425.79**	**1934.74**
2	**Expenditure**				
(a)	**Fixed cost**				
(a.1)	Employees cost	323.44	1458.45	1358.20	911.29
(a.2)	Administrative and General Expenses	87.04	69.75	92.01	71.93
(a.3)	Depreciation	120.00	133.59	166.21	222.35
(a.4)	Interest and Finance charges (net after capitalisation)	206.72	311.22	349.18	428.26
Total fixed cost (A)		**737.20**	**1973.01**	**1965.60**	**1633.83**
(b)	**Variable cost**				
(b.1)	SLDC Charges	12.85	17.91	14.42	13.55
(b.2)	Generation of Power (Including Prior Period Exp.)	104.79	165.31	181.54	150.07
(b.3)	Repairs & Maintenance	66.41	74.47	80.17	95.14
Total variable cost (B)		**184.05**	**257.69**	**276.13**	**258.76**
Total cost (A) + (B)		**921.25**	**2230.70**	**2241.73**	**1892.59**
3	**Transmission**				
(3.1)	Installed capacity (MW)	6420.68	7019.48	8076.51	9188.22
(3.2)	Power received from generation units (MUs)[25]	3509.889	2879.005	2090.093	2607.469
(3.3)	Power purchased (MUs)	33206.823	35991.712	42114.738	44602.987
Total (C)		**36716.712**	**38870.717**	**44204.831**	**47210.456**
Loss in transmission (MUs) (D)		**2197.594**	**2410.320**	**2704.110**	**2629.730**
Net power transmitted in MUs (C) – (D)		**34519.118**	**36460.397**	**41500.721**	**44580.726**
4	Realisation (₹ per unit)[26]	0.267	0.376	0.344	0.434
5	Fixed cost (₹ per unit)[26]	0.214	0.541	0.474	0.366
6	Variable cost (₹ per unit)[26]	0.053	0.071	0.066	0.058
7	Total cost (₹ per unit) (5+6)[26]	0.267	0.612	0.540	0.424
8	Contribution (₹ per unit) (4-6)[26]	0.214	0.305	0.278	0.376
9	**Profit (+)/Loss(-) (4-7)[26] (₹ per unit)**	0.000	-0.236	-0.196	0.010

It was observed that the realization per unit and total cost per unit were same for the year 2007-08. This was due to framing of financial statements on 'No Profit No Loss basis' as mentioned in previous paragraph. The financials

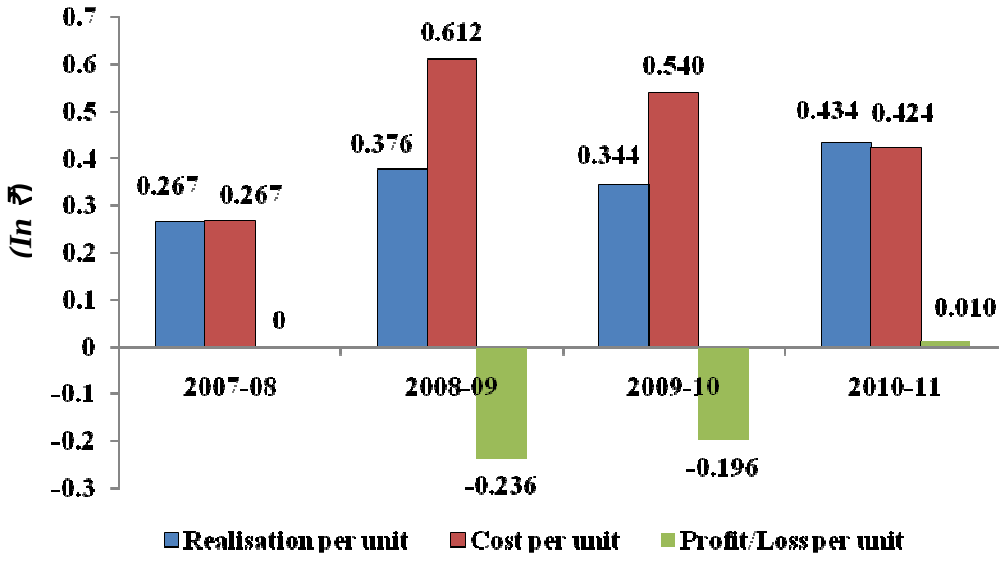
25 Including private generation.

26 Other income is also considered for calculation of per unit cost under rows 4-9.

of RRVPNL deteriorated during 2008-09 and 2009-10 as the total cost per unit was more than the realisation per unit. RRVPNL though registered increase in contribution per unit from ₹ 0.305 to ₹ 0.376 during 2008-11 but an excess fixed cost per unit during 2008-10 wiped of the savings as the fixed cost on account of employee cost significantly increased from ₹ 323.44 crore in 2007-08 to ₹ 1458.45 crore (350.92 *per cent*) in 2008-09. The consequential effect of increased employee cost affected the financials till 2010-11 when the fixed cost per unit decreased by ₹ 0.108 and contribution per unit increased by ₹ 0.098 in comparison to 2009-10 thereby reducing the total cost per unit leading to marginal profit in 2010-11. Further, the interest cost which increased by 107.17 *per cent* during 2007-08 to 2010-11 also affected the profitability of RRVPNL.

Recovery of cost of operations

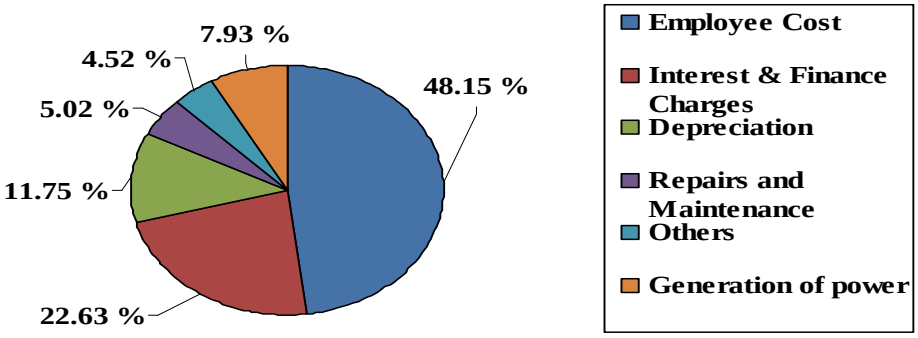
2.1.32 The realisation per unit, cost per unit and profit/loss per unit during 2007-08 to 2010-11 is given in the bar graph below:



The graph above indicated that RRVPNL could not recover cost of operations during 2008-09 and 2009-10. The reasons of non-recovery of cost of operation have been discussed in previous paragraph.

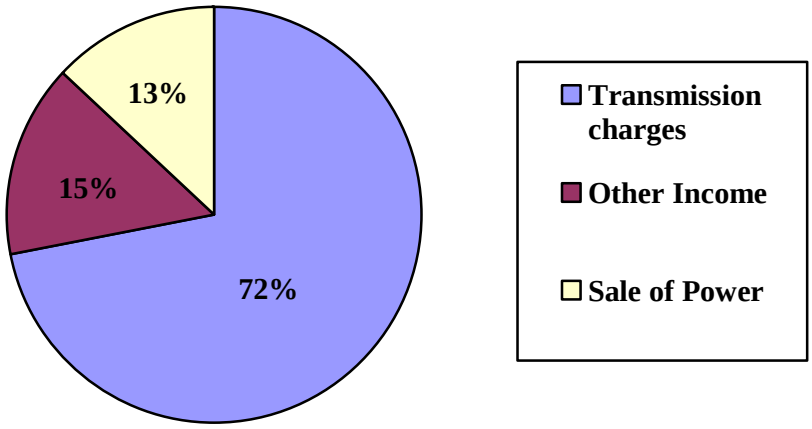
Elements of Cost

2.1.33 The percentage break-up of major elements of costs for 2010-11 is given below:



Elements of revenue

2.1.34 Transmission charges constitute the major element of revenue. The percentage break-up of revenue for 2010-11 is given below in the pie chart**.**



Tariff Fixation

2.1.35 The financial viability of RRVPNL depends upon generation of surplus (including fair returns) from the operations to finance its operating needs and future capital expansion programmes by adopting prudent financial practices. Revenue collection is the main source of generation of funds. The issues relating to tariff are discussed here under.

The tariff structure of RRVPNL is subject to revision approved by the RERC after objections, if any, received against ARR petition filed by it within stipulated period. As per clause 13 and 8 of RERC (Terms & Condition for Determination of Tariff) Regulation 2004 and 2009 respectively, RRVPNL is required to submit ARR by 30 November every year along with annual statements of performance and accounts including latest report of audited accounts. The tariff worked out in accordance with the regulations is chargeable from April 1, next year.

The table below shows the due date of filling ARR, actual date of filing, date of approval of tariff petition and the effective date of the revised tariff for the period 2007-08 to 2011-12.

Year	Due date of filing	Actual date of filing	Delay in days	Date of approval of ARR/tariff order by RERC	Effective date of tariff order	Time gap between effective date and date of approval
2007-08	30 November 2006	30 December 2006	30	7 March 2007	1 April 2007	-
2008-09	30 November 2007	29 December 2007	29	31 March 2008	1 April 2008	-
2009-10	30 November 2008	26 March 2009	116	1 August 2009	1 April 2009	4 months
2010-11	30 November 2009	27 January 2010	58	16 September 2010	1 April 2010	5 months and 16 days
2011-12	30 November 2010	14 March 2011	104	23 December 2011	1 April 2011	8 months and 23 days

We observed that RRVPNL never filed ARR with RERC within dues date of filing during 2007-08 to 2011-12 and the delay was ranging between 29 days and 116 days which consequently delayed the approval from RERC. It is pertinent to mention that RRVPNL appointed consultants during 2009-10 to 2011-12 for timely filing of ARR but even then the target date of filing could not be adhered and delay increased in comparison to 2007-08 and 2008-09. Further, delay in approval by RERC was ranging between four months and eight months 23 days also led to delay in implementation of tariff order. Scrutiny of reasons for delayed approval from RERC besides delay in filling of ARR were delay in responding to the queries of RERC, delay in submission to the objections raised by parties during hearings *etc*.

Delay in implementation of RERC tariff order resulted in recovery of transmission charges by RRVPNL either at the rate of previous year or provisional rate ordered by RERC for the respective year. This caused loss of interest of ₹ 4.22 crore on delayed recovery of transmission charges of ₹ 85.57 crore and ₹ 94.20 crore during 2009-10 and 2010-11 for delay in filing of ARR.

The Government attributed that ARR for the year 2009-10 was filed with delay due to introduction of new formats by RERC and in case of 2010-11, it was delayed due to non-finalisation of plan ceiling by the Planning Commission. The reply was not convincing as RRVPNL appointed a consultant keeping in view the new formats for the year 2009-10 and 2010-11. Even then ARRs were filed with delay and consequent loss of interest borne by RRVPNL.

Other issues in Financial Management

Deposit works

2.1.36 RRVPNL executes deposit works on the demand of private parties/ government departments/institutions after collecting the estimated expenditure in advance in accordance with the policy/circulars issued from time to time. As per the policy/circulars the amount of advance is to be deposited in one installment by the party after issuance of technical sanction. Further, the final

account of deposit work shall be prepared within 60 days of the completion of the deposit work to ensure recovery/refund as per the final account.

We noticed that there was no proper system of accounting of deposit works due to which RRVPNL was not aware of the actual expenditure incurred/incurring on the deposit work during execution stage. Further, the final account of deposit work was also not finalised within the stipulated period as a result a sum of ₹ 5.52 crore was pending for recovery from the parties as on March 2011. Our scrutiny of records of deposit works revealed the following:

(I) According to deposit works policy (April 2004) RRVPNL was to recover block charges from the party for shut down of 132 KV or higher voltage, Single/Double Circuit line. We noticed that RRVPNL could not recover block charges of ₹ 22.60 lakh from Krishi Upaj Mandi Samiti, Jaipur (KUMS) for shifting 220 KV double circuit line passing through the terminal market, Muhana, which was executed in December 2007. We noticed that the initial (March 2005) estimate was revised (August 2006 and April 2007) twice and the same were deposited by KUMS. RRVPNL, however, after finalisation (December 2007) of bill of quantity raised additional demand of ₹ 22.60 lakh towards block charges but KUMS did not deposit the same claiming the delay was on the part of RRVPNL and requested to waive the block charges. The management refused (May 2010) to waive the block charges but on subsequent request (October 2010) of KUMS, the Whole Time Directors (WTD) approved (January 2011) the waiver on the grounds that RRVPNL suffered no revenue loss due to shut-down of line as the supply system was worked on alternate means during the entire period of shut down.

We observed that RRVPNL could not recover the block charges due to incorrect estimation of shut down time during all the three times and further the decision of WTD was in violation of the laid down policy. This led to loss of revenue of ₹ 22.60 lakh which could have been recovered had the estimates were made after considering the appropriate shut down time.

The Government replied that the contractor did not complete the work and the balance work was got completed through departmental labour which could not complete the work within due course of time. It further stated that there was no disturbance of power therefore no revenue loss occurred to RRVPNL and there was no violation of laid down policy and hence, the WTDs waived the block charges considering KUMS a Government Organisation. The reply was not convincing as shut down actually occurred and the charges were to be recovered as per deposit works policy (April 2004) which were not included in all the three estimates and finally had to be waived off on the representation of KUMS after inclusion in final bill.

(II) Deposit works of modification of 'EHT track crossing between Madar-Pushkar new line' and 'gauge conversion of Rewari-Ringus-Phulera-Ajmer section' were undertaken by RRVPNL on the request of North Western Railway (NWR) and Rail Vikas Nigam Limited (RVNL). The block charges amounting to ₹ 2.26 crore and ₹ 1.76 crore respectively to be recovered as per the modified (March 2006) policy were not included at the time of preparation (June 2006) of technical estimates. The block charges were later included in the final bill (NWR- May 2009 and RVNL) but could not be recovered (May

2012) since NWR and RVNL were of the view that block charges levied were not reasonable and did not commensurate with actual working hours.

We observed that negligence in preparation of estimates led to non-recovery of block charges of ₹ 4.02 crore. Had the charges been included in estimates, the actual work would have been undertaken only after full deposit of the estimated amount.

The Government replied that recovery from concerned agency was being pursued.

Expenditure in excess of RERC approval and loss of equity

2.1.37 RERC (Investment Approval) Regulations 2006 provided that no investment would be considered for ARR/tariff determination unless it had been approved by the commission under annual investment plan. It further provides that investment should not exceed the approved limits specified by the RERC from time to time and in case capital expenditure during a year was not incurred as per investment plan approved by RERC, there should be prorata deduction of depreciation, interest and finance charges and O&M charges in the tariff at the time of truing up. The investment plan/revised plan for the years 2007-08 to 2011-12 submitted by RRVPNL, approved by RERC, outlay by State Government and actual expenditure is as below:

(₹ in crore)

Year	Investment plan submitted to RERC	Plan approved by RERC	Revised investment plan submitted to RERC	Outlay by State Government (Revised)	Actual expenditure
2007-08	622.00	639.18	-	622.00	712.92
2008-09	825.00	825.00	1048.52	825.00	1518.04
2009-10	1233.00	1233.00	1550.00	1233.00	1382.70
2010-11	2550.00	2280.00	2000.00	2000.00	1657.64
2011-12	2820.00	2470.00	2000.00	2000.00	2014.95
Total	**8050.00**	**7447.18**		**6680.00**	**7286.25**

Analysis of the above revealed that:

- RRVPNL incurred excess capital expenditure of ₹ 916.48 crore during 2007-10 than the approval of RERC. Consequently, RERC disallowed expenditure of ₹ 53.20 crore towards interest charges at the time of truing up of ARR 2008-09. Truing up order of ARR 2009-10 was not yet issued (October 2012) by RERC.
- RRVPNL incurred excess expenditure of ₹ 948.61 crore than the capital investment approved by the State Government during 2007-08 to 2011-12 except 2010-11. As a result RRVPNL was deprived of the 20 *per cent* equity portion of the excess expenditure amounting to ₹ 195.72 crore and had to manage the equity portion through borrowings which created minimum additional burden of interest of ₹ 55.92 crore.

The Government stated that RRVPNL made efforts so that there is no excess capital expenditure from the approved plan but to get transmission system ready matching with commissioning of generation projects and requirement of field, excess expenditure was done from outside plan fund which could not be

avoided. It further stated that incase, work of transmission schemes was stopped in between to avoid excess expenditure, the schemes might be delayed and later on the payment of price variation would be more than the equity portion expected from the Government. The reply was not convincing as the excess expenditure beyond approved plan could have been avoided by proper planning and fund estimation of schemes. This resulted in payment of interest on borrowed funds which otherwise would be financed through equity coupled with disallowance of interest by the RERC.

Incentive for achieving higher availability of transmission system

2.1.38 Clause 82 and 105 of RERC (Terms and Conditions for Determination of Tariff) Regulations 2004 and 2009 respectively provides for annual incentive to the transmission licensee on achieving availability of transmission system beyond 98 *per cent* in accordance with the prescribed formula[27]. The regulations further provides that no incentive shall be payable above the availability of 99.75 *per cent.*

We noticed that the actual availability of transmission system at 132 KV during 2007-08 to 2009-10 was more than 98 *per cent* but RRVPNL did not claim incentive during truing up of ARR of these years. It was further noticed that RERC *suo-motu* allowed incentive (August 2009) of ₹ 6.63 crore for the year 2007-08 stating that better performance of an utility could be recognised more-so when projected ARR was getting reduced by a considerable amount without any return on equity.

Truing up of 2008-09 ARR and 2009-10 ARR were filed in March 2011 and November 2011 respectively without claiming incentive. RERC order against 2008-09 ARR was issued in December 2011 without allowing any incentive and order for 2009-10 was pending (October 2012). As per prescribed formula incentive for 2008-09 and 2009-10 worked out to ₹ 13.22 crore and ₹ 16.98 crore respectively.

The Government stated that as per Financial Restructuring Plan (FRP) 2005, RRVPNL was not to claim return on equity during transition period. It further stated that RRVPNL did not claim incentive on enhanced system availability above targeted availability being additional return in view of the provisions of FRP. The reply was not convincing in view of the fact that interpretation of incentive as an additional return was incorrect and in contravention of orders/directives of RERC to submit claim for incentive which was not claimed by RRPVNL.

Availment of higher interest loans

2.1.39 Power Finance Corporation (PFC) increased (August 2004) the threshold limit of short-term loans (STL) for RRVPNL from ₹ 120 crore[28] to ₹ 300 crore which was further enhanced (February 2010) to ₹ 500 crore. As per policy of PFC, STL could be availed initially for a period of 180 days on the basis of Government guarantee/hypothecation of assets and thereafter could be rolled over for a period of another 180 days. The policy was changed

27 Incentive= Annual Transmission Charges X (Annual availability achieved- Target availability)/ Target Availability.

28 Prior to August 2004, the aggregate sanctioned limit of RVUNL, RRVPNL, JVVNL, AVVNL and JdVVNL was ₹ 600 crore.

in February 2010 and could be availed in multiples of 30 days with option to roll over for a maximum of 360 days or for complete one year in one outgo.

We noticed that RRVPNL availed short term loans of ₹ 150 crore between May 2009 and August 2009 from various banks on government guarantee at interest rate ranging between 10 and 10.50 *per cent* though STL from PFC was available at a rate ranging between 8 and 8.75 *per cent*. Further, RRVPNL also did not roll over the higher interest loans of ₹ 200 crore availed prior to enhancing of the limit by PFC.

This resulted into payment of avoidable higher interest rate and guarantee commission amounting to ₹ 6.57 crore to the banks which would otherwise have been saved had the STL was borrowed from PFC at lower interest rate without guarantee commission and the higher interest loans would have been restructured.

The Government replied that the rates of PFC were reduced at the end of April 2009 and a proposal (May 2009) was sent to PFC to sanction a short-term loan. On receipt of sanction and completion of all other formalities, the loan was availed in installments in July to September 2009. The fact was that availment of higher interest loans from other institutions instead of PFC resulted in additional interest burden which could have been avoided through better time management and financial planning.

Awarding of contract at higher rates

2.1.40 RRVPNL with a view to achieve economy and uniformity in cost of construction of 400 KV and 220 KV bays at existing 400 KV GSSs at different locations under turnkey contract (TN-292 and TN-294) proposed (December 2010) the lowest bidder (L1 bidder) to revise its quotations on the basis of least quoted item wise cost. The proposal was accepted by the L1 bidder and RRVPNL managed to save ₹ 1.40 crore in this contract.

We noticed that RRVPNL did not apply same principle in the construction of 765/400 KV GSS Phagi and 400/765 KV GSS Anta. The price bids for which were opened (February 2011) under turnkey system and the L1 bidder was the same party (Areva). The L1 bidder was given (September 2011) an option to select either of the GSSs for construction as the WTD were of the opinion that it would not be possible for the bidder to complete the work of both the GSSs within scheduled time. The L1 bidder selected 400/765 KV GSS Anta for which the higher rates were quoted by him in comparison to GSS Phagi. The work of GSS Phagi was awarded to L2 bidder at the rates quoted by the L1 bidder after adjustment of capitalisation of transformer losses.

We observed that the item wise rates quoted by L1 bidder for GSS Anta were higher than the rates quoted for GSS Phagi for same items and the decision of the WTD to award contract to the L1 bidder without matching the rates led to awarding of contract at higher prices amounting to ₹ 9.07 crore[29].

The Government stated that the item wise comparison was not feasible in turnkey projects. It further stated that Areva had opted only one project *i.e.* TN-2, therefore comparison of cost of individual item with that of TN-1 which

29 Only unit wise cost of seven major items were considered for calculating the difference amount.

was awarded to other firm could not be insisted upon. The reply was not convincing as RRVPNL had compared item wise cost in turnkey contract where same work was involved and the same firm was L-1, thereby savings were made. Further, RRVPNL had awarded the work of TN-1 to other firm on the overall amount quoted by Areva, hence it was not appropriate to conclude that the amount was not comparable.

Non recovery against risk and cost

2.1.41 RRVPNL placed (May 2009) order for construction of (i) 132 KV S/C line from Saradhana GSS to Pushkar Road, (ii) 132 KV S/C line from MDS University GSS to Kotra GSS and (iii) 132 KV D/C LILO of Chittor-Hamirgarh line to Rashmi. The three lines were scheduled to be completed by November 2009. It was noticed that the contractor could not complete the work within time schedule consequently RRVPNL decided (May 2010) to withdraw the work of first two lines on "as is where is" basis and to complete the balance work at their risk & cost. Subsequently, on the request (June 2010) of the contractor to restore the work order, RRVPNL restored (June 2010) the work of second line while work order for first line was awarded (June 2010) to another contractor. The CMD level committee however decided that payment to the defaulting contractor should be made after effecting recovery of risk and cost amount for the withdrawn line. It was further decided that lifting of un-utilised material should be allowed after ensuring adequate financial hold against risk & cost of the amount of withdrawn work.

Our scrutiny however revealed that the TLPC[30] did not finalise the risk and cost amount but CPC made (July 2010 to March 2011) payment of ₹ 65.77 lakh in violation of the decision of CMD level committee. Further, TLPC calculated (October 2012) tentative recovery of ₹ 73.04 lakh towards risk and cost but the same was pending (November 2012) for approval by the competent authority.

As on November 2012, RRVPNL was having financial hold of ₹ 1.59 crore against the defaulting contractor but the same could not be utilised for recovery as the amount was under attachment by Allahabad High Court.

The Government replied that tentative recovery of ₹ 73.04 lakh had been worked out towards risk and cost clause by TLPC wing. The fact, however, remained that the tentative recovery worked out by TLPC was pending approval by the competent authority and the amount withheld could not be used for recovery due to Court stay.

Material Management

2.1.42 The key functions in material management are laying down inventory control policy, timely placement of orders and economical procurement of materials and disposal of obsolete inventory. A proper inventory control needs application of various techniques *viz.* determination of maximum and minimum stock level, determination of safety stock, ABC analysis based on the value of a particular item and its share in total quantity.

30 Transmission Line Procurement Circle

RRVPNL maintains three stores at Heerapura, Beawer and Jodhpur, one store in each zone. Zonal Chief Engineers in each zone assess the likely works to be executed by various circles during the year and after considering the position of available material in stores net requirement of material to be purchased is determined. The requirement of material pertaining to sub-stations is conveyed to SSPC and that for lines to TLPC. SSPC and TLPC invites tenders and the procured material is either deposited at store or is directly delivered at site as per requirement

The details of annual/monthly stock consumption, net closing stock and closing stock in terms of months consumption for all the three stores during the period 2007-08 to 2011-12 are as below:

(₹ in crore)

Year	Consumption (per annum)	Consumption (per month)	Net Closing Stock	Closing stock in terms of months to consumption
2007-08	73.71	6.14	77.84	12.68
2008-09	140.85	11.74	86.19	7.34
2009-10	116.63	9.72	121.85	12.54
2010-11	165.14	13.76	158.77	11.54
2011-12	148.58	12.38	78.67	6.35

It could be seen from above that the stores of RRVPNL maintained inventory level ranging between 6.35 months consumption and 12.68 months consumption during 2007-12. We observed that the stores though maintained higher closing stock in terms of month's consumption during 2007-08, 2009-10 and 2010-11 it neither conducted any ABC analysis nor fixed any standard minimum level/reorder level for material requirement. Keeping higher stock levels shows improper planning and lack of co-ordination between execution and purchase.

Review of material management system revealed the following:

- As on March 2012, non-moving material valuing ₹ 51.57 lakh was lying at Heerapura store. We noticed that these materials were purchased during 1994 to 2005 but could not be utilized due to change in design/specifications *etc*. This showed that these items were purchased in excess or without requirement. Non-disposal of these items had resulted in diminishing of realizable value with passage of time and incurring of carrying costs.

- Three failed power transformers deposited in the store by the field offices way back during 2000 to 2006 were lying without any decision as regards repair or disposal. Similarly, three transformers were also lying with AEN-I (C&M 400 KV) Heerapura since 2005 to 2009 for disposal. It was also observed that two repaired transformers were also lying with the same office since May 2008/November 2010 but were not installed (May 2012).

- Work order for erection of 132 KV S/C Gangapurcity (220 KV)-Sri Mahaveerji line and 220 KV D/C Hindaun-Gangapurcity line were awarded in November 2010 with scheduled completion during August 2011 and October 2011. We noticed that RRVPNL failed to procure tower material due to inability of the suppliers in both the cases but continued to accept the supply of disc insulators and conductor. The

disc insulators and conductor of ₹ 3.49 crore purchased between January 2011 and March 2011 were lying (March 2012) in stores/material at site.

The Government stated that material requirement was finalised for the works to be executed during current financial year as well as for the works which were to be initiated during current financial year and targeted to be completed in next financial year as per plan. It further stated that essential material has to be kept in ready stock to meet the requirements for maintenance work and any exigency/emergent situation. The reply was not convincing as inventory level more than six months was not justified and could have been reduced through proper material management. Higher inventory level led to blocking of funds and risk of obsolescence due to change in design/change specification besides deterioration in quality. Further, the reply of Government was silent about the other issues regarding non-moving/slow moving items and non-utilisation/disposal of transformers.

As regards purchase of disc insulators and conductors prior to procurement of tower material, Government replied that supply orders for tower material were placed November/December 2010 and again in June/July 2011 but suppliers failed to deliver the material.

Non-utilisation of bays

2.1.43 33 KV bays strengthens the distribution system in a way that either the distribution losses are reduced or load on a particular distribution GSS is reduced/diverted to protect them from overloading. To meet this objective, 33 KV bays are constructed along with all new 220/132 KV GSSs and further additional bays are constructed as per the proposal/requirement of DISCOMs.

A review of records revealed that large numbers of 33 KV bays constructed by RRVPNL were not utilized since their construction. The number of un-utilised bays as on March 2009 were 96 which increased to 214 valuing ₹ 31.84 crore as end of March 2012. This increasing trend of unutilized bays indicated that the project evaluation/DISCOMs proposals were not analysed properly. The non-utilization of bays defeated the very purpose of strengthening of distribution system and also led to blocking of funds.

The Government stated that the DISCOM authorities were being regularly requested for providing timely inter-connection. The position was, however, that the numbers of unutilized bays were increasing year by year.

Un-warranted purchase of transformers

2.1.44 CMD level committee of RRVPNL reviewed (January 2011) the supply position of 20/25 MVA, 132/33 KV category transformers under TN-2859 and analysed that against the scheduled supply of 35 transformers by March 2011, delivery of only 30 transformers was expected. Considering inability of a supplier under the said purchase order to supply five transformers by March 2011, the committee placed (January 2011) repetitive order with another supplier of the same tender at same prices. The delivery of these five transformers was received between 22 March 2011 and 29 March 2011. The installation/utilization of the transformers revealed that 22 transformers could be utilized by June 2011 and thereafter 10 transformers were utilized by October 2011 while three transformers remained unutilized

(May 2012) at sites due to non-completion of GSSs on account of non-completion of civil works/lines/ROW problems.

We found that prices of the transformers were on declining trend and lower prices (between 7.70 *per cent* and 20.60 *per cent* as compared to previous tender) were received in price bids opened during August 2010 to November 2010 for other capacity transformers. It was also noticed that another tender (TN-2920) for 42 transformers of the same capacity as that of TN-2859 was floated during October 2010 and technical bids for which were opened during November 2010 was kept pending for finalisation till July 2011. Purchase orders for TN-2920 were issued in July 2011 at a price below 22.06 *per cent* than the updated price of TN-2859.

We observed that RRVPNL delayed the finalisation of TN-2920 against the purchase manual directions of finalizing the same within 120 days from the date of opening of tender and gave repetitive order for five transformers under TN-2859 at higher prices. Had the TN-2920 been finalised as per purchase manual directions by March 2011, the delivery of the five transformers could have been obtained by June 2011.

Thus, delay in finalizing TN-2920 extended undue benefit to the supplier under TN-2859 by placing repeat order for five transformers at higher prices without any actual requirement at the sites. This resulted into extra expenditure of ₹ 2.29 crore.

The Government replied that repetitive order under TN-2859 was placed in January 2011 to meet the targets of financial year 2010-11. The transformers supplied against repeat order were utilized promptly in April/May 2011 (except one transformer at Sarna Doongar due to ROW problem of line). It further stated that no extra expenditure was incurred as delayed supplies of five transformers under TN-2859 were taken at lower prices of TN-2920. The fact was that only 22 transformers were utilised up to June 2011 indicating there was no need of repeat order for five transformers. Had the TN-2920 been finalised as per purchase manual directions by March 2011, the delivery of the five transformers could have been obtained by June 2011 at reduced prices. Further, getting supplies of five delayed transformers under TN-2859 at the prices of TN-2920 was not recoupment of the extra expenditure incurred due to repeat order.

Advance procurement of conductor

2.1.45 The delay in completion of Chhabra-Hindaun line and Chhabra-Bhilwara line by 16 and 21 months respectively due to lack of preparatory activities has been discussed in paragraph 2.1.11**.** As regards procurement of conductor for these lines the purchase orders were awarded in December 2007 with scheduled delivery in November/December 2008 which was in accordance with scheduled completion of the work orders of lines. The supply of the conductor was to be made in two lots of 2558 Kms (Lot-1 for Chhabra-Bhilwara) and 1953 Kms (Lot-2 Chhabra-Hindaun) in monthly packages of 350 Kms and 250 Kms respectively from February 2008 and to be completed upto September 2008 while the remaining supply was to be made in December 2008 and November 2008 respectively.

We noticed that the CMD instructed (December 2007) to expedite the work of completion of Chhabra-Dahra (portion of Chhabra-Bhilwara) by March 2008 in view of readiness of power evacuation system from Chhabra stage-I. The superintending Engineer (SE 400 KV design) accordingly instructed (February 2008) the supplier to complete the overall delivery schedule of both the lines by June 2008, which was completed in July 2008.

We observed that SE 400 KV design mis-interpreted the directions of CMD and instead of ensuring conductor availability of only 1581 Kms for only Chhabra-Dhara portion pre-poned the overall delivery schedule of lot-1 and lot-2 which was not required as stringing work of Dahra-Bhilwara portion of the line could not start till December 2008. Due to delayed progress of stringing work, only 1879.95 Kms conductor could be utilized till July 2008 out of total 4509.50 Kms conductor procured.

Thus, the decision to procure all the conductor of lot-1 and lot-2 instead of deferring the supply as per clause 8.3[31] of the purchase order in accordance with the actual progress resulted in advance procurement of 2629.55 Kms conductor which was utilized during August 2008 to September 2010. Consequently, funds of ₹ 72.05 crore remained blocked over a substantial period.

The Government stated that supply of conductor was rescheduled in anticipation of commissioning of Chhabra TPS upto September/October 2008. It further stated that in case the supply of conductor was taken as per scheduled delivery then RRVPNL would have to pay ₹ 4.94 crore more towards price variation. The reply of the Government was not correct as the conductor was procured before delivery schedule without requirement even before completion of tower work and commencement of stringing work of Dahra-Bhilwara line. This clearly indicates mis-interpretation of directions and lack of overall planning of RRVPNL in completion of line. As regards savings of ₹ 4.94 crore in the form of price variation, the same was after thought and the inventory carrying cost was much more than the savings.

Monitoring and Control

2.1.46 The performance of the GSSs and lines of 400/220/132 KV on various parameters like Maximum and Minimum voltage levels, breakdowns, voltage profiles should be recorded /maintained as per the Grid code standards. The circle offices of RRVPNL compiled yearly MIS reports indicating the performance of the TCCs as well as installed equipments and forwarded the same to the Corporate Office. However, the information was not compiled by MIS wing. Further, verification of MIS reports of circles revealed that details regarding programmed overhauls of equipments like Circuit Breakers (CBs), due dates of next oil change, On Load Tap Changer operations, dates of maintenance works, performance of GSS batteries, performance of relays, cause-wise analysis of feeder breakdowns *etc.* were not compiled/maintained.

31 Purchaser reserves the right to reschedule (prepone/postpone) of supply of conductor as per requirement assessed based on actual progress of stringing work of conductor at site.

The Government stated that various reports except due dates of next oil change *viz*. maximum/minimum voltage levels, breakdowns, records and maintenance of voltage profile, overhauls/maintenance of equipments were recorded in OMS module at circle level. The reply was not correct as these reports were neither generated by the circles nor sent to MIS wing at corporate level for further compilation and submission to higher authorities for decision making and improvement in the system.

Review of the envisaged benefits of T&D schemes

2.1.47 RRVPNL executed and commissioned 115 EHT GSSs and erected a total length of 7308.33 CKM of EHT lines during review period. While approving T&D schemes RRVPNL envisaged benefits in terms of reduction in line losses, improvement in voltage levels and the load growth to be achieved by the new schemes. It was, however, observed that there was no system to measure the achievement/non-achievement of the envisaged benefits of the schemes. In number of cases GSS and lines were completed/commissioned belatedly against the schedule completion period but the same were neither reviewed/measured to assess the return on capital expenditure.

The Government while accepting the fact stated that there was no methodology to quantify the scheme wise benefits in an integrated system. It was further stated that the overall technical parameters of this system were being monitored.

Internal Controls and Internal Audit

2.1.48 Internal control is a process designed for providing reasonable assurance for efficiency of operations, reliability of financial reporting and compliance with applicable laws and statutes which is designed to ensure proper functioning as well as effectiveness of the internal control system and detection of errors and frauds. The shortcomings in internal control system and internal audit mechanism as pointed out by Statutory Auditors and observed by us during performance audit are discussed below:

Comments of statutory Auditor

2.1.49 The statutory auditors pointed out following major shortcomings in their various reports:

- The internal audit system of RRVPNL was not adequate and needed to be reinforced so as to make it more effective and result oriented to cover vast and vital check points.
- Internal Auditors were unable to detect material observations regarding capitalisation of fixed assets, physical verification of inventory, fixed assets, non-uniform procedure of deposit works, misclassification in various heads, *etc.* The same was due to continuous failure of management to correct major weaknesses in internal controls.

The Government accepted the fact and stated that the work of audit was being carried out without sufficient staff and were trying best efforts to carry out effective internal audit. The Government also appraised that it had awarded a work order to conduct internal audit of commercial accounts for the year 2011-12.

Our findings

2.1.50 We observed following shortcomings in the internal control system and internal audit mechanism during the course of performance audit:

1. No parameters for quantum of work, selection of manpower and deployment of manpower for internal audit had been framed which showed unscientific management of the internal audit system as out of 34 selected units during 2011-12 internal audit wing could cover only 22 units. Further, the internal audit wing pointed out only meager recoveries ranging between ₹ 0.39 lakh and ₹ 0.71 lakh during 2009-10 to 2011-12.
2. Little cognizance was given to internal audit comments as out of 677 outstanding paras as on March 2012, 100 paras pertains to the period 2003-06.

The Government stated that parameters for quantum of work, selection of manpower and deployment for internal audit had been framed and two internal audit parties were working for expenditure of 34 units and one party for commercial accounts. The reply was incorrect as nothing on record was found as regards selection and deployment of manpower as per quantum of work. Further, the fact of inadequate deployment of manpower had been accepted above by the Management. As regards outstanding paras it was stated that vigorous efforts were being made at corporate level to settle the outstanding paras.

Conclusion

- **Plans for capacity additions/augmentation were not prepared keeping in view the peak demand and existing transmission capacity and hence, extra/idle transmission capacity increased over the years;**
- **RRVPNL could not adhere to the norms/criteria stipulated by RERC/CEA regarding operation and maintenance of transmission system;**
- **RRVPNL could not complete transmission projects within scheduled completion period due to deficient planning and non-adherence to recommendations of Task Force Committee on Project Management.**
- **Transmission losses were in excess than fixed by CEA/RERC. The capital investments did not contribute to effective reduction in transmission losses during the review period and the losses stood at 6.20 *per cent* against the norms of 4 and 4.2 *per cent* of CEA & RERC respectively;**
- **There was mismatch in commissioning of transmission projects with generation projects;**
- **RRVPNL did not implement the Disaster Management Plan at Grid Sub-Stations. Vulnerable centres having highest risk were**

also not identified and comprehensive state-wide drills were never carried out to test the capabilities.

- **RRVPNL could not file ARR in scheduled time and did not claim incentive for enhanced availability of transmission system than targeted. The capital expenditure was incurred in excess to the amount approved by RERC/Government; and**
- **There were instances of improper material management as higher level of inventory was kept, material was procured in advance of requirement and bays remained idle for considerable period of time.**

Recommendations

RRVPNL needs to:

- **Prepare plans for capacity additions/augmentation keeping in view the peak demand and existing transmission capacity;**
- **Adhere to the recommendations of Task Force Committee on Project Management and take effective steps to ensure completion of transmission projects in scheduled time,**
- **Ensure adherence to norms/criteria stipulated by RERC/CEA regarding Operation and Maintenance of transmission system;**
- **Ensure completion of transmission system with commissioning of generation projects;**
- **Ensure implementation of Disaster Management Plan broadly;**
- **Evolve mechanism for timely submission of ARR to RERC. The Capital expenditure should be kept as per plan approved by RERC/Government;**
- **Analyse and monitor inventory level.**

2.2 Performance Audit on Rajasthan State Road Development and Construction Corporation Limited

Executive Summary

Rajasthan State Road Development and Construction Corporation Limited (Company) mainly executes three types of works (i) Tender works, (ii) Centage/Deposit works (iii) BOT projects.

Work performance

The pace of completion of works was very slow as against 208 works pending for execution at the beginning 2006-07 and 286 works (₹ 3814.66 crore) obtained during 2006-12, only 267 works (₹891.06 crore) could be completed and transferred to client department. Almost 82 per cent (186 works) works were completed with a delay upto 18 months while in 18 per cent cases (42 works) the delay was beyond 18 months. The maximum execution of works was 66 months. Delay in completion was attributable to awarding and commencement of work by the contractor, late approval of drawings by client department, completion by contractor, supply of cement and steel by the Company, poor monitoring and supervision of works and release of funds by the client department. It deprived the Company of timely recovery of centage besides loss of credibility where the client department withdrew the work and loss of socio-economic benefits to the State.

Deposit/Centage works

The rates of centage were fixed by the GOR way back in 1996 but the Company never reviewed the adequacy of centage towards recoupment of actual administrative overheads incurred. Against the directions of GOR to recover nine per cent centage on actual cost, the effective recovery turned out between 7.24 and 8.15 per cent against actual overheads ranging between 8.06 and 11.48 per cent, thereby leaving a gap of ₹21.10 crore during 2006-08 and 2009-11. Besides, the Company while arriving out total cost did not include the interest and finance charges which also resulted in short recovery of centage of ₹ 2.65 crore on the projects executed during 2010-12. Further, instead of charging 15 per cent profit on the investment as allowed under Rajasthan Road Development Rules, 2002, the Company charged centage at the rate of seven per cent which resulted in under recovery of profit by ₹ 17.96 crore on 13 roads entrusted by the State Government during 2009-10.

Tender works

The Business Procurement Cell of the Company largely failed to increase tender business by 10 per cent as per the directions of the State Government. Out of participation in 195 tenders during 2006-12, the Company could secure only three tenders valuing ₹ 65.08 crore. Of eight tender works completed during 2006-12, the Company earned profit of ₹ 2.26 crore on six works and incurred loss of ₹ 0.80 crore on two works. The profit on these works was without apportioning administrative cost which after consideration would turn the tender works into loss of ₹4.63 crore. There was substantial delay in raising final bills of the completed projects ranging between three and 31 months with the client and as on March 2012 payments of ₹ 2.94 crore were pending for realisation.

BOT Projects

The Company overbooked the profits by ₹ 17.70 crore during 2006-12 due to incorrect accounting of BOT projects entrusted by the State Government. The Company contrary to the provisions of the Rajasthan Road Development Act, 2002 and MOU with State Government collected toll of ₹16.82 crore in addition to actual recovery of investment including interest.

Contract Management

The Company invited tenders without including risk and cost clause in the standard bidding document. This caused additional financial burden of ₹ 15.47 crore transpired due to re-invitation of bids on un-executed works by defaulter contractors. There was lack of co-ordination and uniformity in execution

of the work among units as similar nature of works were got executed by different units by clubbing with main contract or through separate contract and by using different rates of BSR for same items causing extra expenditure of ₹48.84 lakh.

Mechanical Unit

The overall performance of the mechanical unit was not satisfactory and it negatively contributed to the profits of the Company. The hire charges in all the years except 2009-10 were not even able to cover the direct cost. The Company while fixing cost to be charged on deposit works did not include the element of labour cost employed on the machinery in the hire charges and consequently labour charges of ₹ 7.35 crore were under recovered. The overall utilization of machinery as on March 2012 against the standard annual hours recommended by MOST was only 41.41 per cent and the individual utilization ranged between 22.24 and 79.38 per cent.

Conclusions and recommendations

The Company did not prepare long term action plan to ensure achievement of organisational objectives and was wholly dependent on the works entrusted by the State Government/Departments/PSUs. The procurement of works on its own was almost negligible. The provisions of the manual were not adhered to and variations in budgets were not analysed. Improper planning and in-adequate contract management led to delay in completion of the projects. Excess toll collection was made in contravention to the provisions of Rajasthan Road Development Act, 2002 and MOU with GOR. Project formulation was not as per Rules which caused short recovery of profit and further centage charges were also not adequate to meet administrative cost. The Company executed un-viable road projects and improper evaluation of tenders, absence of risk and cost clause and lack of co-ordination among units caused extra expenditure. There was under utilization of plant and machinery against the standard hours recommended by Ministry of Surface Transport. The review contains five recommendations which include preparation of long-term action plan and annual plan to minimize dependence on entrusted works; adherence to the Manual, Rules and Procedures; proper planning, effective monitoring and co-ordination with contractors as well as clients to avoid delay in execution of works; ensure viability of the projects and adequacy of centage charges to maintain profitability; and optimum utilization of plant and machinery.

Introduction

2.2.1 Rajasthan State Bridge and Construction Corporation Limited (RSBCCL) was incorporated in February 1979, as a wholly owned State Government Company to augment the limited number of specialized and quality construction agencies available in the State and Country so as to reduce the cost/time overruns in the construction of Bridges, Roads and Buildings. RSBCCL was renamed (18 January 2001) as 'Rajasthan State Road Development and Construction Corporation Limited' (Company) to include the construction of privately financed infrastructure projects, mainly Highways, Bridges and Rail Over Bridge (ROB) *etc.* being constructed on Build-Operate-Transfer (BOT)/Public Private Partnership (PPP) model.

The Minister for Public Works Department (PWD), Government of Rajasthan (GOR) is the Chairman of the Company and is further assisted by the Managing Director, Company Secretary, Financial Advisor and the General Managers. As on March 2011, the Board of Directors (BOD) of the Company comprises of seven directors apart from Chairman and Managing Director.

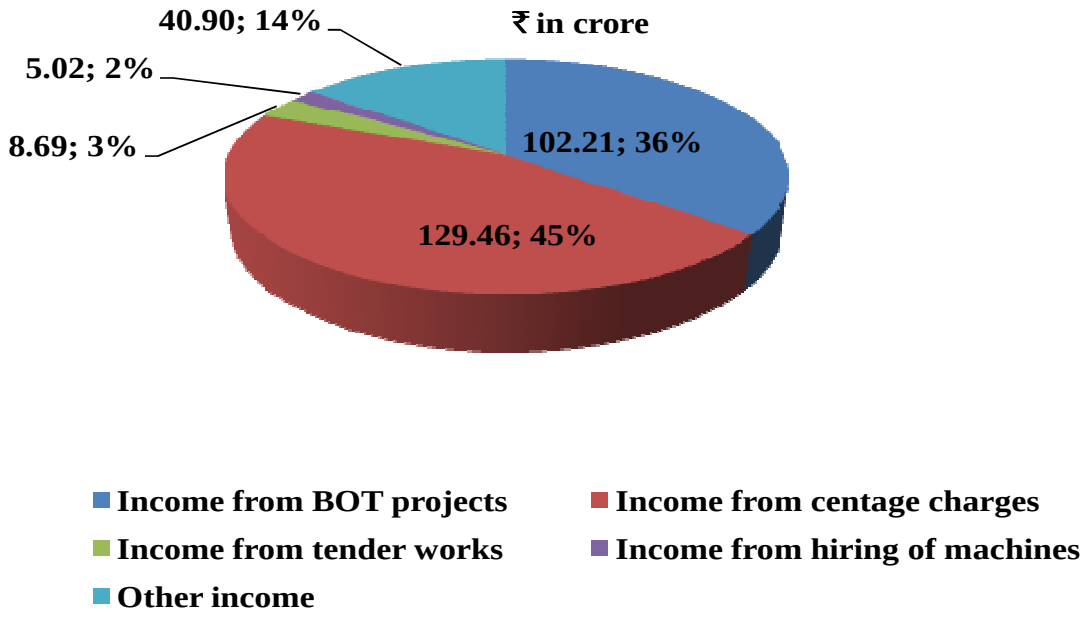
The Company mainly executes three types of works[1] (i) Tender works *i.e.* works/contracts procured through participation in competitive bidding, invited by various Government Bodies/Organisations throughout the country, (ii) Centage/Deposit works *i.e.* works/contracts entrusted by various State Government Departments/Undertakings on cost plus basis and (iii) BOT projects. The Company executes the projects through unit offices, headed by the Project Directors (PDs) who are further assisted by the Project Officers (POs). The unit offices are of temporary nature and are created as per the volume of the work requirement. The units are wound up or are merged with other units after completion of the project/s. The position of units during 2007-08 to 2011-12 excluding service units (Mechanical and Electrical units) was as below:

Year	2007-08	2008-09	2009-10	2010-11	2011-12
Number of units	17	17	17	28	28

Revenue Sources

2.2.2 The various sources of revenue include income from BOT projects, centage/deposit works, tender works, hiring of machines and other income *viz*. interest income, sale of tenders *etc.* The Company earned revenue of ₹ 286.28 crore during last five years ending March 2012 from these sources.

The revenue from various sources is depicted in pie chart below.



Scope of Audit

2.2.3 A comprehensive Performance Audit on "Construction Activities" of the Company appeared in the Audit Report (Commercial) for the year ended 31 March 2005. The review had been discussed (May 2007) by the Committee on Public Undertakings (COPU) and the recommendation report of the

1 The position of the works during the year 2007-08 to 2011-12 is referred in paragraph 2.2.9.

Committee was placed in the State Legislature on 26 August 2011. The main recommendations of the COPU were (i) to execute the projects in time bound manner (ii) to ensure sound contract management (iii) to control cost overrun (iv) to maintain quality and (v) to ensure sound financial management.

The present performance audit covers performance of the Company in execution of deposit works, BOT projects and tender works during the period 2006-07 to 2010-11. The working figures for the year 2011-12 have also been incorporated in the Performance Audit. The audit examination involved scrutiny of records at the Head Office, four service units (one mechanical and three electrical), Gurgaon unit and three other units (Udaipur-I, Jodhpur-I and Jaipur-II) during last five years ending March 2011. The selection of units was based on the total highest turnover[2] and maximum number of execution of tender works. Besides, three units (Udaipur-II, Jodhpur-II and Chittorgarh-I) having turnover 12.34 *per cent* of the total turnover were also reviewed as the same were lying in the vicinity of selected units. Thus, the size of sample was 39.28 *per cent* of the total turnover of the units during 2006-07 to 2010-11. During the course of performance audit 102 centage works having turnover of ₹ 234.33 crore, seven roads having turnover of ₹ 562.46 crore and 11 tender works with turnover of ₹ 129.08 crore were selected on the basis of value of work more than ₹ 20 lakh.

Audit Objectives

2.2.4 The performance audit of the Company was carried out to ascertain whether:

- There was action plan and projects were implemented after adequate planning, survey, investigation and estimates to cater effectively to infrastructure needs of the State; and
- There was a transparent system for contract documentation, bidding and awarding the work as per the terms and agreement of the contract.

Audit criteria

2.2.5 The source of the audit criteria were the following;

- Agenda and minutes of the meetings of BODs and Executive Committees (EC);
- Instructions/guidelines issued by the State Government/Company;
- Road traffic census data and consultancy reports;
- Basic Schedule of Rates (BSRs) issued by the Public Works Department;

2 Total turnover of the Company during 2006-07 to 2010-11 was ₹ 1216.68 crore. Total turnover in the three selected units during 2006-07 to 2010-11 was, Jaipur-II (₹ 75.56 crore), Jodhpur-I (₹ 114.15 crore) and Udaipur-I (₹ 90.08 crore) and selection was 22.96 *per cent* of total turnover. The total of sample was 39.28 *per cent* (including 3.98 *per cent* turnover of Gurgaon unit).

- Detailed Project reports of toll projects;
- Standard bidding document containing general and specific terms and conditions;
- Rajasthan Road Development Act, 2002 and Rules;
- Budget and financial estimates/statements;
- Material at site accounts, Measurement books, Job work bills, monthly running accounts and monthly progress reports; and
- Procurement and operational manuals of the Company.

Audit Methodology and Findings

2.2.6 We explained the audit objectives, audit criteria, audit methodology and scope of the Performance Audit to the Management in Entry Conference (March 2012). The audit findings were reported to the Government/Company (August 2012) and discussed in the Exit conference (November 2012) which was attended by Deputy Secretary to the Government of Rajasthan, Public Works Department and Managing Director of the Company. The views expressed (November 2012) by the Management have been considered/incorporated while finalizing the Performance Audit Report.

Planning

2.2.7 The Company did not prepare long term action plan to ensure achievement of the objectives laid down in Memorandum of Association. The Company was mainly dependent on the works entrusted by the State Government/Departments/PSUs. The procurement of works at its own was almost negligible. The work performance has been discussed in subsequent paragraphs.

Budgetary analysis

Budgetary analysis

2.2.8 The Company prepares annual physical and financial budgets. The budget manual provides that budgets should be prepared and approved by the Board in the month of February of preceding year. It further provides that revised estimates for the current year should also be prepared showing separately the actual expenditure for nine months and estimates for three months along with detailed justification for variances.

We noticed that the budget estimates for the years 2007-08 and 2008-09 were belatedly approved by the BODs in June 2007 and June 2008 respectively. The budget estimates for 2009-10, 2010-11 and 2011-12 were also submitted to the Board on 30 March of the preceding financial year. The Company, however, did not achieve the targets of turnover estimated in the physical budget except during 2007-08. The shortfall in accomplishment of turnover was ranging between 3.92 and 39.06 *per cent.* The percentage of variation in

respect of budgeted revenue and actual was ranging between 93 and 202 *per cent* while in respect of budgeted expenditure and actual was 82.76 and 235 *per cent* **(Annexure-9)**.

The Management accepted the facts and stated that all efforts were being made to place the budget estimates before Board as per time schedule. It further stated that budget provisions were mere approximation of quantum of work likely to be executed during the year and could not be strictly adhered to list of work indicated in the budgets. The controllable expenses were closely watched and had been kept within prescribed ceilings during last five years. The fact remained that the reasons of wide variation in the budget were never analysed and appraised to Board as required in the manual of the Company. Further, the administrative expenses also ranging between 93 and 160 *per cent* of budget indicated the lack of control over expenditure.

Position of works in hand

2.2.9 The details of various works (in numbers and value) pending execution at the beginning of the year, works received and executed during the year and pending execution at the end of year during 2006-07 to 2011-12 are as below:

(₹ in crore)

Year	Works pending at the beginning of the year		Works obtained during the year		Works executed during the year		Work completed and transferred to the client during the year		Works pending at the end of the year	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
2006-07	208	255.93	55	265.02	263	141.84	84	119.96	179	277.81
2007-08	179	277.81	55	332.21	234	170.10	29	112.54	205	335.37
2008-09	205	335.37	34	199.48	239	289.73	31	135.75	208	489.35
2009-10	208	489.35	58	2656.99	266	221.50	45	167.13	221	543.72
2010-11	221	543.72	48	249.95	269	394.48	61	185.25	208	752.95
2011-12	208	752.95	36	111.01	244	873.57	17	170.43	227	1456.09

It could be seen from above that the pace of completion of works was very slow. As against 208 works pending execution at the beginning 2006-07 and 286 works valuing ₹ 3814.66 crore obtained during 2006-12, only 267 works (54.05 *per cent*) valuing ₹ 891.06 crore could be completed and transferred to client department. Further, out of 208 works pending execution at beginning of 2006-07, 176 works valuing ₹ 179.43 crore (70.11 *per cent*) were allotted by State Government/Departments/PSUs. Similarly, out of 286 works obtained during 2006-12, 283 works valuing ₹ 3749.58 crore (98.95 *per cent*) were pertained to Government/Departments/PSUs and remaining three works valuing ₹ 65.08 crore (1.05 *per cent*) could only be procured through tenders.

A comparison of the deposit works vis-à-vis tender works executed by the

Company during 2006-07 to 2011-12 is as below:

Year	Deposit works		Tender works		Total	
	Number	Value (₹ in crore)	Number	Value (₹ in crore)	Number	Value (₹ in crore)
2006-07	231	110.98	32	30.86	263	141.84
2007-08	208	148.89	26	21.21	234	170.10
2008-09	218	263.97	21	25.76	239	289.73
2009-10	253	200.08	13	21.42	266	221.50
2010-11	264	388.91	5	5.57	269	394.48
2011-12	240	870.24	4	3.33	244	873.57

During 2006-12, the execution of tender works in comparison to deposit works had decreased substantially due to poor participation in open tenders, lack of professional expertise and unable to compete the bidding coupled with increased allotment of deposit works/BOT projects to the Company by the State Government/Departments/PSUs.

Thus, the dependency of the Company was on deposit works and revenue generated from the works allotted by the State Government/Departments/ PSUs had been the lifeline of the Company over a period of time. The reasons for slow pace in completion of works are discussed in subsequent paragraphs.

The Management stated that pendency of work at the end of any financial year was unavoidable because period of completion of most of the works was either two years or even more. It further stated that decrease in execution of tender works in comparison to deposit works was due to immense rise in turnover during these years and deputation of additional staff was not agreed by PWD. The reply was not convincing as 82 *per cent* of the works were delayed beyond scheduled completion date. The Company, however, could not secure works through participation in open tenders as discussed in paragraph 2.2.14.

Delay in completion of work

2.2.10 A review of the 267 works completed and transferred to the client department during 2006-07 to 2011-12 revealed that only 39 works were completed within scheduled period. The extent of delay in execution of 228 works is detailed below:

(Numbers)

Year	Delay in months							Total[3]
	1-6	7-12	13-18	19-24	25-30	31-36	above 36	
2006-07	26	21	4	5	3	-	-	59
2007-08	10	15	11	7	3	1	1	48
2008-09	13	7	5	2	1	1	-	29
2009-10	20	13	6	5	1	3	2	50
2010-11	13	12	2	1	-	-	1	29
2011-12	-	2	6	1	2	2	-	13
Total	**82**	**70**	**34**	**21**	**10**	**7**	**4**	**228**

It could be seen that almost 82 *per cent* (186 works) of the works were completed with a delay upto 18 months while in 18 *per cent* cases (42 works), delay was beyond 18 months. The maximum delay observed in execution of

3 The figures mentioned above might not match with the previous table as the unit offices and accounts wing has taken different approaches for deciding the works completed and transferred to the client department.

works was 66 months *i.e.* in case of works started prior to 2006-07. Delay in completion was attributable to delay in awarding and commencement of work by the contractor, late approval of drawings by client department, delay in completion by contractor, delay in supply of cement and steel by the Company, poor monitoring and supervision of works and delay in release of funds by the client department. A few major works showing exorbitant delay in execution along with reasons are given in **Annexure-10.**

We also observed that non-availability/inadequate supply of steel and cement was also significant reason of delay in execution of works. The head office of the Company procured cement and steel on the basis of quarterly requirement from the unit offices. The position of ordered quantity of steel and actual supply during 2006-07 to 2011-12 is given below:

(In MT)

Year	Ordered Quantity	Actual supply	Short supply
2006-07	8509.20	8020.26	488.94
2007-08	5670.00	4672.66	997.34
2008-09	13512.50	10430.10	3082.40
2009-10	4558.50	4473.90	84.60
2010-11	2773.10	2767.57	5.53
2011-12	11827.00	10142.34	1684.66

The short supply of steel was due to placing of orders on a single bidder which could not make timely supply as per the requirement of the units and delayed the projects. The Company, from 2011-12 onwards, started procurement of entire steel from Steel Authority of India Limited instead of inviting bids.

Delay in completion of works deprived the Company of timely recovery of centage charges besides loss of credibility and socio-economic benefits to the State.

The Management accepted the facts and stated that delay was unavoidable in the interest of work and Company. Further, there was no loss of credibility as these departments were still getting the work done by the Company. The reply was silent on the issue of delayed and inadequate supply of cement and steel. As regards, loss of credibility, Kota Super Thermal Power Station mentioned about poor work performance of the Company and was reluctant to get the work done through Company.

Deposit/Centage works

2.2.11 Deposit/Centage works are those which are executed by the Company on actual cost plus certain fixed overheads. The PWD (GOR) authorized (October 1979) the Government Departments/State PSUs to entrust large civil engineering works directly to the Company (erstwhile RSBCCL) at actual cost plus 15 *per cent* or 10 *per cent* overheads[4]. This circular (1979) was extended/amended from time to time by the State Government to maintain continuity of business to the Company. However, the fixed overhead rates to be charged by the Company were amended (January 1996) to 12.50 *per cent* in case designs and drawings were to be prepared by the Company; 10 *per cent*

4 15 *per cent* overheads if the Company executes the work as a departmental work while 10 *per cent* in case works executed by the Company through contractor.

in case the same was supplied by the client department. These rates were further amended (August 1996) to nine *per cent* and seven and half *per cent* respectively. These rates were being continued till now (March 2012).

Adequacy of centage charges

2.2.12 The Board of *erstwhile* RSBCCL constituted (September 1979) a four[5] member committee to propose administrative set up for RSBCCL. The Report of the committee was approved (March 1980) by the Board. As per the recommendations of the committee, it was decided to appropriate four *per cent* centage charges towards staff at site, six *per cent* towards staff at headquarters, three *per cent* for payment of loan and interest and two *per cent* as reserve/profit. Further, the GOR while extending (December 1981) the period of circular (1979) reiterated that the overheads would include charges pertaining to or incidental to a work *i.e.* establishment expenditure of office staff and field supervisory staff of the level of Junior Engineer, office expenses and running and maintenance of vehicles used for supervisory purposes.

We observed that the Company never reviewed the adequacy of centage charges towards recoupment of actual administrative cost incurred on execution of deposit works. Further, the effect of reduction in recovery of centage charges from 15 *per cent (*1979*)* to nine *per cent* in 1996 was also not reviewed considering increase in administrative cost consequent to two wage revisions and inflation in economy.

The position of actual administrative cost incurred on deposit works and centage charges earned during 2006-07 to 2011-12 is given in **Annexure-11.**

It could be seen from the annexure that the centage charges earned were not sufficient to cover the actual administrative expenditure/overheads incurred on execution of deposit works except in the years 2008-09 and 2011-12. Against the directions of GOR to recover nine *per cent* centage charges on actual cost, the effective recovery turned out between the range of 7.24 and 8.15 *per cent* against actual overheads ranging between 8.06 and 11.48 *per cent;* thereby leaving a gap of ₹ 21.10 crore during 2006-08 and 2009-11 without including interest and finance charges and depreciation on machinery *etc*.

We also noticed that the Company either did not charge centage on some projects[6] or the rate charged was lower than fixed by the Government. In some cases[7] the Government itself directed to charge a lower rate than prescribed by it. We further noticed that the Company charged centage on BOT projects ranging between three and nine *per cent* against 15 *per cent* as allowed under Rajasthan Road Development Rules 2002 without any specific directions from the Government.

The rates of centage were fixed by the GOR way back in 1996 and thereafter as commented above the overheads increased manifold. Despite this the Company never approached the Government for revision in centage rates.

5 Chairman and Managing Director (CMD) of RSBCCL, Chief Engineer (PWD), Chief Engineer (Irrigation) and Deputy Secretary to GOR.

6 Govind Devjee Temple (Nil), Satellite Hospital (Nil) and Construction of IIT-R (7 *per cent*).

7 High Court Building Jodhpur (6.5 *per cent*), Construction of Medical College Jhalawar (5.5 *per cent*) and Construction of Rajasthan State Judicial Academy (6.5 *per cent*).

Further, a recovery below than prescribed limits in BOT projects also contributed to short recoupment of the actual overheads incurred.

The Management stated that calculation had been done by attributing overheads to deposit works only, while the same manpower and machinery was also deployed on the execution of tender works. The overall recovery of centage keeping in view the payment made to meet the shortfall towards pension fund of employees was ranging between 5.24 *per cent* and 8.96 *per cent*. The reply was not correct as the calculation was done after apportioning overheads between deposit and tender works in the ratio of respective turnover. Further, the turnover of deposit works was taken net off centage charges. As regards provisions towards the employees' pension fund, the shortfall pertained to respective years was also to be recovered in subsequent years.

Non-recovery of centage on interest and profit

2.2.13 The norms for project formulation mentioned in Annexure A of the 'Rajasthan Road Development Rules 2002' stipulates 15 *per cent* interest rates to be included in the cost of project. The terms 'actual cost' indicated in GOR Circular 1981 mention that any cost directly related to the works to be included in the actual cost of the project. The interest cost during construction, being the direct cost should have been included in actual cost while calculating the centage charges. A review of the system of charging centage revealed that the Company while arriving at total cost did not include the interest and finance charges which resulted in short recovery of centage of ₹ 2.65 crore[8] on the projects executed during 2010-12.

Annexure-A to the 'Rajasthan Road Development Rules, 2002' (Rules) also allowed 15 *per cent* profit to the person/entrepreneur with whom the State Government has entered into an agreement for development of road on his investment. The Company instead of charging 15 *per cent* profit on the investment, charged at the rate of seven *per cent* as centage. This resulted in under recovery of profit by ₹ 17.96 crore on 13 roads entrusted during 2009-10 by the State Government.

The Management replied that MOU with GOR for execution of BOT projects allowed only rate of seven *per cent*. It further stated that recovery of investment with seven *per cent* charges takes a period of about 20 years and it was not prudent to claim 15 *per cent* centage charges. The reply was not correct as the MOUs did not provide for rate of centage recovery and rather allowed 15 *per cent* profit as per norms for project formulation.

Tender works

2.2.14 The State Government extended the validity of circular to award large civil engineering works directly to the Company by Government Departments/State PSUs from July 2005 onwards with the condition that there should be increase of 10 *per cent* in the volume of works procured by the Company by tender process every year. Report to this effect was to be

[8] Seven *per cent* of interest capitalised (₹ 37.91 crore) during 2010-12.

conveyed to Finance and Administrative departments (GOR) by 31 March of each financial year. Failure to submit such report would result in automatic withdrawal of extension prematurely. Prior to this, the Company had constituted (April 2002) a Business Procurement Cell (BPC) to secure tenders by participating in the bidding process. The cell was responsible for examination of Notice Inviting Tenders (NITs), preparation of proposals for new tender works and technical bid and submission of its recommendations to the Managing Director (MD) who was the competent authority to take decision for participation on the basis of past experience and capacity of the Company.

We noticed that the BPC largely failed to increase tender business by 10 *per cent* every year as the performance of the Company in tender participation was meager. Besides, the Company never reported the performance of tender business to the State Government despite standing directions to do the same in every financial year.

The status of participation in tenders by the Company and the contracts actually procured there against during six years ending March 2012 is given below:

Year	No. of tender in which the Company participated	No. of tenders acquired by the Company	Total value of works acquired (₹ in crore)	Percentage success in participation
2006-07	15	0	0	0
2007-08	21	2	56.58	9.52
2008-09	17	1	8.50	5.88
2009-10	138	0	0	0
2010-11	4	0	0	0
2011-12	0	0	0	0
Total	**195**	**3**	**65.08**	**1.54**

The Company out of participation in 195 tenders during 2006-12, could secure only three tenders valuing ₹ 65.08 crore. During 2006-07 and 2009-12 the Company even could not secure a tender, out of participation in 157 tenders.

The Management stated that main reason for non participation in tender works was immense rise in turnover during these financial years and scarcity of Engineers and technical staff and lot of works in hand to execute. The reply was not convincing as the Company executes the works on contractual basis, which did not affect the shortage of manpower. The turnover of deposit works was increased October 2010 onwards and prior to it the Company could secure only three tenders out of participation in 195 tenders which indicated that the quoted rates were not competitive. Further, the Company managed with almost same number of staff even after five times increase in turnover.

Determination of non-feasible price bid

2.2.15 The Company participated (October 2007) and accepted (April 2008) a tender work valuing ₹ 13.46 crore for construction of 60 number of residential units of various categories at Kota Super Thermal Power Station (KSTPS), Kota. For execution the contract, the Company, between April 2008 and June 2008, invited tenders two times but could not finalise it as the rates received were on higher side. On the basis of last tender (June 2008), the Company assessed that it would suffer a loss of ₹ 18.94 lakh in case it was executed.

Considering the probable loss in execution of the work, the Company refused (August 2008) KSTPS to execute the work on the plea that the work was awarded after expiry (December 2007) of the validity of the bid. Since the Company did not execute the work, KSTPS issued (July 2009) notice for recovery of ₹ 22.48 lakh towards risk and cost of the work awarded to another contractor. The actual risk and cost of the work has not been assessed by the KSTPS (September 2012).

The Management stated that KSTPS placed work order with the Company even after withdrawal of bid. The Company decided to execute the work and demanded escalation due to delay in issue of work order, which was lawful and justified. The reply was not correct as the Company managed its inability to execute the work on the quoted rates taking plea of the validity period of bid. Had it been the reason for non-execution, the Company would not have invited tenders twice and asked (June 2008) for drawings and designs coupled with assurance (July 2008) to commence the work by the Managing Director. Further, the tender conditions/work order did not stipulate any escalation clause.

Performance in execution of tender works

2.2.16 The position of tender works completed during 2006-07 to 2010-11 and in progress as on March 2012 is given in **Annexure-12.** It could be seen from the annexure that:

- Of eight tender works[9] completed during 2006-07 to 2011-12, the Company earned profit of ₹ 2.26 crore on six works while incurred loss of ₹ 0.80 crore on two works. The profit worked out (certified value of work *less* actual expenditure) on the actual investment/ expenditure on these works was ranging between 4.02 *per cent* and 6.25 *per cent.* We, however, observed that the Company did not apportion the administrative cost incurred on execution of these works which was ranging between 7.30 *per cent* and 11.48 *per cent* during the period 2006-07 to 2010-11. After considering administrative cost[10] the profit of ₹ 1.46 crore earned on these eight completed works would turn out into loss of ₹ 4.63 crore.

- There was substantial delay in completion of these projects ranging between 9 and 41 months from scheduled completion period envisaged in tenders. We observed that the client departments did not made fronts timely available, delay in providing drawings and designs, incorrect assessment of bill order quantity (BOQ), excess and extra work. The Company, however, made delay in providing cement and steel and deficient monitoring *etc.*

- There was substantial delay in raising final bill of the completed projects ranging between 3 and 31 months with the client. The payments were made by the clients with a delay ranged upto 7 months and as on March 2012 payments of ₹ 2.94 crore were pending receipt from clients on four completed projects.

9 Works procured prior to 2006-07.
10 9.51 *per cent* being the average of five years administrative cost and turnover.

The Management stated that after meeting seven *per cent* administrative overheads the Company incurred minor loss of ₹ 7.12 lakh on the 11 works. The reply was not correct, as stated above, the Company incurred loss on eight works executed and completed during last six years ending March 2012 and remaining three works were shown in progress as per its latest accounts. Thus, the position of profit/loss on these remaining three works could not be assessed. The reply was silent on the issue of delay in completion of projects, delay in raising of final bills and non-receipt of payments from the clients.

BOT Projects

2.2.17 The Company executed two types of BOT projects, one which was directly allotted by the State Government with flexible period of concession and the other procured by the Company in competitive bidding with fixed concession period. In case of flexible period of concession, the Company was to recover investment made on the project through levy of user fee (Toll) as per the provisions of Rajasthan Road Development Act, 2002. After full recovery of investment, the project was to be transferred to the State Government free of charge. While in case of fixed period of concession, the Company was to collect toll during specified period mentioned in the tender. In this case the collection of toll in excess or below the investment was to be the profit or loss of the Company, as the case may be.

The Memorandum of Understanding (MOU) between the State Government and Company for execution of BOT projects rendered on flexible concession period basis include the capital cost of construction, interest on capital cost, maintenance cost *etc.* of the project during the period required for recovery of investment and would be recovered through collection of toll. Clause 5 of the MOU provides that the Company shall maintain a separate account for the 'project' detailing all these costs and recovery of total investment through collection of toll. The details of this account shall be submitted to the State Government every year in April. The Company prepares a definitive project report (DPR) and on the basis of all the likely costs to be incurred and expected toll revenue, a concession period for recoupment of investment is determined.

Accounting System of BOT projects

2.2.18 As per system adopted by the Company for accounting of flexible concession period BOT projects, the profit element in the form of centage charges included in the project's capitalized cost during construction period. The excess/short recovery of toll than the capitalized cost of project amortized was treated as profit/loss of that particular year.

We observed that since the element of profit was included in the investment till completion of the project and treating the excess/short recovery of toll than the amount amortised during concession period as income/expenditure was not in accordance with the provision of MOU and generally accepted accounting principles. This led to inflation/deflation of the profit/loss of that particular year. The Company overbooked the profits by ₹ 17.70 crore during 2006-07 to 2011-12.

The Management stated that the Company was following this policy since financial year 2002-03 and was accepted by the Audit and Income Tax Authorities. Further, the profit earned during 2006-11 was only ₹ 9.88 crore. The reply was not convincing as the MOUs for the projects were signed with GOR in 2009 which provided for recovery of investment only. Prior to the MOUs all the projects, whether acquired through tenders or directly entrusted by GOR were treated at par and accordingly accounting for entrusted projects was considered. As regards difference in figure of profit, the Management had not considered three[11] projects surrendered to the Government. After considering these three projects surrendered, the profit was ₹ 17.70 crore.

2.2.19 During 2006-07 to 2011-12, the State Government allotted 20[12] road construction works to the Company for execution under BOT system with flexible period of concession. One road was also procured by the Company through competitive bidding with fixed period of concession. Out of these 21 roads, the Company had executed four[13] roads and started collecting toll between December 2009 and May 2011. Of remaining 17 allotted roads, 11 roads were under execution and DPRs of two roads were under preparation as on March 2012. The other four[14] roads were withdrawn by the State Government for execution under different schemes. The position of the roads under execution and the margin money deposited by the State Government there against is given in **Annexure–13.**

Collection of Toll

2.2.20 During 2006-07 to 2011-12 the Company had been collecting toll on 12[15] roads having fixed and flexible period of concession. Out of these, three roads with fixed period of concession and three roads with flexible period of concession had been surrendered to the State Government. As on March 2012 the Company was collecting toll on six[16] BOT projects. The shortcomings noticed in collection of toll during review period are discussed below:

Excess collection of toll

2.2.21 The State Government awarded (February 2001) the work of construction of Banswara – Dahod road, Massi Bridge and Mangalwar-Nimbaheda road to the Company with right to recover investment by levy of toll. The Company completed the Banswara – Dahod road, Massi Bridge and

11 Banswara-Dahod Road (surrendered on 4 June 2002), Mangalwar-Nimbahara Road (surrendered on 3 August 2010) and Massi overbridge on Sanganer Malpura Road (surrendered on 31 March 2011).

12 One road was allotted by the State Government in June 2008 while 19 roads were allotted in January 2010 and March 2010.

13 Bikaner Bypass (started toll collection from December 2009), Chala Neem Ka Thana-Kotputli Road (started toll collection from October 2010), Chittorgarh-Kapasan -Mavli-Dabok Road (started toll collection from February 2011) and Suratgarh-Hanumangarh Road (started toll collection from May 2011).

14 (i) Pratapgarh - Mandsaur, (ii) Sanderao - Falna, (iii) Jodhpur – Bhopalgarh – Gotan – Merta and (iv) Bharatpur - Roopwas - Dholpur.

15 Four roads completed during 2006-12 as mentioned in paragraph 2.2.19 and eight road completed prior to 2006-07 and toll was collected during 2006-07 onwards.

16 (i) Sriganganagar-Hanumangarh, (ii) Hanumangarh-Suratgarh, (iii) Chomu-Ajitgarh-Shahpura (iv) Bikaner bypass (v) Chittorgarh -Kapasan –Mavli-Dabok, and (vi) Chala Neem Ka Thana-Kotputli Road.

Mangalwar- Nimbaheda road at a cost (excluding interest) of ₹ 2.20 crore, ₹ 1.62 crore and ₹ 7.84 crore and started toll collection from November 2001, April 2002 and March 2002 respectively. At the time of awarding work to the Company, the State Government did not specify the concession period for recovery of toll. The State Government notified (April 2002) 'Rajasthan Road Development Act, 2002' (Act); Clause 5 of which *inter alia* provided that the State Government might enter into an agreement with any person or any local body in relation to development of any road who should be entitled to collect and retain the whole or such portion of the toll for such period as might be agreed having regard to the expenditure involved in the development of the road and collection of the toll, interest on the capital invested, reasonable return on the investment and volume of traffic. Further, Memorandum of Understanding (MOU) with State Government for these works was entered in March 2009. Clause 7 of the MOU provided that the Government land leased to the Company should be handed over back immediately on the day when the total investment for construction, development and maintenance was fully recovered by the Company. The MOU, however, did not mention the specific concession period.

We noticed that the Company, contrary to the provisions of the Act and MOU, continued toll collection on these projects beyond the actual recovery of investment including interest amounting to ₹ 16.82 crore till these were surrendered[17] to the State Government. The Company was aware of excess toll collection on these projects but the Chairman allowed (October 2009) to continue toll collection in view of substantial collection from the project.

The Management stated that toll was collected upto the actual concession period mentioned in approved DPRs or till extended concession period. The reply was not convincing as the period mentioned in DPRs was an estimate for recovery of investment while the MOU signed with GOR in March 2009 explicitly provided for recovery of toll till recoupment of investment. Further, the provisions of MOU superseded the concession period mentioned in DPRs.

Improper planning

2.2.22 Sensitivity analysis is an important tool in facilitating investment decisions involving huge capital outlay and large payback period. In road projects, it is pre-requisite for assessing the feasibility of the project that various factors *viz*. estimation of toll collection, interest element and overall expenditure on the project should be subjected to sensitivity analysis for proper evaluation and return on investment on the project.

We observed in two completed projects that the Company while evaluating the proposals of Chittorgarh-Kapasan-Mavli-Dabok Road and Suratgarh-Hanumangarh Road did not ensure the financial feasibility of the projects though the same was specifically mentioned by the State Government while conveying (August 2010) administrative and financial (A&F) sanction. The toll collection contract for Chittorgarh-Kapasan-Mavli-Dabok Road was

17 (i) Banswara – Dahod road surrendered on 4 June 2009, excess collection was ₹ 2.38 crore, (ii) Massi Bridge surrendered on 31 March 2011, excess collection was ₹ 4.76 crore and (iii) Mangalwar - Nimbaheda road surrendered on 3 August 2010, excess collection was ₹ 9.68 crore.

awarded (March 2012) for the first year after calling four times bids at ₹ 20.50 crore against the DPR projections of ₹ 38.23 crore. Further, Suratgarh-Hanumangarh Road, the contract was awarded (February 2012) for initial two years after calling four times bids at ₹ 25.09 crore against the DPR projections of ₹ 35.21 crore. The expenditure on these roads till March 2012 was ₹ 274.22 crore and ₹ 183.15 crore respectively which was further likely to increase as some minor works were pending completion on both the roads. Further, as per A&F sanction, the Company was liable to refund margin money with interest to the State Government. The margin money of the State Government on these two projects was ₹ 89.57 crore and the rate of interest to be charged was pending decision with the Government. These projects were financed through borrowing (October 2010 and March 2012) of ₹ 200.28 crore from HUDCO, margin money given by the State Government and remaining from own funds.

While analyzing the actual toll collection with estimated eight *per cent* increase every year (State Government norm for State highways is six *per cent*) was not even sufficient to meet the cost of financing which had been considered at 11.50 *per cent* per annum (rate of interest of HUDCO loan as on 1 April 2012) on both the projects in next 10 and 15 years. However, DPR projections mentioned recovery of cost of financing from the first year itself and recovery of investment in 16 years (Chittorgarh-Kapasan-Mavli-Dabok Road) and 20 years and six months (Suratgarh-Hanumangarh Road). Thus, in the absence of sensitivity analysis by factoring input variables of interest rate and estimated toll collection while determining the financial viability, these un-viable projects would not have been accepted by the Company.

The Management accepted the poor viability of roads and stated that after completion of bridges on these roads, toll would certainly increase as more traffic would be diverted. It further stated that the projects were allotted by the GOR on open ended basis and there was no loss to the Company. The fact remained that the projects were entrusted by the Government with clear instructions to execute the projects after ensuring financial viability, which was, however, not done by the Company. These projects cannot remain open ended.

Tender evaluation

2.2.23 For execution of 15 BOT projects awarded (January and March 2010) by the State Government, the Company split the roads into various stretches and invited individual tender for each stretch. The tenders were invited in two parts, technical bids and financial bids. The financial bids of only technically qualified bidders were opened, which carried two[18] parts *i.e.* G-schedule and H-schedule and the tenders were finalised in favour of the bidder who stood lowest in totality. The shortcomings noticed in tender evaluation process are discussed as below:

18 G-schedule means Basic Schedule of Rate (BSR) of items and H-schedule means non-BSR items.

Improper evaluation of BOQ-a case study

2.2.24 Based on the BOQ of G-schedule and H-schedule envisaged in the tenders of the projects, the Company awarded the work orders in favour of the lowest bidders. Our scrutiny of the records of Chittorgarh – Kapasan – Mavli– Dabok road revealed that there were vast variations in the BOQ envisaged in tender and work actually executed. The variations in BOQ of G-schedule of different stretches of the road ranged between *minus* 8.87 and *minus* 20.81 *per cent* while in case of H-schedule, the same was ranging between 5.02 and *minus* 54.62 *per cent* **(Annexure-14)**. This indicated that the DPRs prepared were not commensurate with the actual work requirements and there was lack of field study.

We noticed that of three stretches[19]out of total 10 stretches, completed during April 2011, two items of H-schedule (i) carrying out confirmatory bores up to depth between 0 m to 10 m and (ii) depth between 10 m to 20 m though envisaged in DPRs and tenders of all three stretches but were not actually executed by the contractor due to non-requirement. Besides these, other two items (i) P & F 100 mm NB GI pipe rail and (ii) S & F road delineator, envisaged in DPRs and tenders of 60-70 Km and 90-99 Km stretches were also not executed. Non-execution of H-schedule items of tenders would have changed overall status of the of the bidders in stretches 60-70 Km and 90-99 Km and the bidder who stood lowest in totality (G-schedule *plus* H-schedule) was not actually the lowest in real terms after exclusion of the non-executed items of H-schedule.

Since G-schedule items constitute more than 90 *per cent* of the value of the total order, the Company instead of evaluating the financial bids in totality, should have separately decided the lowest bidder for G and H-schedule and thereafter the lowest rates for H-schedule items should have been offered to the lowest G-schedule bidder to achieve economy and transparency in awarding tenders. This would minimize the instances of change in the status of bidders after execution of work.

Had the Company adopted above system of evaluation of financial bids, the Company could have saved ₹ 2.13 crore in awarding the tenders for all the three stretches.

The Management stated that G-schedule and H-schedule items were interdependent which could not be awarded to different contractors. There could be variation in quantity taken in BOQ and quantity actually executed, however, lowest should remain lowest was also ensured in final quantities. The reply was not correct as the position of lowest bidder had been changed after execution of two stretches, as stated above. We also observed that the Company awarded items of G-schedule and H-schedule to different contractors in same stretch (60-70 Km) of a road. Thus, the argument put forth that G-schedule and H-schedule items were interdependent and could not be awarded to different contractors did not hold well.

19 (i) 60 to 70 Km stretch, (ii) 80 to 90 Km stretch and (iii) 90 to 99 Km stretch.

Contract Management

2.2.25 Contract management is a process of managing and executing contracts in an efficient and economic manner. The contract agreement includes various clauses *viz*. performance security, bank guarantee, risk and cost, security deposit *etc*. to safeguard the financial interests.

Non-insertion of risk and cost clause

2.2.26 We noticed that the Company while inviting tenders for execution of 13 roads **(Annexure-13)** allotted (January and March 2010) by the State Government made a new standard bidding document which did not include the risk and cost clause. The bidding document, apart from five *per cent* performance security included unbalanced bid[20] clause to safeguard the financial interests of the Company.

Our scrutiny revealed that the bidders quoted rates lower than the Engineer's Cost and procured the work orders but did not complete the works within stipulated time schedule. This led to withdrawal of work by the Company after forfeiting the five *per cent* performance security and additional performance security relating to unbalanced bid. Further, on re-invitation, the bids were received at a very high price ranging between 12.88 and 21 *per cent* above G-schedule than that of earlier awarded ranging between 15 and 28.54 *per cent* below G-schedule.

We observed that performance security and unbalanced bid against the work orders withdrawn by the Company was not sufficient to meet the additional financial burden on re-invitation of tenders. Further, in one[21] case the Company though invoked the bank guarantee of ₹ 8.36 crore against additional performance security but could not materialize it due to litigation. Had the Company incorporated the risk and cost clause in the contract agreements, the additional financial burden on the un-executed works could have been recovered from the defaulter contractors.

The details of works withdrawn by the Company due to non-execution by the contractors and additional financial burden of ₹ 15.47 crore transpired due to re-invitation of bids are given in **Annexure-15**.

The Management accepted the facts and stated that contractors bid on given set of condition and as such earlier bided works could not be changed, however, for further tenders the Management would take a view. It also stated that no financial burden occurred till date on this account. The reply was not correct as the extra cost as worked out based on the quantities and rates mentioned in the new bids would be more than the financial hold due to award at higher rates than the previous bids. We also observed that in the previous tenders documents of Bikaner Bypass Road the Company included the risk and cost clause.

20 If the bid amount of the successful bidder is lower than the Engineer's Cost of the work to be performed under the contract, then the bid shall be treated as 'unbalanced bid' and the bid amount *minus* Engineer's Cost shall be considered as unbalanced amount.

21 Jodhpur-Osian-Phalodi road.

Sub-standard execution of work

2.2.27 The Company executed (September 2010 to May 2011) the work (four lanes from existing two lanes) of Suratgarh–Hanumangarh road at an expenditure of ₹ 183.15 crore. Toll collection on this road was started from 5 May 2011. However, the toll collection process was aborted (11 September 2011) due to damages occurred in the road and on the pretext of incomplete work at some stretches.

We noticed that the PWD and the State Government constituted (between 25 August 2011 and 8 February 2012) three committees[22] to identify/investigate the reasons for damage/failure of road, fixing of responsibility and to determine the cost of removal of defects. The committee constituted by PWD (17 November 2011) was to submit report within seven days while that constituted by the State Government (8 February 2012) was to submit report by 29 February 2012. The findings of the committees were not provided by the Company treating them as confidential. It was further noticed that the State Government suspended (July 2012) nine engineers of the Company and also issued charge-sheet to the then Managing Director.

The PWD inspection notes, however, revealed that the damages occurred due to heavy rains and seepage of rain water from the median of the road. It was further noticed that Company blamed that the work was not completed by the contractors as per Ministry of Road Transport and Highways (MoRTH) specifications while the contractors blamed the Company that the consultant appointed for DPR preparation lacked technical expertise and DPR prepared was defective. The contractor further blamed that no quality issues were complained by the officers of the Company during execution of road.

The Management accepted the facts and stated that inquiry had already been taken up and all possible measures had been taken to ensure quality work. It was also stated that the agreement consist clause of defect liability/maintenance guarantee and accordingly the firm has to maintain and rectify defects upto six years. The reply, however, did not mention that the abstract bills of the road were certified by the Project Officer stating that the work had been carried out as per the PWD specifications.

Improper co-ordination among units

2.2.28 Co-ordination among different units of the Company becomes *sine qua non* when different stretches of a same road are executed through different units. The Dabok - Mavli - Kapasan- Chittorgarh road was divided into 10 stretches under three units. Three stretches (0-10, 10-20 and 30-40) were under unit Udaipur-I, two stretches (20-30 and 40-50)were under unit Udaipur-II and remaining five stretches (50-60, 60-70, 70-80, 80-90 and 90-99) were under Chittorgarh-I unit. A review of various works executed by these three units under different tenders on the seven completed stretches revealed the following shortcomings.

22 First committee by the PWD in August 2011 under Superintending Engineer (PWD), Second committee by the PWD in November 2011 under chairmanship of Additional Chief Engineer (PWD) Zone-1, Jaipur and third committee by the State Government in February 2012 under Advisor (Infra) RSRDCC.

(a) We noticed that Chittorgarh unit included the work of tree guard in the main work order and got executed the same at G-Schedule rates *less* tender discount at cost of ₹ 513.42 per tree guard. However, the unit-I and II awarded separate contracts for the same work at a cost of ₹ 1550 and ₹ 2000 per tree guard respectively. We observed that all the three units lacked co-ordination and uniformity in execution of the work of tree guard as the Chittorgarh unit put in place tree guards with iron structure while the Udaipur unit-I and II put in place tree guards with RCC.

Thus, use of disparate tree guards by the units led to extra expenditure of ₹ 40.57 lakh[23].

The Management stated that works along different stretches were taken up through different units but DPR was prepared by one consultant. As such there was no variation on the major items and minor variation might be there on account of stretch specific requirements, which could not be considered as extra expenditure. The reply was not convincing as tree guard was not a stretch specific item and similarity was to be maintained as per DPR.

(b) The Udaipur-II got executed the work of filling agricultural earth in central strip at different stretches through item no. 8 of Chapter of BSR (Earth work for road R-3) G-schedule rate *less* tender discount at cost of ₹ 66.50 per Cum and ₹ 66.97 per Cum. However, the Udaipur-I unit did not include the work in G-schedule and invited the tenders by including it in H-schedule which was awarded at ₹ 125 per Cum for all the three stretches. We observed that by going strictly with the nature of work, it could have been executed by clubbing three items[24] (number 3, 8 and 9) of the horticulture chapter (R-10) under applicable BSR whose combined cost was ₹ 109 per Cum. After giving effect of tender discount, the applicable cost to the Company was in the range of ₹ 84.46 to ₹ 85.91 per Cum.

The dissimilarity in execution of same work was due to improper monitoring/supervision at the level of Deputy General Manager and Headquarters' level who were supposed to verify the tender documents submitted by the project directors of each unit.

Thus, non-observance of similarity in execution of same work led to extra expenditure of ₹ 8.27 lakh[25].

The Management stated that the contractor while quoting rates for any work go through the items involved in execution of that work. By changing item, rates received would be different. Further, presuming different set of items on same rate and calculation of extra expenditure or loss was not realistic. The reply was not in consonance with the issue as the Company was supposed to verify and maintain similarity of G-schedule items of different tenders to ensure economy in execution of same works.

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23 (₹ 1550 - ₹ 513.42) X 2001 + (₹ 2000-₹ 513.42) X 1334 (number of tree guards).

24 Item no. 3- Supplying sludge duly stacked at site/store (₹ 73 per Cum), Item no. 8- (Spreading of sludge farm-yard manure or/and good earth in required thickness (cost of sludge, farm-yard manure or/and good earth to be paid separately) (₹ 32 per Cum) and item no. 9- Mixing earth and sludge or farm-yard manure in proportion specified or as directed (₹ 4 per Cum).

25 (Rate at which the work was awarded – Rate attributable as per G-schedule) X Quantum of work executed *i.e* [(₹ 125 – ₹ 84.46) X 7000 Cum + (₹ 125- ₹ 85.91) X 7000 Cum + (₹ 125 - ₹ 85.04) X 6740.91 Cum].

Withdrawal of work by client

2.2.29 Rajasthan Rajya Vidyut Utpadan Nigam Limited (RRVUNL) allotted (February 2006) infrastructural civil work of 2 X 250 MW Chhabra Thermal Power Project to the Company on actual cost of ₹ 4.33 crore (later on revised to ₹ 8.16 crore) plus centage charges at the rate of 7.5 *per cent* with scheduled completion within nine months from the date of handing over of site. The site was handed over to Company in February 2006 and the Company mobilized its staff in March 2006.

We noticed that the Company though split[26] and awarded (March 2006) the work to six contractors but did not ensure commencement of all the works simultaneously as only three[27] works could be started during March and April 2006. The non-commencement and slow progress of work was brought to the notice of Company by RRVUNL several times between May and July 2006. RRVUNL also complained about non availability of supervising staff at site to monitor the work of contractors. The Company, however, despite several reminders from RRVUNL could not speed up the work to the desired satisfaction level of RRVUNL. Consequently, RRVUNL directed (October 2006) to stop the work *w.e.f.* 30 November 2006, upto to which works of ₹ 2.16 crore were executed by the Company.

Thus, the lack of supervision and co-ordination between the Company and contractors led to withdrawal of work by RRVUNL and caused loss of revenue of ₹ 45 lakh towards centage charges on un-executed works.

The Management stated that change in work specification and drawing by RRVUNL led to stoppage of work. The reply was not correct as three works were not started even after lapse of six months and one work was rescinded due to slow progress of the contractor.

Work of Biological Park at Sajjangarh

2.2.30 The Wildlife Department Udaipur allotted (October 2008) the construction work of various buildings and boundary wall at Sajjangarh Biological Park to the Company on actual cost plus nine *per cent* centage charges. Of the total estimated cost of ₹ 14.75 crore for overall project, work of ₹ 5.30 crore were to be executed in first phase by August 2010.We noticed that the Company could complete the first phase project work of ₹ 4.33 crore till May 2012 due to lack of planning and improper co-ordination among various project activities. The Company awarded (August 2009) the work of construction at ₹ 2.74 crore with scheduled completion by August 2010, excluding cement and steel and without engaging architectural consultant for preparation of designs for the project. The architectural consultant was belatedly engaged in February 2010.

We further noticed that awarding of construction work without finalization of designs/drawings/specifications led to crop up differences between the Contractor and the Company. As a result, the contractor refused to carry out the work with changed specifications than the G-schedule and as such the

26 (i) Boundary wall Part-A, (ii) Boundary wall Part-B, (iii) Field hostel, (iv) Office & store shed, (v) Road and (vi) Fencing work.

27 (i) Boundary wall Part-A, (ii) Office & store shed and (iii) Fencing work.

Company cancelled (September 2010) the contract at the risk and cost of the contractor. The Company re-awarded (January 2011) the work to already defaulted firm with scheduled completion period upto August 2011. The Company further could not get the work completed due to conflict on the issue of delay in providing material/designs/drawings by the Company and slow progress of the work by the contractor. Resultantly, the Company again cancelled (December 2011) the contract and black listed the contractor for participation in future tenders. Both the contractors initiated legal action against the Company and new contract was yet to be finalised (November 2012). This not only caused delay in realisation of centage charges of ₹ 19.44 lakh on un-executed portion of first phase but also attracted litigation with the contractors.

The Management while accepting the fact of delay and litigation stated that work of ₹ 4.33 crore had been completed against the sanction of ₹ 5.30 crore and forest department had assured to issue revised sanction of ₹ 20 crore works. The reply was not convincing as improper contract management led to rescinding the contract twice and next contract was yet (November 2012) to be finalized.

Avoidable expenditure due to not using excavated earth

2.2.31 The BSR and the tenders invited for construction of roads mentioned different rates for 'construction with excavated earth' and 'construction with earth from borrow pits (private land)'. Scrutiny of the final bills submitted by the contractors revealed that whole of the excavated earth was not used by the contractors in construction and instead they claimed construction from borrow pits. The position of earth excavated, excavated earth used in construction and earth unused in construction test checked in stretches of Chittorgarh – Kapasan – Mavli - Dabok and Suratgarh – Hanumangarh roads is given in **Annexure-16.**

As against 9.31 lakh Cum earth excavated from culverts, bridges and drainages, 8.41 lakh Cum earth was used in the construction. Non-utilisation of 0.90 lakh Cum excavated earth caused extra expenditure of ₹ 41.07 lakh as the work was executed through earth from borrow pits.

The Management stated that all possible efforts were done to use available excavated earth, if it was suitable for use in embankment and economical in transportation. Most of the times surplus earth available was in distant section from the section of its use and in such cases transportation, loading, unloading become costlier than taking earth from nearby borrowed area. The reply was not convincing as the Company was to record the available excavated earth on a particular location and also the reasons for not using the same. However, no such record was found maintained and the reasons for not using the excavated earth were also not recorded.

Awarding the work to single bidder despite higher rates

2.2.32 Rule 55 of the General Financial and Accounts Rules (GF & AR) Part-II issued by the State Government provides that retendering would be necessary in case tenders received were less than three and the committee was not satisfied about the reasonability of the rates. Clause 6.8 of the manual

of the Company further provides that in case the lowest tenderer does not reduce his rates in negotiations or the reduced rates are still considered to be higher, then the tender sanctioning authority may work out a counter offer and ask the lowest tenderer to accept it. If it is not accepted by the lowest tenderer, then the sanctioning authority may reject the tenders or make the same counter offer as per delegation of powers.

The Company awarded tenders at higher rates without ensuring reasonability of rates. In some cases the tenders were awarded to single tenderer instead of re-inviting the tenders as required under GF & AR and manual of the Company. Cases noticed in selected units are as detailed below:

Name of work	Rates quoted by the lowest tenderer	Internal estimates of the Company	Whether tender re-invited	Rates received on re-tendering	Rates at which tender was awarded
Construction of Hostels at AIIMS Jodhpur	24.50 *per cent* above G-schedule (single bidder)	-	No	NA	24.50 *per cent* above G-schedule
Construction of LSQ & USQ Campus at Udaipur	30 *per cent* above G-schedule	22.95 *per cent* above G-schedule	Yes	23.51 *per cent* above G-schedule	23.51 *per cent* above G-schedule
	29.81 *per cent* above G-schedule	22.93 *per cent* above G-schedule	Yes	23.51 *per cent* above G-schedule	23.51 *per cent* above G-schedule
	34 *per cent* above G-schedule	22.87 *per cent* above G-schedule	Yes	19 *per cent* above G-schedule	19 *per cent* above G-schedule

(a) In case of construction of hostels at AIIMS Jodhpur, the work was divided into three parts and only single tenderer participated (December 2007) in the tender process. The rates quoted by the bidder were considered on higher side but during negotiation the bidder refused to reduce the quoted rates of G-schedule. The Company instead of exercising the option of re-invitation, awarded (January 2008) the tender at the quoted rates.

The Management stated that tender was awarded without exercising the option of re-invitation due to the reasons that (i) tenderer did not reduce the quoted rates during negotiation, (ii) rate analysis of Resident Engineer was higher than quoted rates, (iii) similar work was awarded during the same period @ 24.60 *per cent* above G-schedule rates, and (iv) it was a tendered work and penalty could be imposed for delaying the work. The reply was not correct as the internal estimates of the Company for executing the work were ₹ 4.50 crore while the work was awarded at ₹ 5.43 crore. The fact remained that the provisions of the manual as well as GF&AR were not adhered despite single bidder and higher rates than estimates.

(b) Considering higher rates quoted by the contractor in case of Construction of LSQ & USQ Campus at Udaipur the Company negotiated (2 January 2008) with the contractor who in turn reduced rates to 29.25, 29.31 and 33 *per cent* above BSR for part I, II and III respectively but the same were also considered higher by the management. Further, the unit also submitted (23 January 2008) rates of 22.95, 22.93 and 22.87 *per cent* above BSR respectively but these were also not considered reasonable and the Company scrapped the tender. On re-invitation (February 2008) only single bidder quoted 23.51 *per cent* rate above BSR for part I and II whereas in part-III lowest rate of 19 *per cent* above BSR was received among three bidders.

We noticed that though the rates for part I and II were above the estimates submitted by the unit which were also considered on higher side yet the Company awarded (March 2008) the contract to the single bidder without any negotiation.

The Management stated that as per revised rate analysis (24.05 *per cent* above BSR) done by unit on current market rates, the quoted rates were considered reasonable and accordingly work was awarded. The reply was not convincing as the only same bidder again quoted rates on re-invitation of tender and the Company awarded the works at its quoted rates without justifying the market trend which was reducing being evident from part III and new rates received in part I and part II.

Mechanical Unit

2.2.33 The plant and machinery and equipments including tippers and trucks used in the construction of buildings, roads and bridges remain in the charge of the mechanical unit at the head office of the Company. The primary function of mechanical unit involves purchase, operation and maintenance of the plant and machinery and equipment as well as of office vehicles and maintaining their log books.

The working results of the unit for last six years ending March 2012 were as under:

(₹ in crore)

Particulars	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Hire charges charged to civil units	1.33	2.48	0.71	3.82	4.48	8.58
Hire charges received from contractors	0.24	0.23	0.25	0.07	0.06	-
Hire Charges received from PWD	-	0.19	0.40	0.04	-	-
Profit on sale of fixed assets	0.14	-	-	0.01	0.20	0.01
Miscellaneous receipts	0.07	-	0.01	0.05	0.06	0.03
Total revenue	**1.78**	**2.90**	**1.37**	**3.99**	**4.80**	**8.62**
Plant running expenses	1.55	2.90	1.20	2.23	3.76	6.22
Depreciation	0.26	0.19	0.14	0.11	0.16	0.16
Rates & taxes	0.07	0.06	0.05	0.06	0.07	0.08
Establishment Expenses (Labour)	0.75	0.86	1.35	1.56	1.60	1.74
Establishment Expenses (Officers)	0.48	0.32	0.25	0.43	0.59	0.73
Other expenses	0.36	0.42	0.42	0.41	0.46	0.63
Total expenses	**3.47**	**4.75**	**3.41**	**4.80**	**6.64**	**9.56**
Net result	**(1.69)**	**(1.85)**	**(2.04)**	**(0.81)**	**(1.84)**	**(0.94)**

It could be seen that hire charges charged for use of plant and machinery had been the main source of revenue of the mechanical unit. The overall performance of the mechanical unit was not satisfactory as it had negatively contributed to the profits of the Company. Further, the hire charges in all the years except 2009-10 were not even able to cover the direct cost (plant running expenses and labour).

We noticed that the GOR while transferring (December 1981) bridge works from PWD to the Company (*erstwhile* RSBCCL), allowed inclusion of hire charges (including cost of labour) of the machinery excluding element of interest in the actual cost. However, the Company while fixing cost to be charged on deposit works did not include the element of labour cost employed on the machinery in the hire charges and consequently the labour charges of ₹ 7.35 crore were under recovered.

The Management accepted that the machinery and manpower available in mechanical unit could not be fully utilised in previous years due to insufficient work of road construction with the Company. As a result the expenditure was more than income from hire charges. Efforts are being done to control the departmental expenses through departmental execution of more and more road works. It further stated that the Company did not consider direct cost of labour at the time of determination of hiring charges in previous years. However, direct cost of labour is being considered for determination of hiring charges from 2012-13. The major reasons for loss in the unit are discussed below.

Utilisation of plant and machinery

2.2.34 The Ministry of Surface Transport (MOST) recommended in December 1993 and May 1998 'economic life for condemnation purpose' and 'annual utilisation norms' respectively, for various types of plant and machinery used in the construction of roads. Further, the manual of the Company prescribed that the month-wise utilisation of each construction machine/equipment shall be compiled by the Mechanical unit every year and it will be compared with the annual utilisation norms. A report in this regard was to be submitted to the Managing Director with comments to find out the reasons of under utilisation. The details of plant and machinery owned by the Company and there utilisation is given in **Annexure-17**. We observed that:

- The overall utilisation of machinery (excluding crane) as on March 2012 against the standard annual hours recommended by MOST was only 41.41 *per cent* and the individual utilisation ranged between 22.24 *per cent* and 79.38 *per cent.* Further, in case of paver finishers, against the standard annual utilisation norms of 800 hours the average annual utilisation during 2006-07 to 2011-12 was ranging between 32.83 and 787.33 hours. In case of road roller, vibromax roller and soil compactor the same was 423.83, 712 and 476.50 hours respectively against norms of 1000 hours.

The utilisation of the plant machinery was though below the norms yet the unit did not submit month wise and machine wise report to the Managing Director for decision making as regards improvement in the utilisation ratio of machines.

- For condemnation purpose, the MOST recommended two parameters for economic life of the plant and machinery *i.e.* later of year or hours. The paver finisher-3, vibromax roller and crane-5 had completed their economic life both in years and hours. A higher repair and maintenance expenditure on these outlived machinery could not be ruled out but in absence of machine wise details of repair and maintenance expenditure, the same could not be analysed by us.

The Management in addition to reply submitted for paragraph 2.2.33 stated that heavy plant running expenditure was incurred due to ageing of machines and efforts were being done to control it.

Conclusion

The Company did not prepare long term action plan to ensure achievement of organisational objectives and was wholly dependent on the works entrusted by the State Government/Departments/PSUs. The procurement of works on its own was almost negligible. The provisions of the manual were not adhered to and variations in budgets were not analysed. Improper planning and in-adequate contract management led to delay in completion of the projects. Excess toll collection was made in contravention to the provisions of Rajasthan Road Development Act, 2002 and MOU with GOR. Project formulation was not as per Rules which caused short recovery of profit and further centage charges were also not adequate to meet administrative cost. The Company executed un-viable road projects and improper evaluation of tenders, absence of risk and cost clause and lack of co-ordination among units caused extra expenditure. There was under utilization of plant and machinery against the standard hours recommended by Ministry of Surface Transport.

Recommendations

The Company should:

- **Prepare long-term action plan and annual plan to minimise dependence on entrusted works;**
- **Adhere to the Manual, Rules and Procedures;**
- **Ensure proper planning, effective monitoring and co-ordination with contractors as well as clients to avoid delay in execution of works;**
- **Ensure viability of the projects and adequacy of centage charges to maintain profitability; and**
- **Ensure optimum utilization of plant and machinery.**