

CHAPTER-II

Performance Reviews relating to Government companies

2.1 Performance review on the Working of Uttar Pradesh State Agro Industrial Corporation Limited

Executive summary

The Uttar Pradesh State Agro Industrial Corporation Limited, Lucknow was established in March 1967 as a Government Private Company (subsequently converted into Deemed Public Company in May 1975) with the objective to aid, assist, promote or establish, develop and execute agro-industries, projects or enterprises or programme to manufacture or production of such equipments or goods that will promote or advance agro industrial development of Uttar Pradesh. The objectives were modified in February 2000 to include manufacturing and trading of implements/inputs used in agriculture, horticulture, rural industries and other programmes to increase productivity, promote employment and income generation in rural areas, any other activity or business that increase turnover or improves financial position or assigned to it by Government or other agencies.

The Company's activities were mainly confined to sale of tractors, procurement of agriculture implements on Government demands or its authorities, installation of hand pumps, distribution of fertilizers, pesticides, seeds etc. to farmers, procurement of wheat and paddy on behalf of State Government under the Scheme of Minimum Support Price (MSP) of Central Government, procurement of gypsum on behalf of State Government for supply to Agriculture Department, production and sale of agriculture implements and cattle feed.

Procurement and installation of hand pumps

The Company, for installation of hand pumps, received supplies of 745 lots of GI pipes (24.33 lakh metre) which were having weight lesser by 521 MT (valued at ` 2.40 crore) than the standard weight of 7615.16 MT. It failed to cancel supplies of 60 lots (2.20 lakh metre) of GI pipes valued at ` 3.26 crore as per the terms and conditions of orders, where variation in weight exceeded the

permissible allowance. It accepted supplies of 257 lots of GI pipes valued at ` 13.74 crore without its weighment. The Company had weak control mechanism regarding scrutiny of tenders as it placed order for supplies of GI pipes valued at ` 3.98 crore on a firm which had quoted two rates from two places. It incurred extra expenditure of ` 39.70 lakh due to use of more length of PVC pipes in installation of hand pumps without any basis. The Company inflated cost of installation of hand pumps to the extent of ` 5.73 crore by adding extra amount towards cost of materials.

Procurement of fertilizers and seeds

Fertilizers business was continuously in loss during five years ending 2009-10 and aggregated to ` 3.87 crore as the Company could not recover its administrative and finance cost. Reasons of loss were failure to induce farmers for purchasing from Company's outlets, lesser allocation of fertilizers to the Company for sale, margin of sale of fertilizers remaining almost unchanged for last ten years etc. The Company purchased 864.90 quintals of hybrid paddy seeds belatedly without ascertaining its marketability in kharif season 2009 resulting in failure to sell 681.31 quintals seeds and expiry of its germination life and loss of ` 1.28 crore.

Procurement of wheat and paddy under MSP

The State Government authorised the Company for procurement of wheat and paddy for state and central pool. The Company failed to streamline varying practice of raising claims of incidental charges receivable on procurement of wheat and its admittance by RFCs. It did not claim incidentals charges of ` 2.16 crore whereas the RFCs did not admit the claims of ` 0.98 crore of the Company on procurement of wheat during 2005-10.

Manpower Planning

The Company had acute shortage of Executives in key post and other staff which adversely affected internal control, sales promotion, manufacturing and trading of the Company.

Financial Management

The Company at occasions failed to utilise its available funds judiciously as its funds remained parked in FDRs/Cash Certificates fetching lower interest rates resulting in loss of ` 1.21 core. It made avoidable payment of penal interest of ` 42.73 lakh due to delay in repayment of loans within the stipulated period. The Company also failed to repay Government loans of ` 7.50 crore taken in 1998 for fertilizers business on which it paid interest of ` 4.25 crore during 2005-10. The Company also could not realise ` 1.68 crore from the Government against supply of gypsum worsening its fund position.

Internal Control System

Internal Control of the Company was weak as audit wing was non-functional and there was acute shortage of staff on key posts. The Company failed to stop encashment of cheques issued by it before one week of the actual supply as per the terms and conditions of the orders.

Conclusion and Recommendations

The performance of the Company was found to be dismal in regard to procurement and installation of hand pump assemblies. Prescribed procedures for procurement of materials were not adhered to resulting in sub-standard purchase of GI pipes, estimates for the installation of hand pumps were prepared with inflated cost and PVC pipes were used in excess of PVC pipes for casing purpose were used in excess of requirement. Inrequirement.

Hybrid paddy seeds were procured belatedly resulting in major quantity remaining unsold beyond its germination period and resulted in loss to the Company. Claims of incidental charges against procurement of wheat were not being raised uniformly in the Company and as per the Government orders resulting in non-receipt of total

incidental charges. Due to diversion of loan funds received for procurement of wheat, the Company incurred extra burden of interest. There was acute shortage of staff and absence of incumbents for key posts which adversely affected the functioning of the Company. The available funds were not judiciously utilised. The internal control system was deficient in procurement of gypsum and internal audit was not functional.

The Company should adhere to prescribed procedures of procurement to ensure quality of materials, prepare estimate of installation of hand pumps as per norms. It should utilise funds judiciously and arrange funds from Government and other financial institutions for its working capital requirement and streamline internal control system to ensure compliance of procedures, rules, regulation & financial propriety.

1.Introduction

2.1.1 The Uttar Pradesh State Agro Industrial Corporation Limited, Lucknow (Company) was established in March 1967 as Government Private Company, which was subsequently converted (May 1975) into Deemed Public Company by virtue of Section 43A(1A) of Companies Amendment Act, 1974. The main objectives of the Company are to aid, assist, promote or establish, develop and execute agro-industries, projects or enterprises or programme to manufacture or production of such equipments or goods that will promote or advance agro industrial development of Uttar Pradesh. The objectives were modified in February 2000 to include manufacturing and trading of implements/inputs used in agriculture, horticulture, dairying, bee keeping and animal husbandry etc. and activities relating to rural development, agriculture, horticulture, floriculture, rural industries and other programmes of diversified nature to increase productivity, promote employment and income generation in rural areas.

The National Agricultural Policy (NAP) was devised (July 2000) for uniform development in agriculture. The thrust of the NAP was to devise mechanism for price structure of inputs and outputs so as to ensure higher return to the farmers. It further stressed on “adequate and timely supply of quality inputs such as seeds, fertilizers, plant protection chemicals, bio-pesticides, agricultural machinery and credit at reasonable rates, soil testing, quality testing of fertilizers and seeds and ensure checking of spurious inputs being supplied”. The State Government has not formulated any separate agriculture policy.

The Company’s activities were confined to the following:

- Sale of tractors, installation of hand Pumps and manufacture/sale of Agricultural implements;
- Procurement of tractors trolley/lawn movers/bush cutter/tree guard/water tankers etc. on demands from Government’s authority/agencies;
- Distribution of fertilizers/ pesticides/ insecticides/seeds etc. to the farmers;
- Procurement of wheat and paddy on behalf of State Government under Minimum Support Price (MSP) of the Central Government;
- Procurement of gypsum on behalf of State Government for supply to Agriculture Department;
- Production and sale of agricultural implements including tool kits, disc harrow, grain bins etc.;
- Production and sale of cattle feed.

These activities are being undertaken by four divisions[♥] of the Company.

2.1.2 The overall management of the Company vests in a Board of Directors (BOD) comprising of a Chairman, a Managing Director (MD) and eight other Directors. The MD is the Chief Executive of the Company and is assisted by four Chief/General Managers (for four Divisions) and a Financial Advisor cum Chief Accounts Officer, all posted at headquarters, Lucknow. The activities of the Company are spread all over the State with control points at offices of 18 Divisional Engineers and 17 Regional Managers. The Company also has three cattle feed factories at Lucknow, Moradabad and Gorakhpur and one workshop at Lucknow.

[♥] Service Division including Project Division at Noida, Marketing Division, Agricultural Workshop and Cattle Feed Division.

3. Scope of audit

2.1.3 The activities of the Company from 1987-88 to 1991-92 and 1996-97 to 2000-01 were reviewed and the results featured in the Report of the Comptroller and Auditor General of India, (Commercial), Government of Uttar Pradesh for the years 1992-93 and 2001-02 respectively. The activities of the Company from 1996-97 to 2000-01 were earlier reviewed and the results featured in the Report of the Comptroller and Auditor General of India (Commercial) Government of Uttar Pradesh for the year 2001-02. The review has not been discussed by COPU so far (October 2010). The present review conducted during November 2009 to March 2010 mainly deals with the operational performance of the Company for the five years from 2005-06 to 2009-10. Six offices of Regional Managers¹, seven offices of Divisional Engineers² and one office each of workshop and cattle feed factory³ were selected on the basis of geographical distribution in the State. The records of head office and field offices relating to tenders, purchase orders, payments, invoices, sale/adjustment bills, drawings and designs etc. were examined.

The methodology we adopted for attaining the audit objectives with reference to audit criteria consisted of explaining audit objectives to top management during an entry conference held on 20 January 2010, scrutiny of records at Head office and selected units, interaction with the auditee personnel, analysis of data with reference to audit criteria, raising of audit queries, discussion of audit findings with the Management during an exist conference.

4. Audit objectives

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

- the Company managed its business economically, efficiently and effectively to achieve declared objectives pronounced in its memorandum;
- procurement and installation of hand pumps assemblies under the scheme of the Government was done in economical manner and according to plan of installation;
- system of procurement and distribution of gypsum/fertilizers/seeds/pesticides/insecticides etc. to farmers was efficient and effective;
- procurement of food grains under minimum support price scheme of Central Government was done in accordance with the guidelines of State/Central Governments;
- sound financial management was in place in the Company; and
- internal control mechanism was efficient, effective and met the needs of the Management.

5. Audit Criteria

2.1.5 The audit criteria adopted for assessing the achievement of the audit objectives were as follows:

- National Agriculture Policy (NAP);
- Orders/guidelines issued by the Central/State Government in respect of schemes implemented by the Company,
- Procurement manual and orders/circulars issued from time to time regarding production/procurement and sale of items being dealt with by the Company,

¹ Lucknow, Varanasi, Azamgarh, Faizabad, Bareilly and Meerut.

² Allahabad, Gorakhpur, Kanpur, Moradabad, Agra, Jhansi and Noida.

³ Gorakhpur.

- Orders relating to release of funds to the Company for implementation of various schemes and provisions of Financial Hand Book,
- Norms of production of cattle feed and manufacture of agricultural implements.

7. Audit findings

2.1.6 The audit findings were reported to the Management/Government in June 2010 and discussed in the exit conference on 11 June 2010 which was attended by the Managing Director of the Company. Views of the Management had been duly considered while finalising the review.

The audit findings are discussed in the succeeding paragraphs: This resulted in avoidable payment of interest on cash credit for 00000.

7.1 Procurement and installation of hand pump assemblies

2.1.7 .1 The Company was installing hand pumps uUnder the Accelerated Rural Water Supply Programme (ARWSP), now renamed as National Rural Drinking Water Programme (NRDWP), of the Government of India which envisaged making available of safe and potable water to all villagevillagersrs ., the Company has been installing hand pumps. Uttar Pradesh Jal Nigam (UPJN) is the nodal agency for implementing the above scheme in the State. The State Government allotted (October 2001) 10 *per cent* of the work of installation of hand pumps to the Company from the year 2001-02 during 1990. Accordingly, UPJN transferred 10 *per cent* of the total funds received from the Central Government to the Company of the total funds received from the Central Government under the above scheme..

2.1.8 During 2006-07 to 2009-10, The the Company installed 80,650/1030 nos. hand pumps against the target of 86,381 hand pumps at the cost of ` 201.47 crore including profit margin of 12.50 *per cent*.. The Company ne The table below indicates the year wise figures of physical and financial targets and achievements for the period 2006-07 to 2009-10:

Year ⁴	Targets (in number)	Funds ⁵ available (in crore)	Total no. of hand pumps installed	Expenditure incurred (in crore)	Percentage achieved (4/2)
1	2	3	4	5	6
2006-07	17510	37.20	17304	36.65	98.82
2007-08	24900	54.76	21078	46.82	84.65
2008-09	23456	67.60	22324	62.07	95.17
2009-10	20515	57.88	19944	55.93	97.22
Total	86381	217.44	80650	201.47	

We observed that the targets fixed by the Company were based on availability of funds from UPJN and not with reference to the number of hand pumps to be installed. Therefore, target of installation of hand pumps varied from year-to-year during 2006-2010. We further observed that during 2007-08, the Company could install only 84.65 *per cent* of the target for installation of hand pumps despite having sufficient funds in hand for that purpose.

Deficiencies in procurement and installation of hand pumps

2.1.9 The Company was procuring various components of hand pumps, like galvanised iron (GI) pipe, PVC pipes and hand pump assemblies etc. by inviting open tenders each year and placing orders on selected firms for delivery to 70 service centers spread all over the State.

We noticed various shortcomings in procurement and installation of hand pumps, which are discussed in succeeding paragraphs.

Sub-standard procurement of GI pipes for hand pumps

2.1.10 For installation of hand pumps, Tthe Company for installation of hand pumps procures GI pipes of 32 mm *dia* on running length basis conforming to the specification IS-1239 (Part I): 2004 from suppliers short listed after tendering. According to IS code, average weight of GI pipe should be 3.13 Kg per metre with allowance of variation in the weight ± 10 *per cent*, if the ordered quantity is up to 10 MT and ± 7.5 *per cent* if the ordered quantity is

⁴ Data for the year 2005-06 was not made available to Audit.

⁵ Including funds for rebore hand pumps.

more than 10 MT. The Company procured 105.84 lakh metre (718.225 MT) of GI pipes during the period from 2005-06 to 2009-10 on metre basis through 784 purchase orders.

We noticed that:

The Company accepted GI pipes valued at ₹ 3.26 crore where variation in weight exceeded the permissible allowance.

- The GI pipes supplied by the firms in lots were not as per the standard weight and were always less than the specified standard weight of 3.13 Kg per metre. In respect of 745 lots of GI pipes (24.33 lakh metre) received by the Company during 2005-10 its actual weight was less by 521 MT valued at ₹ 2.40 crore than the standard weight of 7615.16 MT.
- As per the terms and conditions of supply orders placed on the firms, supplies were to be cancelled in case GI pipes did not conform to IS specification and the firm was required to be blacklisted with forfeiture of their security money. The Company, however, accepted 60 lots of GI pipes (2.20 lakh metre) valued at ₹ 3.26 crore where variation (negative) in weight exceeded the permissible variation of 7.5 per cent for quantity above 10 MT (42 lots) and of 10 per cent for ordered quantity below 10 MT (18 lots). Thus, the procurement was sub-standard but the Company neither cancelled the supply orders nor did it black list the suppliers and forfeit their security money.
- Since the procurement of GI pipes was centralized, the Company had the option to club the requirements and place all the orders of more than 10 MT (corresponding to 3195 metre). This would have allowed for a lower permissible variation of ± 7.5 per cent in weight rather than the higher variation of ± 10 per cent. The Company did not take advantage of this option in the purchase of 12.84 lakh metre GI pipes during 2005-10, but issued orders of quantities less than 10 MT. In respect of 136 lots of GI pipes received by the Company against such orders, the variation in standard weight exceeded the limit of -7.5 per cent. The monetary impact of higher variance in respect of 136 lots worked out to ₹ 34.70 lakh being the value of variation in weight of GI pipes exceeding -7.5 per cent.

The Management stated in Exit Conference that orders to field units had been issued not to accept sub-standard supplies and from 2007-08 supply orders of more than 10 MT were being placed. The reply is not based on facts as we noticed that orders were placed for quantity below 10 MT during 2007-08 also.

- The supply order envisaged that the weighment of lots of the pipes was to be done at receipt end. A test check of vouchers for the period of five years up to 2009-10 revealed that proof of weighment of the lots was not available in the paid bills of ₹ 13.74 crore in respect of 257 lots. Thus, the payment was made ignoring the provisions of the supply orders.

In the Exit Conference the Management stated that they made payments in such cases on the basis of weighment slips of suppliers. The fact remains that the Company ignored provisions of supply orders, which provided payment on the basis of weighment slips at the receiving end after weighment of lots of the pipes.

Irregular acceptance of tender for procurement of hand pumps

2.1.11 In May 2007 The the Company invited (May 2007) tenders for supply of India markMark-II, deep well hand pumps together with accessories. Thirteen firms submitted tenders, which was were opened on 15 June 2007. The FOR rate of two firms⁶ which wasere lowest (₹ 3949), was 4.11 per cent

⁶ M/s Bharat Enterprises, Noida and M/s Ashish Pumps, Noida.

The Company placed orders for supplies of GI pipes valued at ₹ 3.98 crore on a firm which quoted two different rates from two places.

higher than previous year's rate (₹ 3789). The FOR rates of L2⁷ and L3⁸ were ₹ 3969 and ₹ 3990 respectively. In During negotiations (26 June 2007) both the L1 firms agreed to supply the aforesaid items at ₹ 3945. Similarly On the same day, L2 and L3 also submitted (26 June 2007) their consent for supply of above items on the negotiated rates. These four firms were short listed for supply of the items during 2007-08.

Perusal of tender records further revealed that one of the L1 firms⁹ and the L2 firm were firm was the same and submitted their offer from two different places, one from factory and second from registered office. In further scrutiny we observed that both the bids were quoted by the same person-, giving quoting the rate of ₹ 3949 and ₹ 3969 which was irregular and unethical. The Company, instead of rejecting/blacklisting for quoting twice at two different rates, selected the firm for supplying materials worth ₹ 3.98 crore to the Company.

In Exit Conference, the Management stated that the firm (Bharat Enterprises, New Delhi) was blacklisted for non-supply/untimely supply of ordered quantity. The fact remains that the firm was not blacklisted on account of adopting unethical business practices to grab the order but on the reasons of failure to supply. This is indicative of weak internal control mechanism in the Company as regards scrutiny of tenders.

Extra consumption of casing pipes for hand pumps

The Company incurred extra expenditure of ₹ 39.70 lakh due to increasing length of PVC pipes without any basis.

2.1.12 The IS-9301: 1990 prescribes use of casing pipes (PVC pipe) of nominal diameters from 100 to 125 mm in deep well hand pumps from ground level only in plain area. The Company was using 110 mm dia casing pipes for this purpose. Within the casing pipe, GI pipes are placed whose length varied from 15 metre to 24 metre depending upon the water table of the area.

We observed that the Company during the years 2006-07 and 2007-08 used PVC casing pipes equivalent to the length of GI pipes. But, during the years 2008-09 and 2009-10 it used PVC casing pipe one metre more than the length of GI pipes in all the installation of hand pumps. Thus, the Company deviated from the earlier practice and incurred an extra expenditure of ₹ 39.70 lakh as detailed below:

(₹ in lakh)

Year	Total no. of hand pumps installed in plains	Cost of one metre PVC pipe of 110 mm (in ₹)	Excess expenditure (2 x 3)	Centage @ 12.5 per cent on excess expenditure	Total excess expenditure (4+5)
1	2	3	4	5	6
2008-09	17932	108.00	19.37	2.42	21.79
2009-10	15312	104.00	15.92	1.99	17.91
Total	33244		35.29	4.41	39.70

In Exit Conference the Management stated that the length of casing pipe was increased by one metre to prevent soil from falling in the bore and protect cylinder from any damage due to impact of GI pipe. We do not agree as the change in length of PVC pipe was an arbitrary decision as none of the Divisional Engineers had reported any complaint in writing necessitating such increase in length of PVC pipe. The Management assured (October 2010) that in future estimates would be modified on written information of the Divisional Engineers.

Inflated profit on installation of hand pumps

2.1.136 The Company constitutes a committee every year for finalization of model estimates of hand pumps assembly which comprises material cost, labour and centage of 12.5 per cent of basic cost for meeting

⁷ Bharat Enterprises, New Delhi.

⁸ Atul Generators, Agra.

⁹ Bharat Enterprises, Noida.

expenses towards establishment and indirect cost. Estimates so prepared are circulated to the field units for accounting on the basis of the estimates.

We noticed that the estimates prepared at Headquarter were inflated by 6.20 to 10.94 per cent on each component of material to be used in installation of hand pumps for which no guidelines were received from Government during 2007-08 to 2009-10 as per details given below:

Particulars	FOR rates received by the Company (Amount in `)			Rates provided in estimate (Amount in `)			Percentage variation		
	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10	2007-08	2008-09	2009-10
PVC Pipe									
140 mm 6 Kgf	152.40	178.00	169.10	168.00	189.00	186.00	10.24	6.20	10.00
110 mm 6 Kgf	92.90	100.77	94.48	102.00	108.00	104.00	9.80	7.20	10.00
63 mm 6 Kgf	32.45	35.56	32.90	36.00	38.00	36.00	10.94	6.90	9.50
32 mm GI pipe	138.00	173.78	126.26	152.00	191.00	139.00	10.14	9.91	10.00
India Mark-II hand pump	3945.00	5550.00	4239.600	4340.00	5895.00	4664.00	10.00	6.20	10.00
Ribbed strainer	279.00	279.13	279.00	307.00	297.00	307.00	10.00	6.40	10.00

The Company inflated cost of installation of hand pumps to the extent of ` 5.73 crore by adding extra amount towards cost of material.

Thus, the cost of installation was inflated to the extent of ` 5.73 crore¹⁰ during 2007-08 to 2009-10 by the Company. The Government could have got installed more hand pumps if the Company had not inflated the cost of hand pumps to that extent.

In Exit Conference the Management stated that the Company was preparing estimates as were being prepared by the UPJN. The reply is not based on facts as UPJN was not adding any profit margin on cost of materials and there was no order of the Government for inclusion of such elements in the cost.

Non-receipt back of the GI Pipe from re-bore of the Hand pumps

2.1.147 The hand pumps installed by the Company on being reported to have failed in due course of its their life,life are re-bored by the Company. In re-boring, out of 24 metres half the length of extracted existing GI pipes only 12 metres GI pipe is estimated to be reusable and remaining pipes are required were to be taken back as unserviceable/scrap.

In test check of records of the six¹¹ Divisional Engineers offices, we noticed that the 3711 hand pumps were re-bored in 23 districts during 2005-06 to 2009-10 but the 38760 metre GI pipes that should have been retrieved as unserviceable/scrap (valued at ` 38.82 lakh¹²) was not accounted for as such.

In Exit Conference, the Management stated that unusable GI pipes were handed over to Water Management Committee of the area. We have observed that there was no such order for handing over of the material to any such committee. It was also noticed that UPJN was retrieving back unusable GI pipes.

7.2 Procurement and distribution of fertilizers, seeds etc.

2.1.15 The Company was procuring fertilizers (Urea, DAP, MOP, NPK¹³, sulphur phosphate and zinc sulphate) and pesticides for distribution/sale to the farmers through outlets of the Company in the State. The Central Government fixed sale rates of fertilizer for manufacturers as well as for the Company. The Company was to arrange its own funds for procurement of fertilizers. The Company was fixing targets for distribution of fertilizers for each season (Rabi and Kharif).

¹⁰ The amount has been calculated by applying the average of percentage variation between estimated and actual material cost to total material cost incurred during the three years up to 2009-10.

¹¹ Agra, Allahabad, Jhansi, Kanpur, Moradabad and Noida.

¹² Calculated at the rate of ` 32 per Kg. being approximately ¼ FOR rates (` 126.26) of GI pipe for the year 2008-09. ` 38.82 lakh = 38760 metre x 3.13 (factor for converting length in weight) x ` 32.

¹³ DAP=Di Ammonium Phosphate, MOP=Mouriате of Potash, NPK=Nitrogen Phosphorus Potassium.

We noticed that the Company could procure 6.94 lakh MT of fertilizer against the target of 10.73 lakh MT during five years up to March 2010 and sell only 6.41 lakh MT of fertilizers valued at ₹ 434.07 crore during that period. Targets for procurement of pesticides was not fixed by the Government and the Company procured it according to demand of farmers. We observed that:

The fertilizer business was in loss aggregated to ₹ 3.87 crore during 2005-10 due to lack of efforts in sale and margin remaining almost unchanged during last ten years.

- In respect of sale of fertilizers, the Company never achieved its targets in Rabi seasons and shortfall ranged between 31.15 per cent and 56.08 per cent and during Kharif seasons it achieved targets ranging between 71.73 per cent and 109.17 per cent during 2005-06 to 2009-10. It also failed to sell available stock of fertilizers during the season itself. The balances of stock ranged between 5282 MT (₹ 3.05 crore) and 8728 MT (₹ 6.23 crore) in Kharif season and 2405 MT (₹ 1.63 crore) and 4447 MT (₹ 4.99 crore) in Rabi season. Thus, the Company's working capital remained blocked in balance of the stock.
- The fertilizer business including pesticides was continuously in loss during five years up to 2009-10. The Company could generate gross margin of ₹ 33.41 crore from trading of fertilizers/pesticides during 2005-06 to 2009-10 which was not sufficient to meet administrative and finance cost of ₹ 37.28 crore during those years for the fertilizers business. Unrecovered administrative and finance cost aggregated to ₹ 3.87 crore. Reasons for losses as analysed by us are as under:
 - Lack of efforts to induce farmers to purchase fertilizers from Company's outlets.
 - Fixed margin on sale of fertilizers remaining almost unchanged since last ten years whereas the prices increased substantially during that period.
 - Recurring liability of average interest of ₹ 85.08 lakh per annum due to non-payment of Government loan of ₹ 7.50 crore raised by the Company in 1998 for business of fertilizers.

Loss due to procuring seeds without ensuring demands

The decision of procurement of paddy seeds without ensuring probability of sale caused loss of ₹ 1.28 crore to the Company.

2.1.16 The Company was receiving certified paddy seeds from Uttar Pradesh Beej Vikas Nigam Limited (UPBVNL) during each season against arrangement made by the State Government. The Company received (April-May 2009) 8,000 quintals of certified paddy seeds from UPBVNL and sold 5,481 quintals seeds up to May 2009.

The State Government decided (29 May 2009) to distribute 5,000 quintals of hybrid paddy seeds through Government agencies to the farmers. Accordingly, the next day, the Company placed (30 May 2009) additional order of 1000 quintals of hybrid seeds on UPBVNL and asked the Regional Managers to explore the probability of sale of the seeds. The supply of the seeds, which had a germination life of nine months only, was to be made up to 8 June 2009 having .

In test check of The Company received 864.90 quintals of seeds up to 9 June 2009 and could sell only 183.59 quintals seeds. Since, the seeding period of paddy (hybrid and certified) was May and June only, 681.31 quintals hybrid

seeds valued at ₹ 1.28 crore remained unsold and had expired germination life. Thus, decision of procurement of seeds without taking feed back from RMs for probability of its sale caused loss of ₹ 1.28 crore to the Company.

In Exit Conference the Management stated that no payment had been made to UPBVNL. The reply does not justify the inaction to procure seeds without taking feed back from field about its marketability. We observed that the UPBVNL has raised (December 2009) its claims for supply of hybrid seeds for ₹ 1.63 crore for which Company's liability exists.

7.3 Procurement of Wheat and Paddy under Minimum Support Price

2.1.17 The State Government authorised (1978-79) the Company for procurement of wheat and paddy for State and Central pool. The Company procures allotted quantity of wheat and paddy from farmers at the Minimum Support Price (MSP) decided by the Government of India for a year. After procurement, paddy is handed over to Rice millers for hulling. Rice millers are required to deliver rice after hulling known as Custom Milled Rice (CMR) at fixed percentage¹⁴ of paddy. The Company delivers wheat procured from farmers and CMR received from millers to Regional Food Controller (RFC)/Food Corporation of India (FCI). Any short recovery of CMR is recovered from the millers. The Company raises bill on RFC/FCI for claiming MSP, Mandi Charges, transportation charges, and taxes etc. Accordingly, RFC/FCI releases the payments.

During five years up to 2009-10, the Company could procure only 6.25 lakh MT (wheat) and 6.72 lakh MT (paddy) against the targets of 12.87 lakh MT (wheat) and 6.06 lakh MT (paddy) fixed by the Government. The shortfall in procurement of wheat ranged between 5.1818 per cent and 99.044 per cent during five years as detailed below:

(Figures in MT)

Year	Procurement of wheat			Procurement of paddy		
	Target	Achievement	Shortfall (per cent)	Target	Achievement	Shortfall (per cent)
2005-06	350000	107040	64.42	100000	110466	--
2006-07	350000	3353	99.04	100000	115740	--
2007-08	225000	35633	84.16	100000	105299	--
2008-09	150000	142232	5.18	150000	188059	--
2009-10	211775	336979	--	155999	152420	2.29
Total	1286775	625237	--	605999	671984	--

Reasons for shortfall in procurement of wheat were:

- Fixing of higher targets by the Government without considering previous year's achievements and
- Market price being higher than MSP.

Discrepancies in claims for reimbursement of cost on wheat procurement

2.1.18 The Government was notifying rates of incidental charges viz. mandi fee, mandi labour charge, storage charge, interest charge, transportation & handling charges, administrative charge and commission to societies/sub-agents for procurement of wheat in each season. The Company was required to submit its claims to Regional Food Controllers (RFCs) for reimbursement of incidental charges.

We observed in test check of records of five¹⁵ Regional Offices for the years 2005-10 that various elements of incidental charges were not being claimed

¹⁴ Presently, the State Government fixed recovery of rice at the rate of 67 per cent of paddy.

¹⁵ Lucknow, Faizabad, Varanasi, Bareilly and Meerut.

uniformly by them. Further, claims submitted by the Regional Offices for incidental charges were partially admitted by the RFCs at varying rates as summarised below:

- Mandi labour charges were admissible at the rate varying from ` 9.21 per quintal to ` 10.91 per quintal during 2005-10. Lucknow region did not claim mandi labour charges for the year 2008-09 resulting in non-receipt of incidental charges of ` 21.85 lakh.
- Claims of Faizabad (2007-08 to 2009-10), Varanasi (2007-08 to 2009-10), Lucknow (2006-07, 2007-08 and 2009-10) and Meerut (2007-08 and 2009-10) regions for mandi labour charges were partially admitted by the RFCs at different rates. This deprived the Company an income of ` 29.84 lakh.
- Storage charges were admissible at the rate of ` 0.92 per quintal during 2005-10. Bareilly (2006-07 to 2009-10) and Meerut (2007-08 to 2009-10) regions did not claim storage charges resulting in non-receipt of incidental charges of ` 17.06 lakh.
- Interest charges were admissible at the rates varying from ` 2.58 per quintal to ` 5.85 per quintal during 2005-10. Lucknow (2006-07 to 2009-10) and Meerut (2008-09 and 2009-10) regions did not claim interest charges resulting in non-receipt of incidental charges of ` 41.72 lakh.
- Bareilly (2005-06) and Meerut (2007-08) regions claimed interest charges at specified rates but the RFCs admitted the claims partially. This deprived the Company an income of ` 1.86 lakh.
- Transportation and handling charges were admissible at the rates varying from ` 18.34 per quintal to ` 24.49 per quintal during 2005-10. Bareilly (2006-07 to 2009-10) and Varanasi (2005-06, 2008-09 and 2009-10) regions claimed transportation and handling charges at the specified rate but the RFCs admitted the claims partially. This deprived the Company an income of ` 66.19 lakh.
- Commission to Societies/Sub-agent was admissible at the rates varying from ` 4.42 per quintal to ` 25 per quintal during 2005-10. Bareilly (2007-08), Lucknow (2006-07 to 2009-10) and Meerut (2009-10) regions did not claim commission to Societies/ Sub-agent resulting in non-receipt of incidental charges of ` 135.52 lakh.

Against procurement of wheat, the Company did not claim incidental charges of ` 2.16 crore. In addition, the RFCs did not allow claim of incidental charges of ` 0.98 crore.

As such, the Regions did not claim various elements of incidental charges of ` 2.16 crore whereas the RFCs in respect of some of the elements of incidental charges admitted the claim partially and disallowed ` 0.98 crore. The Company did not take action to streamline varying practices in its Regional offices for claiming incidental charges and for admitting claims of incidental charges through concerned Department of the State and Central Governments.

Interest on premature withdrawal of loan

7.34.2 In test checks of records of the Company, it was noticed that the State Government sanctioned a loan of 15.00 crore for the Rabi Season 2006-07 vide sanction dated 07 March 2006. The withdrawal of the entire amount was made on 08.03.2006 although the purchase of wheat was to be started from second week of April. Thus due to premature withdrawal of the loan it had to pay avoidable interest of 9.17 lakh for the period 08 March 2007 to 31 March 2007 calculated at the prevailing rate of 9.70 per cent.

- (i) (i) All kind of Agricultural inputs;
- (ii) (ii) As service providers for various needs of farmers to enhance the production and productivity;

(iii)(iii) As center to provide the domestic goods to meet the farmers' daily need.

A test check of records revealed that in December 2009, two Agri-Marts at Hapur and Lucknow district were started to be constructed through U P Project Corporation Limited at a sanctioned cost of 193.40 lakh and 198.10 respectively. It was also observed that to run these Agri-Marts following infrastructure was required to be taken up side-by-side of construction activities.

- (i) Tie up with Metrological department for forecast of weather and monsoon;
- (ii) Tie up with financial institution/insurance company for opening of extension counters;
- (iii) Tie up with Agriculture Department for operation of soil testing lab;
- (iv) Tie up with the oil companies for providing LPG and petrol pump outlets.

7.6 Manpower Planning

2.1.19 The Company had acute shortage of staff. It had only 988 staff against the sanctioned staff of 2558. We observed in audit that:

The Company had acute shortage of Executives in key post and other staff which adversely affected internal control, sales promotion, manufacturing and trading of the Company.

- The Company had only three incumbents against the 12 sanctioned key posts. The post of the General Managers, Manager (Food), Sr. Account Officer, Manager (Computer and Monitoring), Manager (Finance), Public Relation Officer, Manager (Fertilizer), Accounts Officer (Cost), Divisional Officers were vacant.
- Against sanctioned post of 80 executives like Account officer, Sales promotion officer, Assistant Engineer (Service) etc. only twenty officers were available for conducting business activities. Their works were carried out by staff of lower cadre having lesser expertise.
- Against sanctioned staff of 1630 in lower cadres, only 391 were in position. Their works were being carried out by unskilled staff. (572 unskilled staff were in position against sanctioned strength of 822).

Thus, the Company's internal control was weak due to shortage in key posts. Acute shortage in executive cadres and staff affected activities in sales promotion, accounting work as well as finalisation of annual accounts and manufacturing and trading of agricultural implements/fertilizer, seeds, pesticides etc. in the Company.

In Exit Conference, the Management stated that they had requested the Government for recruitment/outsourcing, but no approval from the Government was received.

6. Financial Management

6. Financial Position and working results

2.1.20.1 The Company has finalised its accounts up to 2007-08 only. The financial position and working results of the Company during the period from 2005-06 to 2009-10¹⁶ (upto August 2009) are given in **Annexure-7** and **Annexure-8** respectively.

Analysis of the financial position and working results of the Company revealed that:

- The Company did not have its own funds during the last five years up to 2009-10 for working capital requirement as its accumulated loss exceeded the capital fund and reserve & surplus during the last four years up to 2008-09. Therefore, it was dependent on borrowings from banks and Government for its working capital requirement.

¹⁶ The figures for the period 2008-09 and 2009-10 are based on provisional accounts.

- The Company still (as on 2009-1031 March 2010) had accumulated losses of
` 34.5323.06 crore, despite earning profit in each year during 2005-06 to 2009-10.
- The Company did not obtain confirmation from the banks in respect of amount lying in current accounts and fixed deposits at the end of the year.

7. ***Fund Management***

2.1.21 The fund management comprises management of fund inflows and fund outflows. Sources of funds inflow of the Company are borrowing from the Government, funds received from the Government for various schemes, sale proceeds of gypsum/ fertilizers/ seeds/ pesticides/ implements/ tractors etc, reimbursements of cost of procurement of food grains and interest on bank deposits. Funds outflow comprises expenditure incurred on installation of hand pumps, procurement of gypsum/fertilizers/seeds/pesticides/implements/tractors/food grains etc, interest, repayment of loans and expenditure on establishment.

The Company had bank balances ranging between ` 67.97 crore and ` 116.26 crore during 2005-10 excluding ` 60 crore of the Agriculture Department. The Company at occasions failed to utilise the available funds judiciously as discussed in subsequent paragraphs. The failure in its judicious utilisation resulted in loss of interest and procurement of fertilizers as discussed below:

2.1.22 The State Government authorized (1978-79) the Company for procurement of wheat and paddy for State and Central pool. The Company was to procure allotted quantity of wheat and paddy at the Minimum Support Price (MSP) decided by the Government of India for the year from the farmers. The State Government sanctioned loan to the Company every year for wheat and paddy procurement at interest rate ranging from 9.70 *per cent* to 13.10 *per cent* during 2005-06 to 2009-10. Principal and interest thereon was to be repaid by the Company up to 31 July and 31 March of the procurement season of wheat and paddy respectively. In case of payment beyond the cut-off date, a penal interest at the rate of two *per cent* was payable by the Company. The Company obtained loans ranging between ` 7.50 crore and ` 25 crore from the State Government during 2005-06 to 2009-10 for procurement of wheat and paddy.

We noticed that:

The Company's funds remained parked in FDRs/Cash certificates fetching lower interest rates than that of borrowings which resulted in loss of ` 1.21 crore.

- The Company parked its funds in banks in the form of cash certificates/ FDRs at the rates ranging between 5.75 *per cent* to 9.50 *per cent* during 2006-07 to 2009-10. On the other hand it paid interest on loan ranging between 9.70 *per cent* to 13.10 *per cent* per annum besides penal interest at the rate of two *per cent* on payment beyond stipulated dates of payment. As a result, the Company incurred loss of interest of ` 1.21 crore during that period.
- The Government order sanctioning loans to the Company for procurement of wheat and paddy provided that the loan fund should not be utilised for other purposes. The Company, however, temporarily diverted funds of ` 21.36 crore to fertilizer business in contravention of the terms of the Government order.
- The Company failed to repay loan amount within stipulated period and paid penal interest of ` 42.73 lakh during 2008-09.

2.1.23 The Company raised two loans of ` five crore each in March 1998 and September 1998 respectively from the Government for fertilizer business at the interest rate of 12 and 12.5 *per cent* per annum. Out of which ` 7.50 crore were outstanding at the end of March 2005. The Company did not make any payment against above loan during 2005-06 to 2009-10 and incurred interest liability of ` 4.25 crore during that period. 2005-06 to 2009-10. The Company instead of refunding the loan amount parked its funds in FDs and CCs at lower interest rates ranging between 5.75 and 9.50 *per cent*.

2.1.24 An amount of ` 1.68 crore against supply of 57,792.43 MT gypsum to the Agriculture Department during 2006-10 was still outstanding¹⁷. The Company did not take up the matter with the Government for release of outstanding amount, worsening its fund position.

2.1.25 Out of ` 2.28 crore (at the end of March 2007) shown as money in transit relating to period prior to 1988, ` 1.38 crore was still pending for recovery from banks in absence of inter-unit reconciliation. bank has not credited the amount resulting in blocking of company's fund to the extent of

¹⁷ Bareilly, Faizabad, Meerut and Agra Regions.

00000. The company even lapse of 21 to 32 years has failed to receive payment from bank. Non-utilisation of own funds

8. Internal Control System

2.1.26 Internal Control System is an integral process by which an organisation governs its activities to effectively achieve its objectives. Such a system consists of methods and policies designed to prevent frauds, minimise errors, promote operating efficiency and achieve compliance with established policies and helps to protect resources against loss due to waste, abuse and mismanagement.

Internal audit wing of the Company was ineffective as only one Audit Officer was posted for internal audit.

Internal control in the Company was weak due to acute shortage of officers and staff. Internal Audit wing of the Company was non-functional and ineffective as only one Audit Officer was engaged without any supporting staff during five years upto 2009-10. Though there existed an Audit Committee in the Company but no meeting was held.

We observed weaknesses in internal control system contributed to avoidable losses as discussed below:

- The Company entered (April 2009) into a Memorandum of Understanding (MOU) with FCI Aravali Gypsum and Minerals India Limited, Jodhpur (FAGMIL) for supply of 1.10 lakh MT gypsum for the year 2009-10. Individual orders for supply/ dispatch of gypsum stipulated that cheques for payment would be presented by FAGMIL to bank one week before the dispatch of gypsum to avoid loss of interest. The FAGMIL encashed the cheques but delayed the supply of gypsum from three days to 111 days from the date of encashment. Thus, due to failure of the Company to stop encashment of cheques by FAGMIL much before the actual supply, the Company lost interest¹⁸ of ` 17.15 lakh.
- The Company had no system of analysing cost and benefit of transit insurance cover in procurement of gypsum keeping in view the past occurrence of loss/damage in transit. It, however, had been taking insurance cover for loss in transit of gypsum under specific voyage policy and paid ` 8.52 lakh during 2005-10. Incidentally, the loss of 393.60 MT gypsum (valued at ` 7.37 lakh) in transit could not be recovered from the insurer as gypsum was transported in open wagons though required to be transported in cover.
- As per the MOU with FAGMIL, the rate of gypsum was ` 874.14 per MT for supply up to 1.10 lakh MT and ` 984.30 per MT for supply exceeding 1.10 lakh MT. The Company placed orders (October 2009) for supply of 7906 MT gypsum for Fatehpur and Mainpuri at the higher rate of ` 984.30 per MT though the cumulative quantity of orders was less than 1.10 lakh MT. Thus, the Company made extra payment of ` 8.71 lakh on purchase of 7,906 MT gypsum.

The matter was reported to the Management and the Government in June 2010; their replies were awaited (October 2010).

Conclusion

- **The performance of the Company was found to be dismal in regard to procurement and installation of hand pump assemblies. Cases were noticed where:**

¹⁸ Calculated at the rate of 9 per cent after allowing seven days from the date of encashment.

- prescribed procedures for procurement of materials were not adhered to resulting in sub-standard purchase of GI pipes;
- estimates for the installation of hand pumps were prepared with inflated cost; and
- PVC pipes were used in excess of PVC pipes for casing purpose were used in excess of requirement. Inrequirement.
- Hybrid paddy seeds were procured belatedly resulting in major quantity remaining unsold beyond its germination period and loss to the Company;
- Claims of incidental charges against procurement of wheat were not being raised uniformly in the Company and as per the Government orders resulting in non-receipt of total incidental charges;
- Due to diversion of loan funds received for procurement of wheat, the Company incurred extra burden of interest. There was acute shortage of staff and absence of incumbents for key posts which adversely affected the functioning of the Company;
- Funds at the disposal of the Company were not utilised judiciously at occasions.
- Internal control system was deficient particularly in regard to procurement; and
- Internal audit was non-functional and ineffective.

Recommendations

We recommend that the Company should:

- adhere to prescribed procedures and standards of quality in procurement of materials,
- prepare estimates of installation of hand pumps as per the norms,
- streamline varying practices in its regional offices for claiming incidental charges in procurement of wheat under MSP;
- endeavour to arrange funds from Government and other financial institutions for its working capital requirement,
- utilise its funds judiciously to avoid payment of interest on loans.
- streamline the internal control mechanism to ensure adherence to prescribed procedure, rules and regulation and financial propriety, and ; and
- strengthen its Internal Audit Wing.

2.2 Power Generating Undertakings in Uttar Pradesh

Executive summary

Power is an essential requirement for all facets of life and has been recognised as a basic requirement. In Uttar Pradesh, the generation of thermal power is managed by the Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited (UPRVUNL) and of hydro power by Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL). UPRVUNL has eight thermal generation stations and UPJVNL has 12 hydro generation stations with installed capacity of 4082 MW and 526.10 MW respectively. Keeping in view the power availability situation in the State, it was considered desirable to undertake performance audit review of the power generation activities during 2005-10. Important audit observations are discussed below.

Capacity Addition

Against the envisaged capacity addition of 6515 MW to meet the energy generation requirement in the State during 2005-10, the actual addition was 2728 MW. Though 1420 MW of capacity was planned to be added by UPRVUNL during the five years ending March 2010, the actual addition was only 480 MW leaving a deficit of 940 MW. The State was not in position to meet the demand as the power generated as well as power purchased fell short to the extent of 7871 MUs to 13672 MUs during 2005-10.

Project Management

The six units taken up for implementation during the review period were not completed within scheduled time. The slippage in time schedule was due to delay in release of advance to BHEL, delay in splitting and awarding of Balance of Plant (BOP) contract and delay in finalising plot plan/ main power house etc. In two units, time overrun varied from 21 to 27 months in commercial operation of projects, which led to additional expenditure of interest during construction (IDC) of ₹ 46.44 crore. UPRVUNL failed to recover liquidated damages of ₹ 132.45 crore from BHEL being the penalty for the delay in commissioning of the projects. UPRVUNL incurred excess expenditure of ₹ 64.49 crore due to non-awarding of BOP work to BHEL.

Contract Management

During 2005-10, contracts valuing ₹ 7263 crore were executed with BHEL on single quotation basis which defeated the purpose

of getting work done at competitive rate. UPRVUNL extended undue favour to a contractor in award of work of switchyard, resulting in avoidable expenditure of ₹ one crore.

Operational Performance

Performance of the existing generation stations depends on efficient use of material, manpower and capacity of the plants so as to generate maximum energy possible without affecting the long term operations of the plants. Audit scrutiny of operational performance revealed the following:

Procurement of coal

In absence of any agreement with the coal companies during 2005-10, UPRVUNL failed to procure allotted quantity of coal since short receipt of coal was about 10.89 per cent.

UPRVUNL suffered loss of ₹ 53.85 crore on account of excess transit loss of coal as compared to norms fixed by MERC/HERC. The Company also made an avoidable payment of ₹ 16.57 crore as demurrage charges to railways due to delay in unloading of coal wagons by the private contractors and incurred additional expenditure of ₹ 83.40 crore on procurement of 2.40 lakh MT imported coal due to mixing of imported coal with domestic coal in an arbitrary manner.

Consumption of coal

The consumption of coal in Orba and Parichha TPSs was higher than the norms fixed by UPERC during the review period which resulted in excess consumption of coal of 63.06 lakh MT valued at ₹ 1082.51 crore.

Deployment of Manpower

UPRVUNL had 9327 employees as on 31 March 2010. The deployment of manpower was not rational as the manpower deployed at thermal power stations was in excess of the norms fixed by CEA which resulted in extra expenditure of ₹ 694.11 crore during 2005-10. In UPJVNL, the deployment of manpower was within the norms fixed by CEA.

Plant Load Factor

The PLF of all the TPSs of UPRVUNL was lower than the national average except PLF of Anpara TPS. The estimated shortfall in generation as compared to national average PLF worked out to 28608.87 MUs resulting in loss of contribution amounting to ` 1271.17 crore.

Outages

The forced outages remained more than the norm of 10 per cent fixed by CEA in all the five years ending 31 March 2010 which would otherwise have entailed availability of plant for additional 79291 operational hours with consequent generation of 12296 MUs valued at ` 2308.42 crore.

Auxiliary Consumption

The actual auxiliary consumption of Anpara, Obra and Parichha TPSs was more than the norms fixed by UPERC during the period under review resulting in lesser availability of power by 1673.01 MUs valued at ` 269.32 crore.

Repairs and maintenance

UPRVUNL incurred avoidable expenditure of ` 33.94 crore due to non-carrying out of capital overhauling of unit-4 of Anpara 'B' TPS on due date and also suffered generation loss of 1194 MUs valued at ` 208.16 crore.

Renovation & Modernisation

The contract agreement executed for R&M of Obra 'B' TPS with BHEL was faulty since supply of material was not linked with shutdown schedule of each units which resulted in blockade of funds of ` 580.82 crore.

Financial Management

Dependence of UPRVUNL on borrowed funds increased from ` 3115.29 crore in 2005-06 to ` 5516.15 crore in 2009-10 which resulted in interest burden of ` 1750 crore.

Claims and Dues

Due to deletion of penalty clause of PPA, the UPRVUNL could not claim late payment surcharge from UPPCL and suffered loss of ` 2928.80 crore during 2005-10 and receivables (dues) from UPPCL increased from ` 2028.62 crore (March 2005) to ` 4089.94 crore (March 2010).

Environmental Issues

To reduce SPM level, UPRVUNL had procured material valuing ` 209.68 crore for installation of ESPs but it could not be installed so far. Further, on line monitoring system to record SPM level was

not installed/ operative in any TPSs of UPRVUNL.

Conclusion and Recommendations

Construction activities taken up by UPRVUNL and UPJVNL for new thermal and hydro power projects were far behind the scheduled timeframe. The performance of UPRVUNL and UPJVNL was not up to the desired level due to lower operational efficiency and short fall in generation with reference to targets fixed by CEA/ UPERC. UPRVUNL failed to control outages and excess auxiliary consumption in both old and new units. Failure to follow the prescribed preventive maintenance schedule and inefficient fuel management marred the performance of UPRVUNL. The review contains six recommendations which include effective planning and monitoring, ensuring consumption of coal within the prescribed norms, minimise forced outages and auxiliary consumption etc.

Introduction

2.2.1 Power is an essential requirement for all facets of life and has been recognised as a basic human need. The availability of reliable and quality power at competitive rates is very crucial to sustain growth of all sectors of the economy. The Electricity Act, 2003 provides a framework conducive to development of the Power Sector, promote transparency and competition and protect the interest of the consumers. In compliance with Section 3 of the *ibid* Act, the Government of India (GOI) prepared the National Electricity Policy (NEP) in February 2005 in consultation with the State Governments and Central Electricity Authority (CEA) for development of the Power Sector based on optimal utilisation of resources like coal, gas, nuclear material, hydro and renewable sources of energy. The Policy aims at, *inter alia*, laying guidelines for accelerated development of the Power Sector. It also requires CEA to frame National Electricity Plan once in five years. The Plan would be short term framework of five years and give a 15 years' perspective.

During 2005-06, electricity requirement in Uttar Pradesh was assessed at 58,158 Million Units (MUs) of which only 44,929 MUs were available leaving a shortfall of 13,229 MUs, which worked out to 22.74 *per cent* of the total requirement. The total installed power generation capacity in the State of Uttar Pradesh as on 1 April 2005 was 8,076 Mega Watt (MW) and effective available capacity was 5,717 MW against the peak demand of 7,970 MW leaving deficit of 2,253 MW. As on 31 March 2010, the comparative figures of requirement and availability of power were 76,088 MUs and 67,670 MUs with deficit of 8,418 MUs (11.06 *per cent*) while the installed capacity and effective available capacity was 10,804 MW and 8,186 MW respectively. Thus, there was a growth in demand of 17,930 Million Units (MUs) during review period against which 22,741 MUs were additionally available. The effective capacity addition during the review period was 2,469 MW.

Per capita consumption of electricity is treated as a strong indicator of development of a society. As per CEA report, per capita consumption of electricity in Uttar Pradesh during 2005-06 was 208.65 Kwh against all India average of 428.57 Kwh. However, per capita consumption of electricity increased to 345.66 Kwh during 2007-08 against all India average of 717.13 Kwh as per All India Electricity Statistics, General Review 2009 published by CEA in May 2009 (containing data for the year 2007-08). Low per capita consumption in the State was mainly due to low availability of electricity as discussed in succeeding paragraphs. The imbalance seriously affected industrial and social development of society in the State.

In Uttar Pradesh generation of thermal power is carried out by Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited (UPRVUNL) and the generation of hydro power is carried out by Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL) which were incorporated on 25 August 1980 and 17 December 1996, respectively under the Companies Act, 1956. These companies were under the administrative control of the Power Department of the Government of Uttar Pradesh. The Management of these Companies each is vested with a Board of Directors (BOD) comprising of a Chairman-cum-Managing Director (CMD) and three Directors appointed by the State Government. The day-to-day operations are carried out by the CMD, who is the Chief Executive of the Company with the assistance of Chief Engineer, Executive Engineer at headquarters and Power Stations. The UPRVUNL had eight thermal generation stations and UPJVNL had 12 hydro generation stations with the derated capacity of 4082 MW and 526.10 MW respectively. The turnover of the UPRVUNL and UPJVNL was ` 4577.87 crore and ` 80.81 crore

respectively in 2009-10, which was equal to 13.05 per cent and 1.30 per cent of the turnover of the State PSUs (₹ 35691.82 crore) and State Gross Domestic Product (₹ 357557 crore), respectively. UPRVUNL and UPJVNL employed 9327 and 648 employees as on 31 March 2010, respectively.

A performance review on Renovation & Modernisation and Refurbishment activities in Thermal Power Station of Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited was included in the Report of the Comptroller and Auditor General of India for the year ended 31 March 2009 (Commercial), Government of Uttar Pradesh. The report has not been discussed by COPU so far (October 2010).

Scope and Methodology of Audit

2.2.2 The present review conducted during January 2010 to June 2010 covers the performance of the UPRVUNL and UPJVNL during the period from 2005-06 to 2009-10. The review mainly deals with Planning, Project Management, Financial Management, Operational Performance, Environmental Issues and Monitoring by Top Management. The audit examination involved scrutiny of records of UPRVUNL at the Head Office and six* out of eight* thermal generating stations having generation capacity of 3652 MW out of 4082 MW in 2009-10 and generation of 20,879 MU against total generation of 22,912 MU. Further, the audit examination involved scrutiny of records of UPJVNL at the head office and three^ out of 12** hydro generating stations having generation capacity of 432.60 MW out of 526.10 MW and generation of 665 MU against total generation of 945 MU in 2009-10. The thermal and hydro generating stations have been selected for audit examination on the basis of installed capacity and level of generation of thermal and hydro generating stations.

The methodology adopted for attaining the 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 the auditee personnel, analysis of data with reference to audit criteria, raising of audit queries, discussion of audit findings with the Management and issue of draft review to the Management for comments.

Audit Objectives

2.2.3 The objectives of the performance audit were:

Planning and Project Management

- To assess whether capacity addition programme taken up/ to be taken up to meet the shortage of power in the State is in line with the “National Policy of Power for All by 2012”;
- To assess whether a plan of action is in place for optimisation of generation from the existing capacity;
- To ascertain whether the contracts were awarded with due regard to economy and in transparent manner;
- To ascertain whether the execution of projects were managed economically, effectively and efficiently; and

* Anpara ‘A’, Anpara ‘B’, Obra ‘A’, Obra ‘B’, Parichha ‘A’ and Parichha ‘B’.

* Anpara ‘A’, Anpara ‘B’, Harduaganj, Obra ‘A’, Obra ‘B’, Panki, Parichha ‘A’ and Parichha ‘B’.

^ Rihand, Obra (H) and Matatila.

** Rihand, Obra(H), Matatila, Khara, Nirgajini, Chitora, Salawa, Bhola, Belka, Babail, Sheetla and Purla Sumera.

- To ascertain whether hydro projects were planned and formulated after taking into consideration the optimum design to get the maximum power, dam design and safety aspects.

Financial Management

- To assess whether all claims including energy bills and subsidy claims were properly raised and recovered in an efficient manner; and
- To assess the soundness of financial health of the generating undertakings.

Operational Performance

- To assess whether the power plants were operated efficiently and preventive maintenance as prescribed was carried out minimising forced outages;
- To assess whether requirements of each category of fuel worked out realistically, procured economically and utilised efficiently;
- To assess whether the manpower requirement was realistic and its utilisation optimal;
- To assess whether the life extension (renovation and modernisation) programme were ascertained and carried out in an economic, effective and efficient manner; and
- To assess the impact of Renovation & Modernisation/Life extension activity on the operations performance of the Unit.

Environmental Issues

- To assess whether the various types of pollutants (air, water, noise, hazardous waste) in power stations were within the prescribed norms and complied with the required statutory requirements; and
- To assess the adequacy of waste management system and its implementation.

Monitoring and Evaluation

- To ascertain whether adequate MIS existed in the entity to monitor and assess the impact and utilise the feedback for preparation of future schemes.

Audit Criteria

2.2.4 The audit criteria adopted for assessing the achievement of the audit objectives were:

- National Electricity Plan, norms/guidelines of Central Electricity Authority (CEA) regarding planning and implementation of the projects;
- standard procedures for award of contract with reference to principles of economy, efficiency and effectiveness;
- targets fixed for generation of power;
- parameters fixed for plant availability, Plant Load Factor (PLF) etc;
- performance of best generating units in the regions/all India averages;
- prescribed norms for planned outages; and
- Acts relating to Environmental laws.

Financial Position and Working Results

Financial Position and Working Results of UPRVUNL

2.2.5 The financial position of the UPRVUNL for the five years ending 2009-10 is given below.

(` in crore)

Particulars	2005-06	2006-07	2007-08	2008-09	2009-10 (Provisional)
A. Liabilities					
Paid up Capital	2523.81	2930.81	3936.81	4714.81	5527.00
Reserve & Surplus (including Capital Grants)	259.20	257.90	1027.93	1025.19	1030.56
Borrowings (Loan Funds):					
Secured	1286.68	1260.01	157.10	463.27	406.02
Unsecured	1828.61	2158.92	3296.80	4292.63	5110.13
Current Liabilities & Provisions	1648.25	1852.27	2243.35	2577.93	2619.27
Total	7546.55	8459.91	10661.99	13073.83	14692.98
B. Assets					
Gross Block	6754.77	7609.71	8547.11	8695.26	8891.86
Less: Depreciation	4701.61	5056.85	5450.89	5870.16	6264.37
Net Fixed Assets	2053.16	2552.86	3096.22	2825.10	2627.49
Capital works-in-progress	1649.35	1574.18	2115.91	3295.80	5081.26
Investments	909.57	--	--	0.10	21.49
Current Assets, Loans and Advances	2784.02	4248.29	5288.17	6333.39	5992.60
Accumulated losses	150.45	84.58	161.69	619.44	970.14
Total	7546.55	8459.91	10661.99	13073.83	14692.98

During detailed examination of records we observed the following:

- Dues receivable towards sale of energy included under Current Assets, Loan and Advances increased from 51.38 *per cent* in 2005-06 to 68.25 *per cent* in 2009-10 due to their poor realisation which led to accumulation of huge outstanding against Uttar Pradesh Power Corporation Limited (UPPCL) as commented in subsequent paras. Consequently, the Company had to borrow loans for installation of new projects, R&M programmes and operational requirements. This is evident from the fact that the borrowings which was ` 3115.29 crore at the end of 2005-06 increased to ` 5516.15 crore at the end of 2009-10 representing an increase of 77.07 *per cent*.
- Against the ideal debt-equity ratio of 2:1, the debt-equity ratio of the Company was 1.17:1 in 2005-06 which further improved to 0.99:1 in 2009-10 due to further infusion of equity capital of ` 3003.19 crore during the review period.
- During 2007-08, the loan from LIC was settled under OTS. As a result, Secured Loan from LIC reduced by ` 1193.34 crore and Reserve & Surplus increased by ` 702.87 crore.

The details of working results of UPRVUNL like cost of generation of electricity, revenue realisation, net surplus/ loss and earnings and cost *per unit* of operation are given below:

(₹ in crore)						
Sl. No.	Description	2005-06	2006-07	2007-08	2008-09	2009-10 (Provisional)
1	2	3	4	5	6	7
1.	Income					
	Generation Revenue	2905.81	3324.35	3790.57	4170.30	4548.24
	Other income including interest/subsidy	12.34	15.64	45.21	23.99	29.63
	Total Income	2918.15	3339.99	3835.78	4194.29	4577.87
2.	Generation					
	Total generation (In MUs)	19370	20741	21041	22383	22912
	Less: Auxiliary consumption (In MUs)	2051	2124	2240	2427	2433
	Total generation available for Transmission and Distribution (In MUs)	17319	18617	18801	19956	20479
3.	Expenditure					
(a)	Fixed cost					
(i)	Employees cost	262.87	265.71	431.85	468.19	449.78
(ii)	Administrative and General expenses	37.31	41.28	64.53	64.39	74.38
(iii)	Depreciation	335.51	355.36	395.18	419.95	395.52
(iv)	Interest and finance charges	91.19	106.29	172.00	275.43	300.34
	Total fixed cost	726.88	768.64	1063.56	1227.96	1220.02
(b)	Variable cost					
(i)	Fuel consumption					
	a) Coal	1815.57	2168.79	2303.75	2715.71	3122.11
	b) Oil	103.02	152.94	187.81	257.63	227.31
	c) Gas					
	d) Naptha					
	e) Other fuel related cost including shortages/surplus	54.72	-38.71	29.16	82.34	53.10
(ii)	Cost of water & chemical	5.93	6.16	5.91	14.36	7.75
(iii)	Lubricants and consumables	12.82	14.41	14.93	20.26	18.56
(iv)	Repair and maintenance	177.05	262.24	319.50	283.04	274.47
	Total variable cost	2169.11	2565.83	2861.06	3373.34	3703.30
C.	Total cost 3(a) + (b)	2895.99	3334.47	3924.62	4601.30	4923.32
4.	Realisation (₹ per unit)	1.68	1.79	2.04	2.10	2.24
5.	Fixed cost (₹ per unit)	0.42	0.41	0.57	0.62	0.60
6.	Variable cost (₹ per unit)	1.25	1.38	1.52	1.69	1.81
7.	Total cost (5+6) (₹ per unit)	1.67	1.79	2.09	2.31	2.41
8.	Contribution (4-6) (₹ per unit)	0.43	0.41	0.52	0.41	0.43
9.	Profit (+)/Loss(-) (4-7) (₹ per unit)	0.01	0.00	(-) 0.05	(-) 0.21	(-) 0.17

It would be seen from above that:

- The operations of UPRVUNL resulted in marginal profit in the years 2005-06 and loss during the years 2007-08 to 2009-10.
- The employee cost increased from 2007-08 due to implementation of recommendation of 6th Pay Commission in the Company.
- The variable cost per unit of energy generated by TPSs increased from ₹ 1.25 in 2005-06 to ₹ 1.81 in 2009-10 mainly due to increase in cost of fuel.

Financial Position and Working Results of UPJVNL

2.2.6 As compared to UPRVUNL, the operation of UPJVNL are at lesser levels in terms of equity and generation of power. The particulars of financial position and working results for the five years ending 2009-10 are given in **Annexure-9**. An analysis of the data in the Annexure has revealed the following:

- Current Assets, Loans and Advances included dues receivable from UPPCL towards sale of energy which ranged between 26.64 per cent (2009-10) and 36.61 per cent (2005-06). Due to poor realisation of dues and consequent accumulation of huge outstanding from UPPCL

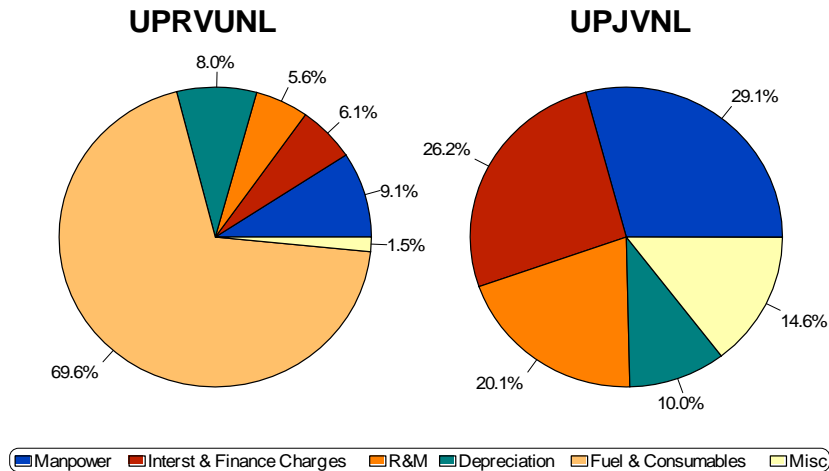
(as commented in subsequent paras), the Company had to borrow loans for R&M programmes. This is evident from the fact that the borrowings which was ` 302.55 crore at the end of 2005-06 increased to ` 393.64 crore at the end of 2009-10 representing an increase of 30.11 per cent.

- Against the ideal debt-equity ratio of 2:1, the debt-equity ratio of the Company was 1.22:1 in 2005-06 and increased to 2.23:1 in 2009-10 due to addition in loan by ` 91.09 crore.
- The operations of UPJVNL resulted in profit in all the years except in the years 2005-06 and 2009-10.
- Other income mainly includes water charges received from sale of water to TPSs.
- The Expenditure does not include ` 132.44 crore written off by the Company as bad debts during 2006-07 to 2009-10 as discussed in paragraph 2.2.52.
- The variable cost per unit of energy generated by HPSs increased from ` 0.07 in 2005-06 to ` 0.19 in 2009-10 mainly due to increase in Repair and maintenance expenses.

Elements of Cost

2.2.7 Fuel & Consumables and Manpower constitute the major elements of costs. The percentage break-up of costs for 2009-10 in respect of UPRVUNL and UPJVNL are given below in the pie-charts.

Components of various elements of cost



Elements of revenue

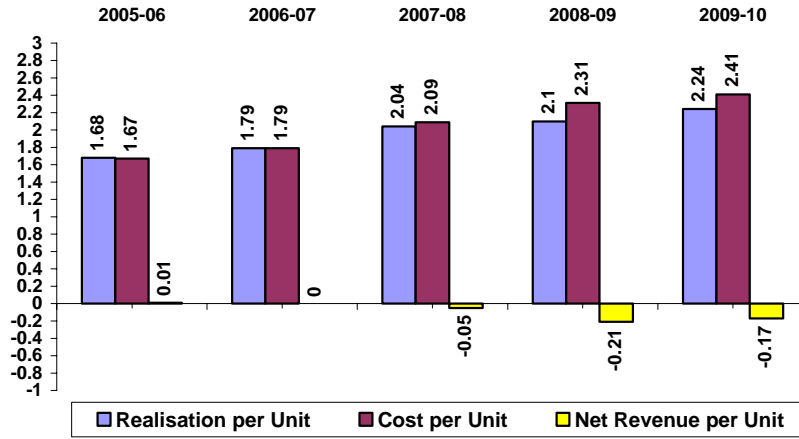
2.2.8 Sale of Power constitutes the major element of revenue. The other income constituted 0.6 per cent and 39.3 per cent of the total revenue during 2009-10 in respect of UPRVUNL and UPJVNL respectively.

Recovery of cost of operations

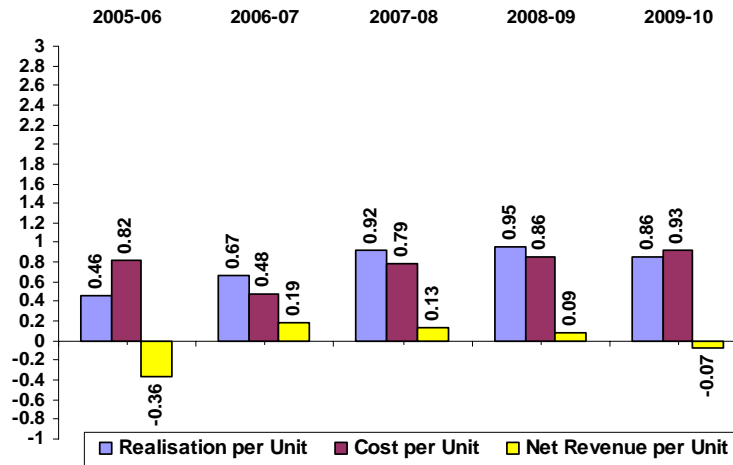
2.2.9 The UPRVUNL was not able to recover its cost of operations during the years 2007-08 to 2009-10. On the other hand, UPJVNL could recover its cost of operations excepting 2005-06 and 2009-10 as depicted in the following bar charts:

UPRVUNL

(Amount in `)



UPJVNL



Had the total revenue earned by UPRVUNL been sufficient to cover the cost, an additional amount of ` 861.22 crore could have been available for capacity addition/ life extension programmes. The main reasons for high cost of generation had been poor capacity utilisation corroding the system performance, high level of auxiliary consumption and higher interest and manpower cost.

Audit Findings

2.2.10 We explained the audit objectives to the UPRVUNL and UPJVNL during an ‘entry conference’ held on 6 February 2010. Subsequently, our audit findings were reported to them and the State Government in August, 2010. The audit findings were discussed in an ‘exit conference’ held on 25 August 2010 which was attended by Accountant General and CMD of UPRVUNL and UPJVNL. The replies to our audit findings were received in September 2010.

The State Government endorsed the views of managements. The views expressed by them have been considered while finalising this review. Our audit findings are discussed below.

Operational Performance

2.2.11 The operational performance of the UPRVUNL and UPJVNL for the five years ending 2009-10 is given in the **Annexure-10**. The operational performance of the UPRVUNL and UPJVNL was evaluated on various operational parameters as described below. It was also seen whether the UPRVUNL and UPJVNL were able to maintain pace in terms of capacity addition with the growing demand for power in the State. Audit findings in this regard are discussed in the subsequent paragraphs. These audit findings show that there was scope for improvement in performance.

Planning

2.2.12 National Electricity Policy aims to provide availability of over 1,000 Units of electricity per Capita by 2012. The Union Government has laid emphasis on the full development of hydro potential being cheaper source of energy as compared to thermal. The Central Government would support the State Government for expeditious development of hydro power projects by offering the services of Central Public Sector Undertakings like NHPC, NTPC and NEEPCO. Besides, environmental concerns would have to be suitably addressed through appropriate advance actions. The power availability scenario in the state indicating own generation, purchase of power, peak demand and net deficit was as under:

Actual generation of electricity in Uttar Pradesh was 45.26 per cent and 34.03 per cent of average and peak demand during 2005-06 which decreased to 35.43 per cent and 28.43 per cent in 2009-10 respectively.

In Uttar Pradesh the actual generation was substantially less than the peak as well as average demand during the period 2005-10 as shown below:

Year	Generation (MW)	Peak Demand (MW)	Average Demand (MW)	Percentage of actual generation to Peak Demand	Percentage of actual generation to Average Demand
2005-06	2905	8537	6418	34.03	45.26
2006-07	3215	8753	6718	36.73	47.86
2007-08	2639	10104	7478	26.12	35.29
2008-09	2773	10587	8013	26.19	34.61
2009-10	3086	10856	8710	28.43	35.43

As may be seen from the above that due to quantum jump in the demand during review period, actual generation could meet 45.26 per cent and 34.03 per cent of average and peak demand during 2005-06 and the same decreased to 35.43 per cent and 28.43 per cent in 2009-10 respectively. Thus, there was wide gap between generation and demand of electricity. Therefore, to narrow the gap, the State Government largely depended on purchase of power from Central Public Sector Undertakings/other States. However, the total supply even after import was not sufficient to meet the peak demand, as shown below:

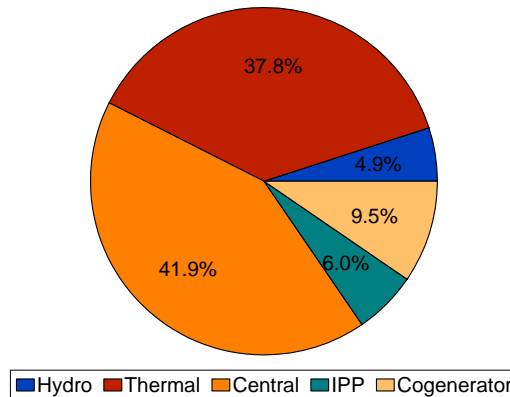
Year	Peak Demand (MW)	Peak Demand met (MW)	Sources of meeting peak demand		Peak Deficit (MW)	Percentage of Deficit
			Own (MW)	Import (MW)		
2005-06	8537	6112	2905	3207	2425	28.41
2006-07	8753	7188	3215	3973	1565	17.88
2007-08	10104	7504	2639	4865	2600	25.73
2008-09	10587	8222	2773	5449	2365	22.34
2009-10	10856	8186	3086	5100	2670	24.59

There remained a shortfall of 1565 to 2670 MW even after import. Consequently rotational load shedding is forced on the populace.

This section deals with capacity additions and optimal utilisation of existing facilities. Environmental aspects have been discussed in subsequent paragraphs at later stage.

Capacity Additions

2.2.13 The State had total installed capacity of 8076 MW at the beginning of 2005-06 and increased to 10804 MW at the end of 2009-10. The break up of generating capacities, as on 31 March 2010, under Thermal, Hydro, Central, IPP and Co-generators is shown in the pie chart below.



To meet the energy generation requirement of 76088 MUs in the State, a capacity addition of about 6515 MW was planned by the State during 2005-06 to 2009-10. As against this, the actual capacity addition at the end of March 2010 was 2728 MW leading to shortfall of 3787 MW. The projects categorised as ‘Projects under Construction’ (PUC) and ‘Committed Projects[∞]’ (CP) were earmarked for capacity addition during review period according to NEP are detailed below.

(In MW)				
Sector	Thermal	Hydro	Non-conventional Energy	Total
PUC	8420	330	NIL	8750
CP	9710	NIL	NIL	9710
Total	18130	330	NIL	18460

We noticed that:

- Government approved (June 2007) installation of 1320 MW project at Meja, Allahabad in joint sector with NTPC. A sum of ` 98.14 crore (including UPRVUNL contribution of ` 49.33 crore) was spent on land acquisition and various site infrastructure etc. up to June 2010. However, the approval of Ministry of Environment and Forest was awaited (September 2010).
- UPRVUNL decided (February 2008) installation of 2000 MW project as joint venture with Neyveli Lignite Corporation (NLC). The Government issued NOC in May 2009 for installation of project at Fatehpur. However, NLC revised (December 2009) the site to Ghatampur without assigning any reason. Thus, non-installation of

[∞] Committed projects denote the projects approved by the State Government.

project at approved site of Fatehpur resulted in delay of more than two years.

The particulars of capacity additions envisaged, actual additions and peak demand vis-à-vis energy supplied during review period are given below:

Sl. No	Description	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Capacity at the beginning of the year (MW)	8076.34	8546.94	10300.54	10643.99	10453.99
2.	Additions planned as per National Electricity Plan (MW)	210	710	-	-	1980
3.	Additions planned by the State (MW)	1644.25	2337.00	147.00	237.00	2150.00
3 (a)	Additions planned by the UPRVUNL (MW)	420	-	-	-	1000
4.	Actual Additions (MW)	502.60	1853.60	343.45	10	350
4(a)	Actual additions by UPRVUNL (MW)	-	210	210	10	50
5	Capacity deletion by CEA(MW)	32	100	-	200	-
6.	Capacity at the end of the year (MW) (1 + 4 - 5)	8546.94	10300.54	10643.99	10453.99	10803.99
7.	Shortfall in capacity addition (MW) (3 - 4)	1141.65	483.40	(196.45)	227	1800
8.	Demand (MUs)	58158	58872	65679	70138	76088
9.	Energy supplied (MUs)					
	a) Energy produced	18596	20043	19722	21048	21419
	b) Energy purchased	27830	30958	35751	35418	46759
10.	Shortfall in supply (MUs)	11732	7871	10206	13672	7910

Actual capacity addition was only 480 MW against 1420 MW planned by UPRVUNL during 2005-10.

It may also be observed from the above table that during review period actual capacity addition was only 480 MW against 1420 MW planned by the UPRVUNL leaving shortfall of 940 MW against the addition planned. The State was not in a position to meet the demand as the power generated as well as power purchased fell short to the extent of 7871 MUs to 13672 MUs during review period. The particulars of projects of UPRVUNL and UPJVNL existing as on 1 April 2005, additions and deletions during review period and projects existing as on 31 March 2010 are given in the **Annexure-11**.

Instances of time overrun and consequential loss of generation have been discussed in subsequent paragraphs under project management.

Optimum Utilisation of existing facilities

2.2.14 In order to cope with the rising demand for power, not only the additional capacity needs to be created, but the plan for optimal utilisation of existing facilities needs to be in place. Simultaneously life extension programme/replacement of the existing facilities besides timely repair/maintenance also need to be executed. The details of the power generating units, which were actually taken up for Renovation and Modernisation (R&M)/Life extension programmes (as per CEA norms) during the five years ending 2009-2010 vis-à-vis those were due are indicated in the table below.

Sl. No.	Name of the Plant	Unit No.	Installed capacity (in MW)	Due date (as per CEA norms)	Date when actually taken up	Delay in taking up R&M/LEP
1	Harduaganj TPS	5	60	March 1997	May 2005	8 years
2	Harduaganj TPS	7	110	March 1998	May 2005	7 years
3	Anpara 'A' TPS	1	210	March 2006	May 2006	-
4	Anpara 'A' TPS	2	210	February 2007	May 2006	-
5	Anpara 'A' TPS	3	210	March 2008	May 2006	-
6	Obra 'A' TPS	6	100	October 1993	December 2005	12 years
7	Obra 'A' TPS	7	100	December 1994	December 2009	15 years
8	Obra 'A' TPS	8	100	September 1995	December 2009	14 years
9	Obra 'B' TPS	9	200	October 2000	June 2006	6 years
10	Obra 'B' TPS	10	200	January 1999	Yet to be started	11 years
11	Obra 'B' TPS	11	200	December 1997	Yet to be started	12 years
12	Obra 'B' TPS	12	200	March 2001	Yet to be started	9 years
13	Obra 'B' TPS	13	200	July 2002	Yet to be started	8 years

From the above, we see that against the 13 units due for being taken up for Renovation and Modernisation/ Life extension programmes, R&M was carried

out in only nine units, and four units have not been taken up (March 2010) despite delays ranging between eight to 12 years. Of the nine units in which R&M was carried out, in six units the works were taken up six to 15 years after due date. Only in three units the R&M work was taken up on or in time.

The Management stated that due to power shortage in the State and delay in supply of material, the units could not be taken up for R&M on scheduled dates.

The detailed audit observations relating to repair/ maintenance and life extension programmes are discussed in succeeding paragraphs.

Project Management

2.2.15 Project management includes timely acquisition of land, effective action to resolve bottlenecks, obtain necessary clearances from Ministry of Forest and Environment and other authorities, rehabilitation of displaced families, proper scheduling of various activities etc. Notwithstanding, time and cost over runs were noticed due to absence of coordinating mechanism throughout the implementation of the projects during review period as discussed in succeeding paragraphs.

The following table indicates the scheduled and actual dates of completion of the power stations, date of start of transmission, date of commissioning of power stations and the time overrun during the review period.

Time overrun

Sl. No.	Phase-wise name of the Unit	Details	As per DPR	Actual time taken	Time overrun
1.	Parichha Ext. Unit-1 (210 MW)	Date of completion of unit	October 2004	23.05.2006	19 months
		Date of start of transmission	January 2005	23.05.2006	15 months
		Date of commercial operation/ commissioning of unit	February 2005	24.11.2006	21 months
2.	Parichha Ext. Unit- 2 (210 MW)	Date of completion of unit	April 2005	28.12.2006	21 months
		Date of start of transmission	July 2005	28.12.2006	17 months
		Date of commercial operation/ commissioning of unit	August 2005	1.12.2007	27 months

It is seen from above that Parichha Extension project implemented during review period, was not completed in time and slippages were on account of lack of co-ordination between various agencies involved in the construction of plant and non-payment of advance on due date. These factors were avoidable at various stages of implementation. However, the project cost remained same as the project was awarded to BHEL on turnkey basis.

The instances of cost overrun and consequential loss of generation vis-à-vis non recovery of LD amounts, as noticed by us, are given below:

Non-levy of liquidated damages in respect of Parichha Extension (2x210 MW)

2.2.16 A LOI was issued (September 2002) to BHEL for Erection, Procurement and Commissioning (EPC) work of 2x210 MW extension project of Parichha TPS at a cost of ` 1425 crore. Both the units were scheduled to be commissioned after 30 months (15 April 2005) and 36 months (15 October 2005) from the zero date respectively. The payment of first instalment of mobilisation advance of 10 per cent to BHEL on 16 October 2002 was considered as Zero date.

The last instalment of mobilisation advance of 5 per cent was paid to BHEL on 31 March 2004 belatedly after a delay of over one year due to non-receipt of funds from the State Government. Accordingly, BHEL extended the due date of commissioning by one year (15 April 2006 and 15 October 2006 respectively).

Despite delay of seven and fourteen months in commissioning of Unit I and II, LD of ` 71.25 crore was not recovered from BHEL.

We noticed that the first unit was commissioned on 24 November 2006 after a delay of seven months and second unit was commissioned on 1 December 2007 after delay of 14 months from the revised date of commissioning.

Thus, due to delay in the commissioning of the units, interest during construction (IDC) increased from ` 214.37 crore to ` 260.81 crore and the Company incurred additional expenditure of ` 46.44 crore on IDC. In addition, the delay caused loss of generation of 2157.96 MU valued at ` 213.64 crore (at the rate of ` 0.99 per unit).

Though, both the units were commissioned after the delay of seven months and fourteen months respectively but liquidated damages (LD) of ` 71.25 crore (5 per cent of ` 1425 crore) was not deducted from BHEL as per clause of LOA.

The Management accepted the increase in IDC due to delay in commissioning of project. The management further stated that negotiation with BHEL, regarding pending issues including LD, is in progress and Corporate Guarantee of ` 71.25 crore is valid up to 30 December 2010.

Collapse of Chimney at Parichha Extension (2x250 MW)

The Company did not impose LD of ` 61.20 crore on BHEL for delay in commissioning of Parichha Extension (2X250 MW) and suffered loss of generation valued at ` 882 crore.

2.2.17 Parichha (2x250 MW) extension was envisaged to augment the existing capacity of Parichha TPS. Accordingly, 2 x 250 MW units (units 5 & 6) were sanctioned by U.P. Government (June 2005). As per the DPR, the units were to be commissioned in 30 months and 36 months respectively from date of order (June 2006). BHEL was awarded the work of supply and installations of BTG and related civil works for ` 1224 crore.

We observed that BHEL was given commissioning schedule of 35 and 39 months from the date of release of advance (August 2006) against the DPR schedule of 30 and 36 months respectively. BHEL submitted revised schedule (August 2007) due to delay in finalising the plot plan/Main Power House (MPH) according to which both units were to be commissioned in January 2010 and May 2010. BHEL could not adhere even to this schedule and accordingly a further revised schedule was agreed to according to which both units were to be commissioned in July 2010 and December 2010.

Thus, there is a likely delay of 18 months and 17 months in commissioning of both the units, due to which the company suffered loss of generation of 5040 MU valued at ` 882 crore upto March 2010. Further, the Company did not impose LD of ` 61.20 crore at the rate of 5 per cent of the cost in accordance with terms of agreement with BHEL.

We further noticed that the Company awarded (June 2007) the work of construction of Chimney to NBCC, New Delhi for ` 33.16 crore which was to be completed by February 2009. However, the construction work of chimney was not completed within stipulated period and the chimney had also collapsed on 24 May 2010. The Company appointed (June 2010) IIT, New Delhi for investigation of reasons for collapse of chimney. Due to collapse of chimney, the commissioning of project would be further delayed.

The Management stated that the NBCC would re-construct the chimney and therefore, the project would be delayed by 15 months. The Management further stated that final decision for LD would be taken after completion of the project.

Splitting of BOP works of Harduaganj -Extension (2X250MW)

2.2.18 The Government approved (June 2005) setting up of 2x250 MW coal based units (Unit No. 8 & 9) at Harduaganj. As per DPR, the estimated cost of project was ` 1900 crore (which included BOP work of ` 500 crore). The

The Company incurred excess expenditure of ₹ 64.49 crore due to splitting of BOP works.

BHEL submitted (February 2006) an EPC proposal of ₹ 695 crore for balance of plant (BOP) work which was valid upto 30 November 2006.

As per directions of the Government the Company invited (July 2006) pre qualification bids for BOP works and two firms[▼] were selected for submitting financial bids.

Subsequently, only REL submitted their price bid for BOP works for ₹ 744 crore which was cancelled by the management in December 2006 due to lack of competition. Thereafter, the Company decided (December 2006) that the entire BOP work should be divided into small packages and fresh tenders be invited for respective works. NTPC was engaged (December 2006) for providing consultancy on BOP works and coordination among different agencies at the fee of ₹ 21.75 crore. The entire BOP work was divided in 23 packages and awarded to different agencies at a total cost of ₹ 787.12 crore (including mandatory spares of ₹ 27.63 crore) between March 2008 and April 2009 which resulted in excess expenditure of ₹ 92.12 crore[♦]. Further, due to delay in splitting and awarding BOP contracts, the units 8 & 9 that were expected to be commissioned by October 2009 and February 2010 respectively are now likely to be commissioned by December 2010 and January 2011. This has also resulted in loss of generation of 3768 MU^{*}.

The Management stated that the BOP work was split in 23 packages for which approval of the Government had been obtained. The Management further stated that the cost of BOP work increased due to inclusion of mandatory spares. However, even after excluding cost of mandatory spares, the Company incurred excess expenditure of ₹ 64.49 crore.

Poor planning in Obra 'C' project (2X500 MW)

2.2.19 The Government approved the project for installation of 2x500 MW new units at Obra 'C' TPS in February 2009. The Company requested (June 2009) NTPC to prepare the DPR and Technical Feasibility Report (TFR) for 2x660 MW super critical units in place of 2x500 MW sub-critical units which was submitted in November 2009 with estimated cost of the project as ₹ 7830 crore. Accordingly, the 1st unit was to be commissioned in 51 months from the award of contract of main plant and the second unit after an interval of 6 months.

The approval of State Government regarding installation of 2X660 MW had not been received so far (September 2010). However the Company had incurred an expenditure of ₹ 5.05 crore on the project up to 31 March 2010.

We noticed that the Company switched over to installation of 2x 660 MW units rather than the Government approved 2x500 MW units. This has already resulted in a delay of more than nine months and is also indicative of poor planning of the Management at the initial stage.

The Management stated that the Company switched over for installation of 2x660 MW units because the Company was planning to get BTG of 2x500 MW units from BHEL but the Government approval received was to install the units through open tenders which required 50-55 months. However, the installation of 2x660 MW units would also require almost similar time.

Delay in clearance of site for Anpara 'D' Project (2 x 500 MW)

2.2.20 The State Government accorded approval (September 2006) for setting up of 2x500 MW units at Anpara. The offer of BHEL for ₹ 3390 crore was approved by the Government in September 2007. The Company subsequently

▼ Reliance Energy Limited (REL) and Alstom Project India Limited (APIL).

♦ (₹ 787.12 crore minus ₹ 695.00 crore).

* Sale rate yet to be decided by UPERC.

issued (October 2007) letter of Intent (LOI) to BHEL for ` 3390 crore for installation of BTG and civil works and paid an advance (January 2008) of ` 456 crore to BHEL which was considered as date of start of work. The 1st unit and 2nd units were to be commissioned in 39 months (April 2011) and 42 months (July 2011) respectively.

We noticed that six transmission lines were passing through the proposed site of the project. The Company executed agreements for removal of transmission lines in February 2008 with Power Grid Corporation of India Limited (PGCIL) with completion period of six months from date of agreement and in July 2007 with U.P. Power Transmission Corporation Limited without specifying the period of completion of the work, which were ultimately removed in September 2009. The piling/civil work was to be commenced by BHEL from June 2008 but it could be started in December 2009 due to delay in shifting of transmission lines resulting in delay of 18 months from the scheduled date. Resultantly, the project commissioning dates have been revised/extended by eight months depriving capacity addition of electricity in a power deficit State.

The Management stated that the delay in shifting of transmission lines was due to submergence of various foundations of towers due to heavy rains. The delay of more than 18 months in shifting of transmission lines was not justified as rain water receded within two to three months.

Inordinate delay in commissioning of Sheetla Hydro Power Project

2.2.21 The Sheetla Hydro Project (3X1.2 MW) was envisaged in Moth District of Bundelkhand on Betwa Main Canal at an estimated cost of ` 13.93 crore, approved by Public Investment Board (PIB) in November 1998. In February 2000, Bhola Singh Jai Prakash Construction Limited and Jyoti Limited were engaged for carrying out Civil Construction Works for ` 5.82 crore and Electrical Works for ` 8.03 crore respectively on turn-key basis. The electrical work was to be completed in 24 months and civil work was to be completed in 30 months by March 2003.

The work of commissioning of all the machines was completed by December 2005 after a delay of more than 30 months. The machines were synchronised with grid by March 2006 and unit could be taken on commercial load in November 2006.

We noticed that the Company incurred an expenditure of ` 21.73 crore registering an increase of 56 *per cent* over the initial estimate. The reasons for time and cost over-run were lack of detailed drawings at the time of original project estimate, lack of detailed study of soil and its bearing capacity, cost/type of turbine/generator, estimation on the basis of estimated drawings which was much less than the execution drawing prepared by Irrigation Design Organisation, Roorkee, delay in acquisition of land from private owners and improper selection of the site which was frequently flooded due to proximity to the Betwa Canal.

Thus, due to poor planning the Sheetla hydro project was delayed by more than 30 months and also suffered cost over-run of ` 7.88 crore.

Poor planning caused delay of 30 months in commissioning of Sheetla Hydra Project and cost overrun of ` 7.88 crore.

Contract Management

2.2.22 Contract management is the process of efficiently managing contract (including inviting bids and award of work) and execution of work in an effective and economic manner. The works are generally awarded on turn key (Composite) basis to a single party involving civil construction, supplies of machines and ancillary works.

During review period contracts valuing ` 7263 crore were executed with BHEL on single quotation basis which defeated the purpose of getting work done at competitive rates. The instances of award of work at higher rate and undue favour to contractors are discussed in succeeding paragraphs:

Undue favour to a contractor

2.2.23 The Company invited tenders (August 2006) for construction of 400 KV/ 220KV switchyard which included installation of 400 KV/6.9 KV station supply transformer in respect of Parichha 2X250 MW extension project. Based on the offers received, the Company decided (April 2007) to award the work of construction of switchyard on turnkey basis to BHEL for ` 123.65 crore. Subsequently, the Board of Directors changed the specification of tender and decided (June 2007) to install a 220 KV/6.9 KV station supply transformer instead of 400 KV/6.9 KV station supply transformer. Accordingly, the tender was cancelled and a fresh tender based on modified specifications was issued in which L&T, Areva and ABB Ltd. were qualified bidders. Areva was found to be lowest and LOI was issued to the firm in March 2008 for construction of Switchyard on turnkey basis with completion schedule of 22 months from date of LOI (i.e. by January 2010).

The Company ignored the earlier lower offer of BHEL for switchyard work and accepted higher tender of Areva which was even not for the desired specifications.

We noticed that in the price bid submitted by Areva, rates were quoted for 400KV/6.9KV station transformer instead of the 220KV/6.9KV station transformer as required in the fresh tender specifications. The Company adjusted the prices of the two transformers at its own level and finally awarded the work for ` 124.65 crore. However, the earlier offer of BHEL for 400 KV/6.9 KV station transformers, which was for ` 123.65 crore was neither considered by adjusting the prices (as done for Areva) nor BHEL was approached to submit bid with revised specification. This resulted in avoidable expenditure of ` One crore atleast.

The Management stated that BHEL did not participate in fresh tender as per revised specification. However, the Company did not ensure specification of station transformer before inviting tenders in August 2006 and also awarded the tender to a firm which had not quoted for the technically specified transformer.

Non-recovery of expenditure incurred on Coal linkage

2.2.24 The Government decided (February 2004) to implement Anpara ‘C’ TPS through private sector participation. Earlier the project was to be implemented by UPRVUNL with the help of Japan Bank for International Cooperation (JBIC). The required clearance from Uttar Pradesh Pollution Control Board, MOEF and CEA had already been obtained by the Company in its own name for setting up the project. Letter of comfort from National Coalfields Limited (NCL) for long term supply of coal had been obtained (28 March 2002) on the basis of which Ministry of Coal, Government of India allowed (1 August 2002) Coal linkage for Anpara ‘C’ project to the Company. The UPERC vide order dated 6 February 2006 directed that the projects clearance viz. MOEF etc. and making Fuel Supply Agreement (FSA) with NCL was the responsibility of the seller (Lanco).

We noticed that despite the order of UPERC (February 2006), the Company decided and paid (September 2006) ` 2 crore to NCL for retaining the coal linkage. Since, the Anpara ‘C’ project was being installed by a private firm viz Lanco, the decision of the Company to pay ` 2 crore to NCL to retain Coal linkage was not justified. The same is yet to be recovered from NCL by the Company (September 2010). Thus, non-recovery of the amount paid for retaining the Coal linkage resulted in locking up of the Company’s fund to the extent of ` 2 crore.

The Management stated that since the private sector investor was not finalised at the time of deposit of ` 2 crore, therefore, the Company decided to deposit the amount with NCL to save coal linkage allotment. The reply is not based on facts since Lanco had already been identified by the time amount was deposited by the Company.

Award of work without ensuring financial interest

2.2.25 The proposed site of Obra C project was in Sector 5, 6 and 7 of Obra Colony and for installation of BTG, approx. 2,70,000 cum of Dakkaya Hillock falling under Sector 6 was to be dismantled. The Company anticipated that since the stone of hillock was of good quality, the agency involved would carry out work at its own cost, pay royalty to the Government and also pay to the Company for stone collected by the agency. Ignoring the above facts, the work of Dakkaya Hillock was awarded (November 2008) to B. L. Agarwal Stone Products Limited for 1,70,000 cum for which the Company was to pay the contractor at the rate of ` 18 per cum. The contractor was to pay royalty at the rate of ` 94 per cum to the State Government. The work was to be completed within 6 months i.e. May 2009. As the contractor did not complete the work, the contractor was directed in August 2009 to stop the work. Till then, the contractor had completed the work of 109000 cum valued at ` 19.62 lakh. The Company cancelled (January 2010) the agreement with the contractor who claimed damages of ` 2.28 crore. The matter was pending with arbitrator (March 2010).

We noticed that the State Government revised the rate of royalty on stone from ` 94 per cum to ` 143 per cum with effect from June 2009. A fresh tender was floated by the Company for work of levelling Dakkaya Hillock in which ` 22.05 per cum was to be received by the Company and increased royalty at the rate of ` 143 per cum.

Thus, the work to B.L. Agarwal Stone Product Limited was awarded without ensuring interest of the Company and it became liable to pay ` 19.62 lakh instead of earning ` 97.06 lakh.

Operational Performance

2.2.26 Operations of UPRVUNL is dependent on input efficiency consisting of material and manpower and output efficiency in connection with Plant Load Factor, plant availability, capacity utilisation, outages and auxiliary consumption. These aspects have been discussed below.

Input Efficiency

Procedure for procurement of coal

2.2.27 CEA fixes power generation targets for thermal power stations (TPS) considering capacity of plant, average plant load factor and past performance. The UPRVUNL works out coal requirement on the basis of targets so fixed and past coal consumption trends. The coal requirement so assessed is conveyed to the Standing Linkage Committee (SLC) of the Ministry of Power (MOP), Government of India, which decides the source and quantity of coal supply to TPSs on quarterly basis. However, from 2009-10, the above concept of SLC was discontinued by notification of New Coal Distribution Policy (October 2007). The UPRVUNL now directly enters into a fuel supply agreement with the coal companies.

The position of coal linkages fixed, coal received, generation targets as reported to SLC for procurement of coal and actual generation achieved during the period from 2005-06 to 2009-10 covering all the TPSs of UPRVUNL was as under:

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10	Total
1	Coal linkage fixed (In lakh MT)	174.15	198.15	185.25	204.90	185.00	947.45
2	Quantity of coal received (In lakh MT)	153.46	160.80	164.05	181.93	184.03	844.27
3	Quantity of coal short received (In lakh MT)	20.69	37.35	21.20	22.97	0.97	103.18
4	Percentage of short coal received	11.88	18.85	11.44	11.21	0.52	10.89
5	Generation targets as reported to SLC (MUs)	21810	21770	22887	23437	22963	112867
6	Actual generation achieved (MUs)	19370	20741	21041	22383	22912	106447
7	Shortfall in generation targets (MUs)	2440	1029	1846	1054	51	6420
8	Percentage of shortfall in generation	11.19	4.73	8.07	4.50	0.22	5.69

It is seen from the above that the total linkage of coal during the five years fixed by the SLC was 947.45 lakh MT. Against this, only 844.27 lakh MT of coal was received, resulting in short receipt of 103.18 lakh MT (10.89 per cent) of coal. Loss of generation of 97.923 MUs was noticed in Parichha due to shortage of coal as commented in paragraph 2.2.32. In the absence of any agreement with the coal companies during 2005-10, the management failed to procure allotted quantity of coal. However, after execution of CSA with Coal Companies during 2009-10, the supply of coal has improved significantly.

Fuel supply arrangement

2.2.28 Coal is classified into different grades. The price of the coal depends on the grade of coal. The UPRVUNL entered (July to November 2009) into coal supply agreements (CSA) with Bharat Coking Coal Limited (BCCL), Northern Coalfield Limited (NCL), Central Coalfield Limited (CCL) and Western Coalfield Limited (WCL) for supply of coal to its power stations at different places.

A review of coal supply arrangements revealed the following:

Purchase of Imported coal

2.2.29 The Board of the Company decided (March 2009) to import 3.36 lakh MT coal from MMTC and directed to mix the imported coal with domestic coal and analyse effect on the basis of analysis. Accordingly, an LOI was issued (March 2009) in favour of MMTC for supply of 3.36 lakh MT coal having guaranteed quality parameters.

The Company incurred additional expenditure of ₹ 83.40 crore on procurement of imported coal as the blending of the same was not done in specified ratio.

We noticed that MMTC supplied 2.40 lakh MT of imported coal during April 2009 to November 2009 to Parichha TPS unit No. 3 and 4. However, the Company did not instruct the TPS to mix the imported coal with domestic coal in a specified ratio due to which the TPS mixed the imported coal with domestic coal in an arbitrary manner. The coal consumption during 2008-09 was 0.86 Kg/kwh which was marginally reduced to 0.82 Kg/kwh during 2009-10 after use of imported coal. The purchase of imported coal could not be justified as in spite of mixing imported coal no significant reduction in coal consumption was noticed. Further, the cost of imported coal was 142 per cent higher than the cost of domestic coal. Thus, the Company had incurred an additional expenditure of ₹ 83.40 crore* on procurement of 2.40 lakh MT coal.

Transit loss of coal

2.2.30 Coal at thermal power stations was received through railway wagons and the payment is being made on the basis of weight of coal mentioned in Railway Receipt (RR). Transit loss of coal is difference between weight of

* Being difference in landed cost of ₹ 5925 per MT of imported coal and cost of ₹ 2450 per MT of domestic coal.

coal rake at electronic weigh bridge of collieries and weight as per weigh bridge of TPS. As per clause 1.2.2(d) of Fuel Accounting Manual (FAM) of the Company transit loss of coal up to 5 per cent was permissible. The Company fixed the norm of 5 per cent arbitrarily on higher side as Maharashtra Electricity Regulatory Corporation (MERC) and Haryana Electricity Regulatory Commission (HERC) allowed only 0.8 per cent transit loss for State Power Generation Companies.

Compared to the norm fixed by the MERC/HERC, the Company incurred excess transit loss of 2.98 lakh MT coal valued at ₹ 53.85 crore at Parichha, Harduaganj and Obra TPSs during 2005-10.

Taking the norm as allowed by HERC and MERC, we noticed that in Parichha, Harduaganj and Obra TPS transit loss of coal ranged between 0.16 to 2.95 per cent during 2005-06 to 2009-10. This was well above the norm of 0.8 per cent fixed by MERC/HERC and resulted in excess transit loss of coal of 2.98 lakh MT valued at ₹ 53.85 crore. The main reason of transit loss of coal as analysed by us, was theft of coal from loaded coal wagons during transit.

The Management stated that transit loss of coal of Parichha, Obra and Harduaganj has reduced considerably and efforts are being made to reduce it further. However, reply was contrary to the facts as percentage of transit loss increased in these TPSs in 2009-10 as compared to 2008-09.

Avoidable payment of Demurrage charges

2.2.31 Coal is transported to thermal power stations from collieries through rail wagons. The railway has fixed time limit of seven hours for unloading of one coal rake (58 wagons) and demurrage charges at the rate of ₹ 100 per wagon per hour were payable for delay in unloading of wagons.

The Company paid demurrage charges of ₹ 16.57 crore due to delay in unloading of coal wagons.

We noticed that Parichha TPS appointed private contractors for unloading of coal wagons manually as well as through coal hoppers. During the period 2006-07 to 2009-10, 2797 coal rakes were received, of which 2381 coal rakes (85.13 per cent) were unloaded after delay of 1 to 118 hours* and the Company paid demurrage charges of ₹ 17.84 crore to railways. Thus due to delay in unloading of coal wagons by the private contractors, the Company made an avoidable payment of ₹ 16.57 crore towards demurrage charges.

The Management stated that the demurrage charges could not be avoided as Parichha TPS is receiving coal from BCCL, CCL, WCL and NCL by four different routes which resulted in bunching of coal rakes. The reply indicates that TPS management could not assess and plan properly unloading activity of coal which ultimately resulted in payment of demurrage charges to Railways. In view of heavy payment on account of demurrage charges, the company should have evolved a system for timely unloading of coal wagons which was not in place over a period of time.

Loss of generation due to inadequate fuel stock

2.2.32 The UPRVUNL did not maintain minimum fuel stock at Parichha TPS and faced problem of shortage of coal from time to time. Test check of records of outages of plants revealed that Parichha TPS fell under forced shut down during 2006-07 due to shortage of coal, resulting in loss of generation aggregating to 97.923 MU valued at ₹ 12.85 crore.

The Management stated that coal stock during 2006-07 was not exhausted and loss of generation was due to problem in coal feeding system. The reply is contrary to the fact since Parichha TPS remained closed for 21 days during 2006-07 for want of availability of coal.

* After allowing norm of seven hours fixed by railways.

Non-receipt of compensation for oversized stone

2.2.33 The coal supply agreement executed with NCL envisaged that all oversized stone of more than 250 mm received along with coal from seller’s supplies by Rail at the power station end would be segregated and stacked separately. Further, as per clause 9.1 of the agreement, the NCL should pay compensation for oversized coal on the basis of weighted average base price through regular credit notes to the UPRVUNL.

We noticed that Anpara and Obra TPSs lodged claim of ` 1.15 crore with NCL for 9009.17 MT oversized stone received during April 2009 to March 2010. NCL neither accepted the claim nor issued credit notes of ` 1.15 crore so far.

The Management stated that credit note of ` 1.06 crore had been received from NCL against Obra and Anpara TPSs during the year 2009-10. However, the management could furnish the copies of only one credit note of ` 0.50 lakh for Obra TPS only.

Consumption of fuel

Excess consumption of coal

2.2.34 The consumption of coal depends upon its calorific value. The maximum and minimum consumption of coal during the period of five years ending 2009-2010 vis-à-vis norms fixed by UPERC for various power generation stations for production of one unit of power in the State are given in the table below:

(In KGs per unit)

Name of the Station	Norms fixed by UPERC	Average minimum consumption during the year	Average maximum consumption during the year
Obra 'A'	0.86 (2006-07) 0.89(2009-10)	0.93 (2009-10)	0.99 (2005-06)
Obra 'B'	0.70 (2007-08) 0.82 (2008-09)	0.86 (2005-06)	0.96 (2008-09)
Parichha 'A'	0.56 (2007-08) 0.87 (2009-10)	0.89 (2009-10)	0.96 (2008-09)
Parichha 'B'	0.45 (2007-08) 0.71 (2009-10)	0.73 (2006-07)	0.86 (2008-09)
Anpara 'A'	0.91(2005-06 to 2009-10)	0.77 (2007-08)	0.79 (2005-06)
Anpara 'B'	0.75 (2008-09) 0.83 (2005-06)	0.67(2006-07)	0.71 (2008-09)

From the above it may be seen that in Obra and Parichha TPSs, the consumption of coal remained higher than the norms fixed by UPERC in all the years under review. However, in Anpara 'A' and 'B' TPS coal consumption was within norms fixed by UPERC during review period. Apart from the low calorific value, the following reasons also contributed to excess consumption, which could *prima facie* be controlled by the Management:

Consumption of coal in Obra and Parichha TPSs was higher than the norms fixed by the UPERC and resulted in extra expenditure of ` 1082.51 crore.

- excessive forced outages,
- non-adherence to maintenance schedule and
- delayed execution of R &M works, etc.

This resulted in excess consumption of coal to the tune of 63.06 lakh MT valued at ` 1082.51 crore during the review period in the above TPSs as given below:

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10
1	2	3	4	5	6	7
1.	Unit generated (MUs)	6336.081	7467.016	7907.437	8420.216	8881.307
2.	Coal required as per norms (in lakh MT)	47.53	50.64	50.85	67.96	71.21

1	2	3	4	5	6	7
3.	Coal consumed (in lakh MT)	55.99	66.28	70.59	78.73	79.66
4.	Excess consumption (in lakh MT) (3-2)	8.46	15.64	19.74	10.77	8.45
5.	Average Rate per MT (₹)	1552.89	1679.30	1705.79	1753.94	1924.79
6.	Coal consumed per Unit (Kg.) [(3 / 1)]	0.88	0.89	0.89	0.94	0.90
7.	Value of excess coal (₹ in crore) (4 x 5)	131.39	262.68	336.80	188.92	162.72

The Management stated that excess consumption of coal was due to poor quality of coal and non-completion of R&M activities.

Manpower Management

Actual manpower in the UPRVUNL was more than the norms of CEA which resulted in extra expenditure of ₹ 694.11 crore during 2005-10.

2.2.35 Consequent upon the unbundling (January 2000) of erstwhile Uttar Pradesh State Electricity Board, all the TPSs and HPSs were transferred to UPRVUNL and UPJVNL respectively. In National Electricity Plan, the CEA has fixed norms of manpower per MW of the installed capacity. The position of actual manpower, sanctioned strength and manpower as per CEA recommendation in UPRVUNL and UPJVNL is given in the **Annexure-12**.

It is seen from the Annexure that actual manpower in UPRVUNL was more than the norms of CEA and resulted in extra expenditure of ₹ 694.11 crore. Despite having excessive manpower in the UPRVUNL in 2009-10, the Obra 'A' TPS engaged Instrumentation Limited, Kota and United Conveyer Corporation, Kolkata for operation of DCS-5-MAR system and Fly Ash handling Plant, respectively of Unit 1 & 2 and incurred expenditure of ₹ 2.68 crore. Besides, overtime aggregating to ₹ 46.13 crore was also paid to the regular staff of generating stations during the period of review. No action was taken by the management to rationalise its staff strength for optimum utilisation. However, actual manpower in UPJVNL was within the norms fixed by CEA.

The Management of UPRVUNL stated that after completion of proposed R&M activities and increase in capacity, man power to MW ratio is expected to come down in the coming years.

Output Efficiency

Shortfall in generation

2.2.36 The targets for generation of power for each year are fixed by the UPERC and approved by the Central Electricity Authority. We observed that UPRVUNL and UPJVNL could not achieve the target in any year under review period as shown in the following table:

Year	Target (MU)		Actual (MU)		Shortfall (MU)	
	UPRVUNL	UPJVNL	UPRVUNL	UPJVNL	UPRVUNL	UPJVNL
2005-06	21810	1307	19370	1282	2440	25
2006-07	21770	1551	20741	1431	1029	120
2007-08	22887	1470	21041	925	1846	545
2008-09	23437	1470	22383	1097	1054	373
2009-10	22963	1470	22912	945	51	525
Total	112867	7268	106447	5680	6420	1588

The year-wise details of energy to be generated as per design, actual generation, plant load factor (PLF) in respect of Obra, Parichha and Anpara TPSs are given in **Annexure -13**.

The details in the Annexure indicate that:

- the actual generation of energy and PLF achieved were far below vis-à-vis those designed;
- as against the total designed generation of 156265.84 MU of energy during the five years audited, the actual generation was 97681.65 MU

leading to shortfall of 58584.19 MU, which could have been technically produced; and

- as the PLF had been designed considering the availability of inputs, the loss of generation (58584.19 MU) during the audit period indicated that resources and capacity were not being utilised to the optimum level due to delayed R&M, frequent breakdown of units and delay in timely rectification of defects as discussed subsequently.

The Management stated that shortfall in generation of 6420 MU was mainly attributed to inability in carrying out timely overhauling and R&M activities.

As regards hydro generation, main reason for shortfall of 1588 MU in generation of energy/power during review period was non-availability of water. The hydro power stations of UPJVNL are designed to meet out the peak demand and therefore, PLF and capacity utilisation of these projects are not fixed by the UPERC.

Low Plant Load Factor (PLF)

2.2.37 Plant load factor (PLF) refers to the ratio between the actual generation and the maximum possible generation at installed capacity.

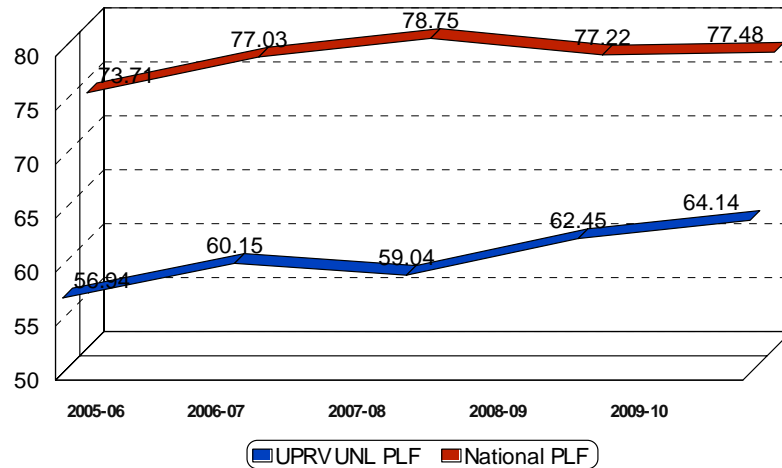
Unit No. 6 of Kota TPS of UPRVUNL achieved PLF of 101.10 per cent which was highest among all the State sector units.

(Source: Performance Review of Thermal Power Stations 2008-09 by CEA).

According to norms fixed by Central Electricity Regulatory Commission (CERC), the PLF for thermal power generating stations should be 80 per cent against which the national average was

73.71 per cent, 77.03 per cent, 78.75 per cent, 77.22 per cent and 77.48 per cent during 2005-06 to 2009-10 respectively. The PLF of Anpara ‘B’ TPS was maximum at 92.34 per cent among all the State sector power stations during the year 2006-07. The actual PLF achieved by UPRVUNL vis-à-vis national average during 2005-06 to 2009-10 is given below in the line graph:

The plant load factor achieved by UPRVUNL ranged from 56.94 to 64.14 per cent during 2005-10 which was below national PLF.



The details of average realisation, average cost per unit, PLF achieved, national PLF, PLF at which average cost would be recovered and shortfall in PLF in per cent are given in the following table:

Sl. No.	Description	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Average Realisation (Paise per Unit)	168	179	204	210	224
2.	Average Cost (Paise per Unit)	167	179	209	231	241
3.	Actual PLF (<i>per cent</i>)	56.94	60.15	59.04	62.45	64.14
4.	National PLF (<i>per cent</i>)	73.71	77.03	78.75	77.22	77.48
5.	PLF at which average cost stands recovered (<i>per cent</i>) (2/1 X 3)	56.60	60.15	60.49	68.70	69.01
6.	Shortfall in PLF (<i>per cent</i>) than national PLF (4 – 3)	16.77	16.88	19.71	14.77	13.34
7.	Shortfall in MU	5704.86	5820.58	7024.36	5293.78	4765.29

It could be seen from the above table that shortfall in generation as compared to national average PLF worked out to 28608.87 MU during 2005-06 to 2009-10 resulting in loss of contribution amounting to ` 1271.17 crore. The main reasons for the low PLF, as observed by us were:

- Low plant availability due to excessive forced outages,
- Low capacity utilisation, and
- Major shut downs and delays in repairs and maintenance.

The Management accepted that PLF of TPSs was lower than the national average due to non-carrying out timely overhauling and R&M activities.

Low plant availability-Thermal

The Actual plant availability in UPRVUNL ranged from 56.35 to 75.85 per cent during 2005-10 against the CERC norm of 80 per cent (85 per cent from 2010).

2.2.38 Plant availability means the ratio of actual hours operated to maximum possible hours available during certain period. As against the Central Electricity Regulatory Commission (CERC) norm of 80 *per cent* plant availability during 2004 – 2009 and 85 *per cent* during 2010 – 2014, the average plant availability of power stations was 64.74 *per cent* during the five years up to 2009-10.

The details of total hours available, total hours operated, planned outages, forced outages and overall plant availability in respect of the UPRVUNL as a whole are shown below:

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10
1.	Total hours available	219000	222048	231312	201480	209520
2.	Operated hours	127262	128277	130334	152328	158917
3.	Planned outages (in hours)	38880	60672	54950	18744	25273
4.	Forced outages [®] (in hours)	52858	33099	46032	30408	25230
5.	Plant availability (<i>per cent</i>)	58.11	57.77	56.35	75.60	75.85

The low availability of Power plants was due to longer duration of forced outages caused by inordinate delays in repair and maintenance and non-availability of required quantity of fuel and other critical inputs. However, plant availability during 2008-09 and 2009-10 increased due to decrease in planned and forced outages.

The Management stated that low plant availability during 2005-06 to 2007-08 was mainly due to non-functioning of units of Obra 'A' and Harduaganj TPSs which were considered in installed capacity. These units were deleted from installed capacity in 2007/2008.

Low plant availability-Hydro

2.2.39 All HPSs of UPJVNL are irrigation based hydro systems except Rihand and Obra (H). The details of plant availability in respect of three major hydro projects are given below:

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09	2009-10
1	2	3	4	5	6	7
Rihand Hydro power project						
1.	Total hours available	52560	52560	52704	52560	52560
2.	Operated hours	14915	17258	11911	12688	12441

[®] Forced outages is closure of plant in excess of prescribed limit due to breakdown in the system.

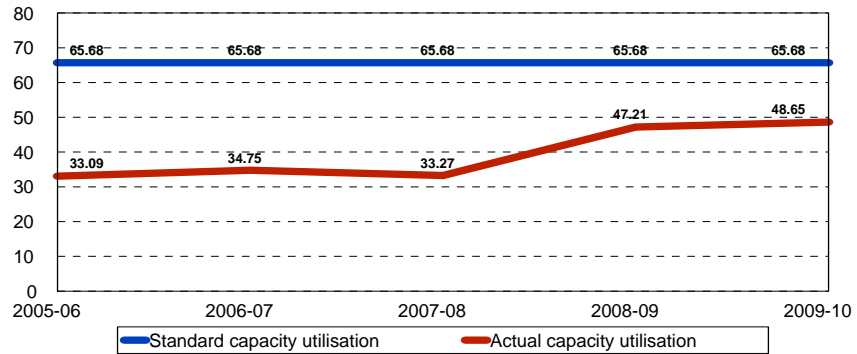
1	2	3	4	5	6	7
3.	Reserve hours ^o	27588	24126	20147	19621	15457
4.	Plant availability (per cent)	80.87	78.74	60.83	61.47	53.08
Khara Hydro power project						
1.	Total hours available	26280	26280	26352	26280	26280
2.	Operated hours	14787	13165	11313	17230	13723
3.	Reserve hours	1455	3391	1044	5229	9232
4.	Plant availability (per cent)	61.80	63.00	46.89	85.46	87.35
Matatila Hydro power project						
1.	Total hours available	26280	26280	26352	26280	26280
2.	Operated hours	13390	11387	7727	16175	11670
3.	Reserve hours	10515	12609	18193	9561	13937
4.	Plant availability (per cent)	90.96	91.31	98.36	97.67	97.44

It could be seen that the Plant availability of Rihand and Khara HPP was lower as compared to Matatila HPP during review period.

Low Capacity Utilisation

The average capacity utilisation in UPRVUNL varied from 33.09 to 48.65 per cent against the standard capacity utilisation factor of 65.68 per cent for the period 2005-10.

2.2.40 Capacity utilisation means the ratio of actual generation to possible generation during actual hours of operation. Based on national average PLF of 77.22 per cent, and plant availability at 85.05 per cent, the standard capacity utilisation factor works out to be 65.68 per cent for power plants. We observed that UPRVUNL average capacity utilisation increased from 33.09 to 48.65 per cent during review period and was far below the national average. The line graph depicting the capacity utilisation is given below:



The main reasons for the low utilisation of available capacity during 2005-10, as analysed by us were:

- Reduced capacity of old generating unit;
- Frequent shutdown due to excessive forced outages; and
- Delayed R&M.

The Management accepted our viewpoint.

Outages

2.2.41 Outages refer to the period for which the plant remained closed for attending planned/ forced maintenance. We observed that in UPRVUNL the forced outages remained more than the norm of 10 per cent fixed by CEA in all the five years ending 31 March 2010. Compliance of the CEA norms would have entailed availability of plant for additional 79291 operational hours with

^o Reserve hours means plant is ready for operation but due to non-availability of water, it could not be operated.

consequent generation of 12296 MU valuing ₹ 2308.42 crore during the period covered under review.

The Management stated that the hours of forced outages decreased during 2008-09 and 2009-10 as compared to 2007-08.

Auxiliary consumption of power

2.2.42 Energy consumed by power stations themselves for running their

Wanakbari Thermal Power Station of GSECL achieved the lowest auxiliary power consumption at 7.05 per cent during 2008-09.

(Source: Performance Review of Thermal Power Stations 2008-09 by CEA).

equipments and common services is called Auxiliary Consumption. UPERC allowed seven to 12 per cent for Anpara, Obra and Parichha TPSs of the power generated to be used as auxiliary consumption. We observed that the actual auxiliary consumption

The auxiliary consumption in UPRVUNL ranged between 7.61 and 19.15 per cent during 2005-10 against the UPERC norm of seven to 12 per cent.

of power stations ranged between 7.61 to 19.15 per cent during the period under review resulting in excess consumption of 1673.01 MU of electricity valuing ₹ 269.32 crore which could not be dispatched to the grid.

The Management stated that the main reason of excessive auxiliary consumption was old age of TPSs. However, we feel that excess auxiliary consumption could be reduced by timely overhauling and implementing R&M and life extension activities of old TPSs.

Repairs & Maintenance

2.2.43 To ensure long term sustainable levels of performance, it is important to adhere to periodic maintenance schedules. The efficiency and availability of equipment is dependent on the strict adherence to annual maintenance and equipment overhauling schedules. Non adherence to schedule carry a risk of the equipment consuming more coal, fuel oil and a higher risk of forced outages which necessitate undertaking R&M works. These factors lead to increase in the cost of power generation due to reduced availability of equipments which affect the total power generated.

We observed that annual maintenance of units of majority of TPS was not done on due dates. Against scheduled annual maintenance of 88 units, maintenance of only 43 units was carried out in time. We observed inordinate delays in Obra 'A' & 'B': 21 to 58 months, Parichha: 24 to 34 months, Panki: 19 to 22 months, Harduaganj: 17 to 20 months and Anpara 'A' & 'B': 13 to 20 months in various units. The delayed maintenance caused continuous deterioration in the condition of machines causing forced outages besides increased consumption of oil, coal and loss of generation of power as discussed in the input performance. A case of non adherence to capital overhauling schedule in Anpara 'B' is discussed below:

Delay in capital overhauling

Delay in capital overhauling caused tripping of the unit of Anpara 'B' project and resulted in extra expenditure of ₹ 33.94 crore on temporary restoration/capital overhauling besides loss of generation of 1194 MU.

2.2.44 In the unit No. 4 (500 MW) of Anpara 'B', installed in July 1993, the capital overhauling was to be carried out every 6 years. First capital overhauling of the unit was carried out in February/March 1999 and second capital overhauling was due in March 2005 which was not done on due date.

The unit No. 4 tripped on 28 September 2007 due to thrust bearing wear trip and turbine bearing vibration. The unit was restored/ synchronised on 28 November 2007 after removal of faults. Original equipment manufacturer in its inspection report (January 2008) stated that 1st stage Nozzle diaphragm had been deformed during the long operation without maintenance and deformed nozzle diaphragm was in contact to the IP and damaged 1st stage blades. During temporary restoration, damaged blades were removed and spare nozzle

diaphragm was modified and installed. It was also stated that the steam turbine would be on limited operation at maximum load of 85 *per cent* of rating load (425 MW) and recommended that in order to get original output of 500 MW, HIP rotor should be replaced with new one.

The unit operated at 425 MW for about two years (28 November 2007 to 20 October 2009). The unit was put under capital overhauling from 21 October 2009 which was completed on 11 December 2009. During this, the old HIP rotor was replaced with new HIP rotor costing ` 28.78 crore.

We noticed that the Company incurred expenditure of ` 5.16 crore for temporary restoration of unit from October 2007 to November 2007 and ` 28.78 crore on replacement of old rotor. This expenditure of ` 33.94 crore could have been avoided had the capital overhauling of unit been carried out on due date in March 2005 itself. The Company also suffered potential generation loss of 1194 MU in two years valued at ` 208.16 crore for 75 MW (500 – 425 MW).

The Management stated that shut down of the unit for 45 days for capital overhaul was denied by the State Government which led to delay in the overhauling of the unit.

Renovation & Modernisation

2.2.45 Renovation & Modernisation (R&M) and refurbishment activities involve identification of the problems of unit of TPS, preparation of techno economic viability reports, preparation of detailed project reports (DPR) to lay down benefits to be achieved from these works.

R&M activities are aimed at overcoming problems in operating units caused due to generic defects, design deficiency and ageing by re-equipping, modifying, augmenting them with latest technology/systems. R&M activities are undertaken in TPS operating at Plant Load Factor (PLF) of 40 *per cent* and above after assessing the performance and requirement of the units.

Refurbishment activities are aimed at extending economic life of the units by 15 to 20 years which have served for more than 20 years or operating at PLF below 40 *per cent*. Residual Life Assessment (RLA) studies are also conducted for all Refurbishment activities and in major R&M works. Power Finance Corporation (PFC) sanctions loan equal to 70 *per cent* of the estimated cost of the activity against guarantee furnished by the State Government for Refurbishment and R&M activities, rest of the fund requirement is met through internal sources or loan from State Government.

The major irregularities noticed in execution of R&M works are discussed below:

Refurbishment of 5X50 MW units of Obra ‘A’ TPS

2.2.46 An agreement was executed (February 2003) with Techno Prom Export (TPE), Russia for refurbishment of 5 units of 50 MW capacity each of Obra ‘A’ TPS for ` 479.50 crore. As per refurbishment work schedule unit No. 1 and 2 were to be completed by January 2005 and refurbishment of units 3, 4 and 5 was to be taken up after completion of work for unit 1 & 2.

TPE started the refurbishment of Unit no. 1 and 2 in July 2003. The Company handed over unit no. 3, 4 and 5 to TPE in September 2005 while the refurbishment work of unit No. 1 and 2 was still incomplete. We noticed that due to non completion of work of unit 1 and 2, the agreement was terminated (March 2008) and remaining work was got completed from other agencies at an expenditure of ` 12.83 crore. As per schedule, refurbishment of unit no. 1 and 2 was to be completed in January 2005 whereas it was completed in May

2009 and February 2009 respectively. Thus, units remained closed for four additional years and the Company suffered loss of potential generation. Unit No. 1 and 2 could not achieve targeted PLF of 80 *per cent* during 2009-10 and the actual average PLF was 71.51 *per cent* (unit No.1) and 69.18 *per cent* (unit No. 2). This has resulted in loss of generation of 81.52 MU valued at ` 13.53 crore.

Advance of ` 19.64 crore was given to the contractor before the requirement which remained blocked.

In the meantime, the Company paid an advance of ` 19.64 crore for unit No. 3, 4 and 5 to TPE, against which TPE supplied material worth ` 5.33 crore which is lying unused since January 2006. No work was even started by TPE on unit No. 3, 4 and 5. Subsequently, unit No. 3, 4 and 5 were deleted (September 2008) by CEA. Thus, the advance payment of ` 19.64 crore (` 14.31 crore as advance and ` 5.33 crore in material) made in contravention of the terms of agreement before completion of work of units No. 1 and 2, remained blocked.

The Management stated that unit 3,4 and 5 were handed over to TPE to speed up the work of refurbishment of these units before completion of unit 1 and 2 and also stated that material supplied against unit 3, 4 and 5 would be used as insurance spares for unit 1&2. However, the Company should not have purchased material for the units 3,4 & 5 as the work was to be undertaken after completion of work of units 1 & 2.

Poor planning of R&M works

2.2.47 The Management decided (December 2004) to carry out capital overhauling work for ` 29.72 crore for unit no. 6 (100 MW) of Obra 'A' TPS. Before the overhauling could be taken up, the unit went in forced shutdown in February 2005. The Company decided (April 2005) to carry out capital overhauling through R&M works for ` 52.47 crore with expected PLF of 60 *per cent*.

We noticed that R&M work was started in December 2005, however, orders for supply of equipments for ` 6.49 crore were placed after October 2006 and civil/erection work of ` 8.85 crore was also incomplete. This indicates that R&M work was carried out in an un-planned manner as no DPR was prepared to club different activities as a package and to specify time schedule of completion of work. The unit was put on commercial load in March 2008 after completion of the R&M work.

We further observed that after completion of R&M work, the unit was being run on old equipment, which led to non achievement of expected PLF, as the Company could not obtain necessary equipment/materials valuing ` 2.50 crore from BHEL. In 2009-10, the unit achieved PLF of 49.37 *per cent* against expected PLF of 60 *per cent*.

Thus, due to poor planning, the unit remained closed for 30 months (after allowing six months time for capital overhauling) resulting in generation loss of 714.13 MU valued at ` 101.83 crore.

The Management stated that after finalizing the scope, the scheme for R&M of the unit was proposed and the work was carried out in a planned manner. However, the desired results of R&M could not be achieved.

Delay in refurbishment of 5x200 MW units of Obra 'B' TPS

2.2.48 The Company awarded (May 2006) the refurbishment work of 5X200 MW (units 9 to 13) to BHEL at a cost of ` 1175 crore with completion period of 30 months and released ` 117.5 crore as advance on 20 June 2006 to BHEL which was considered as the date of start of refurbishment work. The Company paid a sum of ` 752.89 crore (including advance of ` 117.5 crore)

Payment to BHEL against supply of material for refurbishment work was made before the requirement resulting in blockade of funds of ₹ 580.82 crore.

during June 2006 to January 2010 on account of supply of material for all the 5 units but till October 2008 no unit was taken up for refurbishment work. The unit no.9 was shut down on 2 November 2008 and handed over to BHEL. Accordingly, the refurbishment work of unit no. 9 was to be completed by June 2009. It has not been completed till April 2010.

We noticed that the supply of material was not linked with shut down schedule of units which resulted in blockade of funds of ₹ 580.82 crore as the unit no.9 (being the first taken up for R&M) required material of ₹ 172.07 crore only. Further, warranty period of material (24 months) has also expired while work had not commenced on remaining units. This indicated lack of planning as supply of material was not linked with shut down of each unit. Further, the Company suffered loss of generation of 381.456 MU valued at ₹ 80.11 crore due to delay of 10 months in completion of refurbishment work of unit no. 9.

The Management stated that as per the contract agreement, work was to be completed in 30 months i.e. December 2008 and therefore, supply was made by BHEL. However, refurbishment work of only unit 9 was started in November 2008 and work of refurbishment of other units had not been taken up so far, whereas BHEL supplied material for all the units. This indicated that due care was not taken to safeguard the financial interest of the Company to link supply of material with shut down schedule of each unit in the contract agreement.

Delayed execution of R&M of 3X210 MW units (Anpara ‘A’ TPS)

2.2.49 CEA approved (April 2004) the R&M scheme for 3X210 MW units of Anpara ‘A’ TPS for ₹ 55.39 crore. As per scheme, 47 activities were to be completed by June 2005. After R&M it was expected that the PLF would improve from present annual average of 73.17 per cent to 79 per cent, outage of the plant would be minimised and stability improved.

Till 31 March 2010, the R&M work of 29 activities were completed and work on 18 activities were partially executed and the Company incurred expenditure of ₹ 46.27 crore on these activities. The Company also incurred expenditure of ₹ 16 crore on an activity (Repair, rewinding of 3X210 MW generator stator with insulation) which was not included in the R&M scheme approved by CEA.

Due to non-completion of R&M work of Anpara “A” TPS, units operated at PLF lower than the norm resulting in loss of 681.57 MU valued at ₹ 88.57 crore.

We observed that due to non-completion of R&M work within scheduled time frame of June 2005, the units operated at average PLF of 74.51 per cent (2005-06), 76.97 per cent (2006-07) and 73.17 per cent (2007-08) against expected PLF of 79 per cent resulting in loss of generation of 681.57 MU valued at ₹ 88.57 crore.

The Management stated that expenditure on additional activity was technically essential and as total cost of scheme did not exceed the sanctioned amount, the approval of CEA was not necessary.

Operation & Maintenance

2.2.50 The operation and maintenance (O&M) cost includes expenditure on the employees, repair & maintenance including stores and consumables, consumption of capital spares not part of capital cost, security expenses, administrative expenses etc. of the generating stations besides corporate expenses apportioned to each generating stations but excludes expenditure on fuel.

The O&M norms fixed by UPERC and actual expenditure incurred thereagainst during 2005-10 is given below:

(₹ per MW)

Year	Thermal power stations (up to 250 MW)		Thermal power stations (500 MW & above)		Hydro power stations	
	As per norm	Actual	As per norm	Actual	As per norms	Actual
2005-06	10.82	14.84	9.73	5.04	5.05	5.46
2006-07	11.25	16.40	10.12	8.03	6.57	6.36
2007-08	11.70	23.22	10.52	7.36	6.84	7.22
2008-09	12.29	23.95	11.05	8.96	7.43	8.91
2009-10	18.20	22.72	13.00	9.84	8.17	10.55

The O&M expenditure in respect of power stations were higher by ₹ 1129.46 crore in UPRVUNL and ₹ 23.30 crore in UPJVNL than the norms fixed by the UPERC.

It is observed from the above table that O&M expenses were higher than the norms fixed by UPERC in respect of TPSs having capacity up to 250 MW whereas actual expenditure was well within norm in respect of TPSs of 500 MW and above during 2005-10. In respect of hydro power stations, O&M expenses were also higher than the norms except during 2006-07. Consequently, expenses amounting to ₹ 1152.76 crore* (UPRVUNL: ₹ 1129.46 crore, UPJVNL: ₹ 23.30 crore) incurred over and above the norm during the review period, added to the loss of the two companies, as this amount was not considered by UPERC in tariff fixation.

The Management of UPRVUNL stated that they are making efforts for improving the performance of its plants and reduction of O&M cost per MW. It was further stated that true-up petition would be filed with UPERC.

Financial Management

2.2.51 Efficient fund management is the need of the hour in any organisation. This also serves as a tool for decision making, for optimum utilisation of available resources and borrowings at favourable terms at appropriate time.

The power sector companies should, therefore, streamline their systems and procedures to ensure that:

- Funds are not invested in idle inventory,
- Outstanding advances are adjusted/recovered promptly,
- Funds are not borrowed in advance of actual need, and
- Swapping high cost debt with low cost debt is availed expeditiously.

The main sources of funds were realisations from sale of power, loans from State Government/Financial Institutions (FI), etc. These funds were mainly utilised to meet payment of Fuel purchase bills, debt servicing, employee and administrative costs, and system improvement works of capital and revenue nature.

In absence of availability of audited financial statements for 2009-10, the details of cash inflow and outflow of UPRVUNL and UPJVNL for the four years 2005-06 to 2008-09 are given below:

(₹ in crore)

Sl. No.	Particulars	2005-06	2006-07	2007-08	2008-09
1	2	3	4	5	6
	UPRVUNL				
	Cash Inflows				
1.	Net Profit/(loss)	21.11	7.47	(88.26)	(407.22)
2.	Add: adjustments	423.48	511.61	553.42	630.93
3.	Operating Activities	98.80	194.73	488.66	334.58
4.	Investing Activities	1.18	81.82	23.58	11.64
5.	Financing Activities	500.55	926.42	2266.84	2385.79
	Total	1045.12	1722.05	3244.24	2955.72
	Cash Outflows				
6.	Operating Activities	424.69	528.07	971.17	962.18
7.	Investing Activities	436.04	855.59	1480.97	1330.09
8.	Financing Activities	145.88	267.81	748.25	580.70
	Total	1006.61	1651.47	3200.39	2872.97

* Worked out on the basis of actual expenditure incurred by the Company on O & M with reference to the norms.

1	2	3	4	5	6
	Net increase / (decrease) in cash and cash equivalents	38.51	70.58	43.85	82.75
	UPJVNL				
	Cash Inflows				
1.	Net Profit/(loss)	(44.96)	(72.79)	1.93	(4.39)
2.	Add: adjustments	76.04	34.10	34.17	32.47
3.	Operating Activities	30.71	71.56	-	0.53
4.	Investing Activities	-	21.99	-	-
5.	Financing Activities	182.11	31.93	23.77	24.77
	Total	243.90	86.79	59.87	53.38
	Cash Outflows				
6.	Operating Activities	129.46	11.59	62.22	52.58
7.	Investing Activities	9.24	23.67	2.85	0.99
8.	Financing Activities	63.87	22.63	22.77	22.77
	Total	202.57	57.89	87.84	76.34
	Net increase / (decrease) in cash and cash equivalents	41.33	28.90	(27.97)	(22.96)

It could be observed from the above table that in UPRVUNL cash and cash equivalents increased during 2005-06 to 2008-09 and in UPJVNL it decreased in 2007-08 and 2008-09. In UPRVUNL, the cash crunch was overcome mainly by increased borrowings in the form of loans from financial institutions. Main reasons for cash crunch identified by us were poor/ delays in recovery of power supply bills, heavy interest on loans, locking up of funds in inventory not required immediately and heavy capital expenditure without adequate returns. We observed that dependence of UPRVUNL on borrowed funds increased during review period as borrowings increased from ` 3115.29 crore in 2005-06 to ` 5516.15 crore as at the end of 2009-10. This entailed interest burden of ` 1750 crore during review period ultimately increasing the operating cost of UPRVUNL. Therefore, there is an urgent need to optimise internal resource generation by enhancing the PLF to national level, reducing O&M cost, forced outages, auxiliary consumption and vigorous pursuance of outstanding dues from UPPCL relating to recovery of energy bills. This would have enabled increased availability of funds to the extent of ` 3362.29 crore.

Dependence of UPRVUNL on borrowed funds increased from ` 3115.29 crore in 2005-06 to ` 5516.15 crore in 2009-10.

On the other hand, the Company could not utilise the available funds for the intended purposes and kept the funds in current account/ short term deposits from time to time. Some instances, as noticed by us, are given below by way of illustration.

- UPPCL issued Promissory note of ` 909.57 crore on 31 March 2003 to securitise the outstanding dues of UPRVUNL which was redeemable, after end of six years, in 10 equal annual installment. The payment of annual installment of ` 90.96 crore each due on 31 March 2009 and 31 March 2010, respectively has not been received so far (June 2010).
- The UPRVUNL could not draw loan from PFC, sanctioned for new project/R&M activities, as per quarterly schedule and paid ` 91.16 lakh during 2005-06 to 2009-10 as commitment charges on account of non-drawal of committed loan from PFC. However, the Company did not reschedule the drawal of loan as stipulated in the agreement with PFC.

The Management stated that due to slow progress by BHEL the drawl commitments could not be fulfilled and the matter is being taken up with BHEL to make good the loss on account of commitment charges paid to PFC.

Claims and Dues

2.2.52 The UPRVUNL and UPJVNL sell energy to U.P. Power Corporation Ltd. (UPPCL) at the rates specified by UPERC from time to time. UPERC fixed the tariff rates after considering various economic and other factors. Generally, sale price does not cover the total input costs. While on one hand differential amount is absorbed by the UPRVUNL and UPJVNL, on the other hand dues from UPPCL were also not regularly realised.

The table below gives the details of energy bills on UPPCL and recoveries there against made by UPRVUNL and UPJVNL for the review period.

(` in crore)

Sl. No.	Details	2005-06	2006-07	2007-08	2008-09	2009-10 (Provisional)
1	2	3	4	5	6	7
	UPRVUNL					
1.	Opening balance	2028.62	2340.23	2817.92	3454.29	3869.36
2.	Energy sold to UPPCL	2893.37	3403.82	3836.15	4130.36	4447.04
3.	Amount received	2581.76	2926.13	3199.78	3715.29	4226.46
4.	Closing balance [®]	2340.23	2817.92	3454.29	3869.36	4089.94
	UPJVNL					
1.	Opening balance	184.55	201.37	152.52	178.86	209.75
2.	Energy sold to UPPCL	46.82	80.92	66.83	74.99	49.07
3.	Amount received	30.00	30.00	30.00	30.00	38.50
4.	Debts written off	-	99.77	10.49	14.10	8.08
5	Closing balance	201.37	152.52	178.86	209.75	212.24

[®] It includes Promissory Note of ` 909.57 crore issued by UPPCL.

Irregularities noticed in realisation of energy bills and lack of pursuance of energy bills are discussed below:

Due to deletion of clause of imposition of late payment surcharge in supplementary power purchase agreement, UPRVUNL could not claim late payment surcharge of ` 2928.80 crore from UPPCL.

We noticed that the UPRVUNL sells the electricity generated to UPPCL as per provisions of Power Purchase Agreement (PPA) approved by UPERC in its Tariff Order of July 2002. As per clause 10(ii) of PPA, any payment beyond the due date shall render UPPCL liable for payment of a default interest of 1.5 *per cent* per month. In August 2003, the Companies executed a supplementary PPA deleting the clause-10 without approval of UPERC which is the competent authority to make amendment in the PPA or Tariff Order, as per provisions of Section 64 of the Electricity Act, 2003. Thus, due to deletion of penalty clause, the Company was unable to claim Late Payment Surcharge and suffered loss of ` 2928.80 crore during 2005-10. Further, UPPCL had not made payment on due dates, which resulted in increase of dues from ` 2028.62 crore (March 2005) to ` 4089.94 crore (March 2010). This has also forced the Company to take interest bearing loans for financing its expansion activities.

The Management stated that the State Government had issued instruction (January 2005) for deletion of LPS clause from the PPA. However, any change in approved PPA could be made by UPERC only.

UPJVNL wrote off dues of ` 132.44 crore outstanding for more than five years against UPPCL to avoid tax liability.

The UPJVNL sells electricity generated to UPPCL as per provisions of PPA approved by UPERC in its Tariff Order of December 2000. As per provisions of clause 11 (ii) of PPA, any payment beyond due date shall render UPPCL liable for payment of default interest at the rate of 2 *per cent* per month. We noticed that BOD of the Company adopted (February 2009) a policy of write off of debtors outstanding beyond five years as bad debts in Accounts to avoid tax liability. Accordingly, 50 *per cent* of dues outstanding against UPPCL for more than five years amounting to ` 132.44 crore were written off as bad debts in Accounts during 2006-07 to 2009-10. Though, UPPCL was paying a fixed amount against energy bills raised by the Company, the writing off of dues without taking any action for recovery of dues was irregular and unjustified and Board's decision was only to evade Income Tax liability.

The Management stated that receivable from UPPCL had been written off on the basis of an estimate that at best how much amount was recoverable. Since, UPPCL was regularly paying the amount against energy bills and had never showed its inability to pay the dues, writing off of dues was not justified.

Tariff Fixation

2.2.53 The UPRVUNL and UPJVNL are required to file the application for approval of Generation Tariff for each year 120 days before the commencement of the respective year or such other date as may be directed by the UPERC. The Commission accepts the application filed with such modifications/conditions as may be deemed just and appropriate and after considering all suggestions and objections from public and other stakeholders, issue an order containing targets for controllable items and the generation tariffs for the year within 120 days of the receipt of the application.

We noticed that UPRVUNL filed Annual Revenue Requirement (ARR) application with UPERC for 2005-06 to 2009-10 after delay of 6 to 9 months and the UPERC approved generation tariff for 2005-06 to 2008-09 after delay of 5 to 17 months.

It was also noticed that UPJVNL filed Annual Revenue Requirement (ARR) application with UPERC for 2005-06 to 2009-10 after delay of 7 to 22 months and the UPERC approved generation tariff for 2005-06 to 2008-09 after delay of 6 to 22 months.

The Commission sets performance targets for each year of the Control Period for the items or parameters that are deemed to be “controllable” and which include:

- (a) Excess coal consumption;
- (b) Outages;
- (c) Auxiliary Energy Consumption;
- (d) Operation and Maintenance Expenses;

Any financial loss on account of underperformance on targets for parameters specified in Clause (a) to (d) is not recoverable through tariffs.

We noticed that the commission did not allow expenditure amounting to ₹ 4789.71 crore during review period on account of above mentioned items, as discussed in paragraphs 2.2.34, 2.2.41, 2.2.42 and 2.2.50 adding to the loss of UPRVUNL which was avoidable.

The Management stated that the Company could not achieve norms of UPERC as all TPSs are more than 25 years old except 2x250 MW, Parichha and 2x500 MW, Anpara ‘B’ TPSs. However, UPERC fixed the norms after considering all the factors of TPSs.

Environment Issues

2.2.54 In order to minimise the adverse impact on the environment, the GOI had enacted various Acts and Statutes. At the State level, Uttar Pradesh Pollution Control Board (UPPCB) is the regulating agency to ensure compliance with the provisions of these Acts and Statutes. Ministry of Environment and Forests (MoE&F), GOI and Central Pollution Control Board (CPCB) are also vested with powers under various Statutes. The UPRVUNL has an environmental wing at the corporate office.

Our scrutiny relating to compliance with the provisions of various Acts in this regard revealed the following:

Air Pollution

2.2.55 Coal ash, being a fine particulate matter, is a pollutant under certain conditions when it is airborne and its concentration in a given volume of atmosphere is high. Control of dust levels (Suspended Particulate Matters – SPM) in flue gas is an important responsibility of thermal power stations. Electrostatic Precipitator (ESP) is used to reduce dust concentration in flue gases. Control of dust level is dependant on effective and efficient functioning of ESPs.

Non-achievement of specified SPM levels even after up-gradation

2.2.56 ESPs installed at Anpara, Obra, Parichha, Harduaganj and Panki were designed to achieve SPM level ranging from 100 mg/NM³ to 300 mg/NM³. In order to reduce the SPM level, the UPRVUNL placed order (August to October 2006) on BHEL for upgradation of existing ESPs/installing new ESPs in Parichha, Obra and Harduaganj TPSs. The work of installation of ESPs was to be completed within eight months from the date of handing over of civil foundations.

The objective of reduction of SPM level could not be achieved due to non-completion of work of upgradation/installation of ESPs.

We noticed that the UPRVUNL incurred an expenditure of ` 233.98 crore on procurement of material for ESPs so far (March 2010) in respect of nine units. However, up-gradation/installation of ESPs could not be started (September 2010) in eight units except in unit No. 9 of Obra TPS due to non shut down of units. Thus, the desired level of reduction in SPM levels in these eight units could not be achieved and expenditure of ` 209.68 crore remained unproductive so far.

The Management stated that efforts are being made to install ESPs in remaining units.

Installation of on-line monitoring equipment

2.2.57 As per the provisions of the Environment (Protection) Act, 1986, TPSs should provide on-line monitoring systems to record SPM levels. We noticed that on line monitoring system was not installed/ operative in any TPSs of UPRVUNL.

The Management stated that online monitoring system has been installed in Parichha Extension and Anpara'B'. In remaining TPSs, online monitoring systems are proposed to be installed. However, online monitoring system of Parichha Extension was not working.

Ash disposal

2.2.58 Annual generation of fly ash from five TPSs of UPRVUNL was around 54.91 lakh MT to 60.88 lakh MT. MoE&F issued a notification (September 1999) which provided that every thermal plant should supply fly ash to building material manufacturing units free of cost at least for 10 years. Our audit scrutiny of generation and disposal of fly ash for the years under review revealed that against the total fly ash of 290.49 lakh MT generated in the UPRVUNL, only 51.90 lakh MT was disposed of/ utilised. This suggests that concerted efforts were not made to improve the utilisation of ash.

The Management stated that efforts are being made to increase the utilisation of fly ash.

Noise Pollution

2.2.59 Noise Pollution (Regulation and Control) Rules, 2000 aim to regulate and control noise. For noise emission from equipment be controlled at source, adequate silencing equipment should be provided at various noise sources and a green belt should be developed around the plant area to diffuse noise dispersion. The TPSs are required to record sound levels in all the areas stipulated in the rules referred to above.

Our scrutiny revealed that Parichha and Obra TPSs did not record noise levels at all. Further, noise levels recorded by Panki, Anpara and Harduaganj TPSs during day time in industrial areas for a period of five years up to 2009-10 ranged from 83.4 db to 114.6 db against the prescribed level of 75 db.

The Management stated that measures are being taken to limit the noise level to specified norm.

Water pollution

2.2.60 The waste water of the power plant is the source of water pollution. As per the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the TPSs is required to obtain the consent of UPPCB which *inter-alia* contains the conditions and stipulations for water pollution to be complied with by the TPSs.

During 2005-06, 2007-08 and 2008-09 the total suspended solids in effluents from Parichha TPS exceeded the standard fixed by UPPCB.

As per the norms prescribed by UPPCB, total suspended solids (TSS) in effluents from the TPSs should not exceed 100 mg/l. We noticed that TSS in effluent discharges from the following TPSs exceeded the standards for the years mentioned against it:

Sl. No.	Year	Name of TPS	Norms (mg/l)	Actual (mg/l)
1.	2005-06	Parichha	100	276.0
2.	2007-08	Parichha	100	212.7
3.	2007-08	Panki	100	145.0
4.	2008-09	Parichha	100	236.2

The main reasons for exceeding TSS standards were absence of sedimentation tanks and ineffective functioning of effluent treatment plants. As both the reasons are controllable, effective and time bound steps could have avoided the non-repairable damage caused to the water bodies.

The Management stated that installation of ash water re-circulation system was under process for Panki TPS and effluent treatment plant is proposed for construction at Parichha TPS.

Monitoring by top management

MIS data and monitoring of service parameters

2.2.61 UPRVUNL plays an important role in the State economy. For such a giant organisation to succeed in operating economically, efficiently and effectively, there should be documented management systems of operations, service standards and targets. Further, there has to be a Management Information System (MIS) to report on achievement of targets and norms. The achievements need to be reviewed to address deficiencies and also to set targets for subsequent years. The targets should generally be such that the achievement of which would make an organisation self-reliant. Audit review of the system existing in this regard revealed the following.

The status of generation, auxiliary consumption, fuel consumption etc. was being reported daily (shift wise) by each TPS to the headquarters of the Company and this daily information was being compiled for monthly reports. The Company submitted these reports to MOP/BPE/State Government regularly. Further, the Company also placed before BOD a quarterly report on key parameters viz. generation, coal/oil/auxiliary consumption etc. We noticed that though MIS system exists in the company but it is not free from errors and omissions as on line system has not been installed so far and all the information received from the TPSs is being collected manually and through Fax which involve a lot of time and manpower in compilation of information/data and therefore chances for errors and omissions can not be ruled out.

The Management stated that online system would be installed under the project “PRAGATI”.

Conclusion

- Construction activities taken up by UPRVUNL and UPJVNL for new thermal and hydro power projects were far behind the scheduled timeframe due to poor planning and monitoring.
- The performance of UPRVUNL and UPJVNL was not up to the desired level due to lower operational efficiency and short fall in generation with reference to targets fixed by CEA/ UPERC. This led to increase in cost of generation.
- Low Plant Availability and Low Plant Load Factor also contributed towards loss of generation.
- UPRVUNL failed to control outages and excess auxiliary consumption in both old and new units.
- Failure to follow the prescribed preventive maintenance schedule and inefficient fuel management marred the performance of UPRVUNL, resulting in non-achievement of desired level of generation.
- Objective to increase power generation to meet the growing demand of electricity has not been fulfilled.

Recommendations

UPRVUNL/UPJVNL may:

- adequately plan for new projects and obtain necessary clearances before taking up construction so as to avoid time and cost overrun;
- take up renovation and modernisations/ life extension programs on schedule to ensure optimum generation from existing units;
- take up measures to check loss of coal in transit, delay in unloading rakes and reduce consumption of coal;
- endeavour to increase plant load factor by minimising forced outages, increasing capacity utilisation and reducing time in repair and maintenance;
- take measures to control auxiliary consumption; and
- make efforts for timely realisation of dues from UPPCL to improve liquidity.

2.3 IT Support system of Revenue Billing of Lucknow Electricity Supply Administration in Madhyanchal Vidyut Vitran Nigam Limited

Executive summary

The Government of Uttar Pradesh (GoUP) trifurcated (January 2000) the activities of the erstwhile Uttar Pradesh State Electricity Board into three Government Companies. While it assigned the function of power generation to two Government Companies viz., thermal power generation to Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited and hydro-electric power generation to Uttar Pradesh Jal Vidyut Nigam Limited, it assigned transmission and distribution functions to Uttar Pradesh Power Corporation Limited (UPPCL). The GoUP reallocated the functions of UPPCL and assigned (12 August 2003) the distribution function to four newly formed subsidiary distribution Companies (Discoms) of UPPCL viz. Purvanchal Vidyut Vitaran Nigam Limited, Varanasi, Pashchimanchal Vidyut Vitaran Nigam Limited, Meerut, Madhyanchal Vidyut Vitaran Nigam Limited, Lucknow and Dakhinanchal Vidyut Vitaran Nigam Limited, Agra. The present review covers the Lucknow Electricity Supply Administration (LESA) which is one of the four zones of the Mandhyanchal Vidyut Vitran Nigam Limited (Company) and is responsible for supply and maintenance of electrical energy to its 6.30 lakh consumers in the urban area of the Lucknow. The Company signed a MOU on 8 August 2006 with e-Suvidha handing over the complete billing system of LESA including 27 Billing Centres (front end) for maintenance of front end and back end.

Lack of documented IT Policy

Though the Company has adopted the online billing system since 2000, it did not formulate and document a formal IT policy and a long/medium term IT strategy, incorporating the time frame, key performance indicators, cost benefit analysis for developing its own software, integration of various systems and safety measures for data. The hand held billing agencies transfer billed data through CD, pen drive or through e-mail for

uploading in the central server. The system of uploading of billed data is not safe as data is exposed.

System design deficiency

System was not designed in the billing software to take care of provisions of billings in case meter ceases to records consumption and was deficient in case of billing on the basis of units consumed where meter is operative resulting in short assessment of ` 3.47 crore. The software designed and used did not automatically provide alert in the cases where the power factor was below the specified factor of 0.75.

The software designed by the outsourced agencies include an irregular application control wherein the billing of 800 units only is done even in case the consumption of any consumer exceeds 800 units per kW in a month which led to short billing of energy charges of ` 4.16 crore and electricity duty of ` 10.83 lakh.

Mapping of business rules

There were discrepancies in mapping of various provisions of tariff. Interest on security deposit was not credited/ allowed in 354754 bills resulting in accumulated liability of ` 1.03 crore. The special tariff for air conditioning loads was not applied in 65676 bills resulting in short assessment of ` 3.98 crore. The divisions did not issue notice to the consumers to get access to their meter and also did not levy penalty of ` 41.09 lakh.

Input controls

Input controls were deficient as various types of billing were not done as per the provisions of tariff orders resulting in short assessment of energy charges of ` 6.40 crore and electricity duty of ` 0.59 crore in case of life line consumers, short assessment/recovery of energy charges of ` 6.58 crore and electricity duty of ` 0.33 crore in respect of other than life line consumers and short assessment of energy charges of ` 5.16 lakh in case of non-domestic consumers. The consumers were classified as connected through rural feeder instead of categorizing under urban schedule which resulted in

short assessment of energy charges and electricity duty of ₹ 24.39 lakh.

Validation checks

Validation checks were either not there or were deficient as 2.56 per cent of operative consumers had duplicate connection numbers and 4.60 per cent of operative consumers had same meter number. The databank of On-line Billing (OLB) contained unrealistic data and/or incomplete details in 21.53 per cent of the cases.

Compliance of terms and conditions of agreements

In term of the agreement with the e-Suvidha, the latter was responsible for maintaining the OLB system and upgradation/migration to the billing application with new hardware. The upgradation work was delayed by e-suvidha and could not be executed up to February 2010. The system faced problems due to utilisation of 99 per cent of storage up to November 2007. The OLB system was deleting the logs created by the system to make space in the server.

There was no system to obtain the rates of the sister units which resulted in award of work at higher rate and excess payment of ₹ 49.96 lakh to outsourced billing agencies. Payment of ₹ 69.55 lakh to the billing agencies on account of meter reading of defective meter was made despite the fact that the bills of these consumers were generated by the OLB system at the provisional/ assessed units. The Company paid to billing agency for 4764394 bills of healthy category consumers against 4498385 actual bills and 1037288 bills of defective category consumers against 913204 actual bills resulting in excess payment of ₹ 23.11 lakh to the billing agencies.

Monitoring Mechanism

Monitoring of OLB system was inadequate and ineffective because the Company has not recruited any IT expert nor has it formed a committee for monitoring the online billing system. It did not develop a system for periodical inspection of infrastructure of the outsourced agencies. The prescribed MIS reports could not be generated due to inadequacy of the OLB system and the OLB division or the billing divisions did not have access to the databank as the level of authority for access to the

databank has not been prescribed by the competent authority. The GIS mapping work, intended to ensure efficient and effective monitoring, was done by the agencies and a payment of ₹ 75.01 lakh was made on this account but the mapping could not be used as there was no integration between billing databank and GIS mapping data bank.

Lack of disaster recovery and business continuity plan

The Company did not have a disaster recovery and business continuity plan outlining the action to be taken immediately after a disaster and to ensure that the data processing operation could be acquired immediately.

Conclusion and Recommendations

The Company did not formulate and document a formal IT Policy and a long/medium term IT strategy and the system of uploading of billed data is not safe as transfer of data was being made through CD, pen drive or through e-mail. On-line billing software was not designed to take care of various provisions of billings and contained irregular application control. Input control was deficient as various types of billing were not done as per the provisions of tariff. Validation checks were either not there or were deficient. Monitoring of OLB system was inadequate and ineffective. It did not have a disaster recovery and business continuity plan. The GIS mapping work, intended for effective monitoring could not be used due to lack of integration of data.

The Company should formulate and document an IT policy, formulate IT security policy and business continuity plan to prevent changes/modifications in database without authorisation, ensure compliance of tariff provisions issued by UPERC and its application in the billing software/database used by outsource billing agencies, ensure linkage of GIS software with the billing data bank to have finer details of the network and connected consumers, formulate disaster recovery plan for immediate operation of data processing at the time of disaster and GIS mapping should be periodically updated.

Introduction

2.3.1 The Government of Uttar Pradesh (GoUP) trifurcated (January 2000) the activities of the erstwhile Uttar Pradesh State Electricity Board into three Government Companies. While it assigned the function of power generation to two Government Companies viz., thermal power generation to Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited and hydro-electric power generation to Uttar Pradesh Jal Vidyut Nigam Limited, it assigned transmission and distribution functions to Uttar Pradesh Power Corporation Limited (UPPCL). The GoUP reallocated the functions of UPPCL and assigned (12 August 2003) the distribution function to four newly formed subsidiary distribution Companies of UPPCL viz. Purvanchal Vidyut Vitaran Nigam Limited, Varanasi, Pashchimanchal Vidyut Vitaran Nigam Limited Meerut, Madhyanchal Vidyut Vitaran Nigam Limited, Lucknow and Dakhinanchal Vidyut Vitaran Nigam Limited, Agra. The Lucknow Electricity Supply Administration (LESA) is one of the four zones of the Mandhyanchal Vidyut Vitran Nigam Limited (Company) and is responsible for supply and maintenance of electrical energy in the urban area of the Lucknow. The distribution of electricity to 6.30 lakh consumers is done by LESA through 18 divisional offices. On the basis of supply type the consumers are divided in two categories i.e. High tension (HT) supply consumers and Low tension (LT) supply consumers. The billing of high tension consumers is done through the Energy Billing System (EBS) developed by the Price Waterhouse Coopers (PWC). The billing of the LT consumers has been outsourced to three agencies i.e. KLG Systel Pvt. Ltd, Gurgaon, Sai Computers, Meerut and Computronics India, Lucknow which prepare energy bills by taking meter reading manually and feeding the energy consumption in hand held billing machines. The data of the hand held billing machine is uploaded to the main server maintained by e-Suvidha, registered as a society of IT Department of the State Government under Societies Act. CMS Limited is a technical partner of e-Suvidha. The realisation of energy bills is primarily done by the e-Suvidha at its 35 e-Suvidha Centres.

Out of 18 divisions, the billing of 16 divisions with 5.20 lakh consumers is done through online billing (OLB) system and in two divisions billing of 1.10 lakh consumers is done under the International Business Machine (IBM) pattern through cash stubs sent to the Computer Billing Service Centers (CBSC). In Bakshi Ka Talab division a part of the consumer is billed in OLB system and remaining consumers are billed under IBM pattern.

The LESA started the online billing system in the year 2000 at a cost of ` 3.20 crore with a view to bring the consumers of Lucknow urban area under ambit of uniform billing. The system was outsourced to CMC Limited for maintenance of back-end and the front-end was outsourced to the Computronics India Ltd. The system had two sun servers running in cluster environment with central router, switches and modem. The database was set-up on oracle 8i platform and the billing application setup developed on Versata Veritas. The Company signed a MOU on 8 August 2006 with e-Suvidha handing over the complete billing system of LESA including 27 Billing Centres (front end) for maintenance of front end and backend at a payment of ` 5.35 per transaction (on realisation of bill). The e-Suvidha took online billing system from CMC Limited on as is where is basis and started billing by appointing CMS Limited and Ram Informatics Limited as technical partners. The OLB Division is functioning for monitoring purposes.

Three divisions (CESS-I, CESS-II and Bakshi Ka Talab) of LESA were being billed through IBM pattern where inputs were sent manually to the agency for bill generation and posting of cash stubs through Computer Billing Service Centre, Lucknow (CBSC).

Organisational Set-up

2.3.2 The LESA Zone is headed by the General Manager (GM) who is chief Executive of the Zone. The GM is assisted by five Distribution Circles headed by the Superintending Engineers (SEs) and an Online billing division (OLB) under charge of an Executive Engineer (EE). The 18 distribution divisions are headed by the EEs. The GM of the LESA Zone is directly reported to Managing Director, MVVNL. The overall Management of the LESA zone is vested in a Board of Directors and Managing Director of the Company.

Scope of the Audit

2.3.3 For examination of the online billing system of revenue of LESA, databank of online billing system for the period May 2008 to March 2010 of all the 16 divisions was examined by us in audit. We examined billing of IBM pattern consumers for the period April 2009 to March 2010. We also examined the manual records of five OLB divisions and one IBM pattern consumers division to confirm audit findings on the analysis of the databank.

Audit objectives

2.3.4 The audit objectives were to assess whether:

- the Company had adequate IT infrastructure, documented strategy and IT plan and adequate key controls and monitoring mechanism to derive benefits of IT support system to achieve intended objectives;
- the IT controls in the billing application were capable in accuracy, efficiency and effectiveness of the process of billing;
- the Company has adequate monitoring mechanism to ensure compliance of applicable tariff orders, codal provisions, laid down procedures and regulations issued by UPERC;
- the billing done by the outsourced agencies is economical and effective; and
- business continuity and disaster recovery plan was in place to save the activity of billing from the risk of disruption.

Audit Criteria

2.3.5 The various provisions/conditions were examined:

- The rate schedule approved by the Uttar Pradesh Electricity Regulatory Commission for billing;
- Uttar Pradesh Electricity Supply code, 2005;
- Indian Electricity Act, 2003;
- Agreements executed between outsourced billing agencies and e-Suvidha;
- Circulars and orders issued by the Company with regard to billing system.

Audit methodology

2.3.6 The methodology adopted by us was as under:

- The Management was made aware of the audit objectives, scope and methodology of the audit in the entry conference held in May 2010;
- The division-wise analysis of the IT billing was done from the databank made available by the OLB division through Interactive Data Extraction and Analysis (IDEA) 2001;

- Audit findings of the six divisions¹ were cross checked with the manual records made available to audit to confirm audit findings;
- The audit findings were issued to all the 18 divisions for their comments/replies. The comments/replies submitted by the divisions/Management were duly considered in finalisation of the review.
- An exit conference with the Management was held on 28 September 2010.

Audit Constraints

2.3.7 The databank of the HT consumers was not made available to us. The GM, LESA stated (24 June 2010) that since the MRI report of the meters installed at the consumer's premises do not support the billing software designed by the online billing system the databank of HT consumers is not available. The Computronics India Limited, outsourced for the billing work of the consumers under IBM Pattern, was not maintaining the backup data and therefore, could not provide the data for the period from May 2008 to March 2009. Records relating to revenue arrears of ` 1.10 crore dropped out from the databank of online billing system pertaining to 668 consumers during 2004 to 2008, were not made available to us. In absence of these records, we could not evaluate the system lapse that led to drop out of arrears. The uploaded data for the period May 2008 to March 2010 was also not made available.

Similarly, the key documents like software user manual, technical manual and data dictionary, though called for, were not made available to audit. In the absence of these documents, we were not in a position to assess the intended benefits to the users and inter relationship among various data tables.

Audit Findings

2.3.8 Our audit findings as a result of performance review are discussed in the succeeding paragraphs:

General Controls

Lack of documented IT Policy

2.3.9 A well formulated and documented IT policy is essential to assess the time frame, key performance indicators and cost benefit analysis for developing and integrating various functions. Though the Company has adopted the online billing system since 2000, it did not formulate and document a formal IT policy and a long term/medium term IT strategy, incorporating the time frame, key performance indicators and cost benefit analysis for developing its own software and integration of various systems (GIS data, hand held machine data and any separate data prepared due to change of tariff etc.) and safety measures for data.

We observed in this regard that:

- No plans/steering committee with clear role and responsibilities existed to monitor the development/operation of software by outsourced agencies for each functional areas in a systematic manner as well as for ensuring correct billing against the consumers.
- The billing agencies were required to maintain adequate infrastructure viz. handheld machines, computers, servers, printers and qualified staff for efficient billing. During physical verification (July 2010) of inventory of the agencies conducted jointly by us and the Management, it was noticed that the outsourced billing agencies did not maintain a control record showing the details of hardware and manpower.

The Company did not formulate and document an IT Policy and a long/medium term IT Strategy.

¹ Indira Nagar, Gomti Nagar, Aishbagh, Alambagh, Rahim Nagar and CESS-1.

- The hand held billing agencies transfer billed data through CD, pen drive or through e-mail for uploading in the central server. The system of uploading of billed data is not safe as data is exposed.
- The meter readers note down meter reading at the premises of consumers and feed it manually in the handheld billing machine as the system of connecting the handheld machine with the meter does not exist.
- HH machines were not sealed by OLB division and the meter reading was done between 8 PM and 11.57 PM despite the fact that the billed data was to be uploaded up to 8 PM in the central Server of the OLB. Further, the control register of hardware and manpower was not kept at their office for inspection of the MVVNL authorities.

The Management agreed with our observations and stated (September/November 2010) that initially steering committee was formed for implementation of IT support system and after commissioning, Online Billing Division was created for monitoring the outsourced agencies. It further stated that the security problems in providing data in CD, pen-drive and e-mail had not been visualised earlier, system was being designed to provide data in more secure manner to billing agencies, there was defect in CMOS clock of the machine, the agencies had been directed to maintain control register of hardware and software for inspection by MVVNL authorities and meter readings were fed in HHC machines manually as facility of connecting meters with the machines was not made.

System Design deficiency

2.3.10 The system design and its operation by the service providers should be adequate and sound to capture the data from the inputs provided by the Company. In case of deficiencies in the system, there are possibilities of generation of incorrect bills and information. We noticed system design deficiencies as discussed below:

Assessment of consumption recorded by defective meter

2.3.11 The Supply Code 2005 provides that billing of consumption in case the meter ceases to record the accurate consumption should be done on the average consumption of the three billing cycles preceding the billing cycle in which meter became defective. In case the average consumption of meter for three billing cycle is not available; billing was to be done for 104 units per kW per month as prescribed by the Deputy General Manager, Computer Cell (UPPCL) in November 2004.

We noticed that system was not designed for the billing software to take care of aforesaid provisions. This resulted in short assessment of energy charges of ` 1.88 crore in 53634 cases relating to the period from May 2008 to March 2010 due to preparation of bills for less than 104 units in all the 16 divisions as detailed in **Annexure-14**.

The Management replied (November 2010) that some of these bills were prepared on actual three months' average which was lesser than the units specified and rest had been prepared on 80 units which was specified ruling for domestic consumers. The reply is not relevant as we pointed out cases in respect of commercial consumers only.

Short billing in case of healthy category of consumers

2.3.12 As per laid down billing procedure, the consumers under 'Metered Unit Bill' category are required to be billed on the basis of units consumed. We noticed deviations in respect of following billings relating to the period from May 2008 to March 2010:

The system was not designed for the billing software to take care of provisions regarding billing in case meter ceases to record accurate consumption resulting in short assessment of energy charges of ` 1.88 crore.

- In 1026 cases of billings in respect of consumers of domestic light and fan category (LMV-1) assessment was made for lesser units than actual consumption appearing in the data bank resulting in short assessment of ` 61.81 lakh as detailed in **Annexure-15**.
- In 145 cases of billings in respect of consumers of LMV-2 category assessment was made for lesser units than actual consumption appearing in the data bank resulting in short assessment of ` 96.93 lakh as detailed in **Annexure-16**.

The Management replied (September/November 2010) that audit considered the closing readings for judging the billed units but the software provided that revised bill shall be generated on total units as advised through revision. In respect of 145 cases of LMV-2, the Management stated that these cases were either bill revisions or cases where tariff for 2007 and 2008 has been jointly applied on *pro rata* basis. The reply is not based on facts as the databank in respect of said billings do not indicate these were the cases of revisions and during May 2008 to March 2010, the Tariff Order (2008) was not revised.

Dissipation of energy due to absence of system alerts

The software designed and used did not provide alert where power factor was below the prescribed factor of 0.75; consequently no action was taken to install shunt capacitor or disconnect supply.

2.3.13 As per para 8 of the tariff order of April 2008 it is obligatory for all consumers to maintain power factor² more than 0.85 and no new connections of motive power loads/industrial loads above 3 kW other than LMV-1 and LMV-2 category and/or of welding transformers above 1 kVA shall be given, unless shunt capacitors having ISI specifications of appropriate ratings are installed. The tariff order further provides that if on inspection, it is found that capacitor of appropriate ratings is missing or inoperative and licensee can prove that the absence of capacitor is bringing down the power factor of the consumer below the obligatory norm of 0.85 then a surcharge of 15 *per cent* of the amount of bill shall be levied. Licensee may also take action under Section 139 and 140 of the Electricity Act, 2003 and disconnect the power supply if the power factor is below 0.75.

We noticed in analysis of the databank during the period from May 2008 to March 2010 for billing the small and medium power consumers that:

- The software designed and used did not automatically provide alert in the cases where the power factor was below 0.75 and generate exception reports in each month.
- In 4809 cases where power factor were below 0.75, no action was taken either to install shunt capacitors to improve power factor or to disconnect supplies to such consumers.

The extent of energy loss due to low power factor in such cases worked out to 68.29 lakh units.

The Management agreed with the observations and stated (September/November 2010) that e-Suvidha had been directed to generate alerts in case of low power factor.

Deficiency in system regarding allowing due date

2.3.14 Clause 6.1 (g) of the Supply Code prescribes that the licensee shall give time of seven days for payment of the bill where the bills are served through hand held billing machine. Thus, it was required that the due date for payment of bill should be given 7 days after the bill date.

We noticed in analysis of databank that due to deficiency in design, the OLB system did not apply the provisions uniformly in all cases of the consumers.

² Power factor is ratio of kWh and kVAh.

Out of 1,13,05,175 billings during the period from May 2008 to March 2010, in 8,57,547 bills date and due date was common, in 8,15,414 bills time was allowed in excess of seven days and in 27,74,649 bills due date mentioned was prior to bill date as detailed in **Annexure-17**.

The Management replied (September/November 2010) that the present discrepancy appeared in database due to due date having been previously allotted to each consumer book wise whereas open billing cycle was being followed in LESA in which seven days time from date of bill generation was being designed from February 2010 by e-Suvidha as the due date.

Irregular ceiling on the billing of the consumption

The software designed included an irregular ceiling on billing which resulted in short billing of energy charges and electricity duty of ` 4.28 crore.

2.3.15 The software designed by the outsourced agencies include an application control wherein the billing of 800 units only is done even in case the consumption of any consumer exceeds 800 units per kW in a month. The units in excess of 800 units per kW per month are not billed although no provisions for this exist either in the tariff orders approved by the UPERC or in the Supply Code. In such cases, billing should have been done for actual energy consumption indicated in the meters installed at the premises of consumers and reasons for such inordinate consumption should also have been investigated by the divisions to check that consumer has not installed load in excess of the sanctioned load.

This particular control in the billing software led to short billing of energy charges of ` 4.16 crore and electricity duty of ` 10.83 lakh in 1096 bills prepared and issued to consumers between May 2008 and March 2010 as detailed in **Annexure-18**.

The Management replied (September/November 2010) that as per UPPCL norms the billing software imposed a ceiling on consumptions beyond 800 units/kW/Month. It further stated that bills on 800 units were provisional and after site inspection meter reading was obtained and bill made as per actual reading. We are of the view that UPPCL is not required to impose ceiling on billings and alert signal could be obtained without any ceiling on billing.

Mapping of Business rules

The Company is required to adhere the tariff provisions approved by Uttar Pradesh Electricity Regulatory Commission. These provisions, therefore, should be incorporated in billing system so as to generate correct bills. The discrepancies we noticed in mapping of various provisions of tariff are discussed in succeeding paragraphs:

Non-credit of interest on the security deposit to the consumers

2.3.16 According to the clause 4.20 (i) of the Supply Code the licensee shall pay interest on security deposit to the consumers at the bank rate as on 1 April every year by crediting interest on security in bills issued in the month of April. With a view to ensure the compliance of the aforesaid provision the billing software should have been designed so that system should credit interest on security amount in the month of April every year.

Scrutiny of databank made available to audit revealed following:

- OLB prepared 486146 bills in the month of April 2009 but interest on security deposit was not credited/ allowed in 354754 bills against which security amount was available with LESA. This deprived the consumers from getting benefit of interest and on the other hand the Company accumulated liability of ` 102.57 lakh as detailed below:

Name of the division	Number of bills in April 2009	Security amount deposited (`)	Security interest credited (`)	Security interest to be credited at the rate of 6 per cent (`)
Alambagh	18166	4,066,081.00	0	243,964.86
Aliganj	46488	25,205,896.00	0	1,512,353.76
Aminabad	6097	2,463,447.00	0	147,806.82
Aishbagh	31133	7,163,216.00	0	429,792.96
Chowk	26873	7,186,982.00	0	431,218.92
Gomtinagar	41368	27,288,233.00	0	1,637,293.98
Hussainganj	16229	14,031,595.23	0	841,895.71
Indira nagar	45548	24,654,308.00	0	1,479,258.48
Kanpur road	34801	17,613,575.00	0	1,056,814.50
Khurramnagar	33179	15,325,535.00	0	919,532.10
Raj bhawan	8114	9,000,533.00	0	540,031.98
Rajajipuram	17286	5,422,057.00	0	325,323.42
Residency	17947	9,651,338.00	0	579,080.28
Thakur ganj	11525	1,882,814.00	0	112,968.84
Total	354754	170,955,610.23	0	10,257,336.61

This indicates that the software did not have effective application control for interest calculation and its credit to consumers' account.

- In 130953 cases security amount was not available in the databank,
- In 102191 cases security amount available was less than the minimum chargeable amount of ` 300,
- In 591 cases security amount was indicated as ` (-) one, and
- In 153 cases field of security amount indicated nothing.

The Management replied (September/November 2010) that interest of previous financial year was given under separate account head code due to technical constraints and mostly in May and June. It further stated that database with no security amount was because of incompleteness of data during migration to new system and security of less than ` 300 was an old rates. The reply is indicative of fact that the OLB system did not have effective application control, database of security deposits was incomplete and credit of interest on security deposits on separate account head code could not be shown to us.

Non-assessment for Air Conditioning charges

2.3.17 Clause 11 of the general provision of Tariff Order 2008-09 applicable from 27 April 2008, prescribes special tariff for Air Conditioning charges at the rate of ` 150 per ton for every 5 kW load.

We noticed in scrutiny of databank for the billing month from May to September 2008 and April to September 2009 that the special tariff for air conditioning loads was not applied in 65676 bills prepared and issued to the consumers having load of more than 5 kW under rate schedules LMV-2, LMV-4 and HV-1 in the 14 distribution divisions. This resulted in short assessment of ` 398.70 lakh as detailed below:

The special tariff for air conditioning load was not applied which resulted in short assessment of ` 3.98 crore.

Name of the division	No. of cases of consumers having load more than 5 kW		AC charges to be levied (`)		Total (`)
	May to September 2008	April to September 2009	May to September 2008	April to September 2009	
Alambagh	1702	2257	1031625.00	1346850.00	2382434
Aliganj	4084	5275	3325275.00	2999925.00	6334559
Aminabad	402	1398	220500.00	746325.00	968625
Aishbagh	1429	1447	666900.00	663300.00	1333076
Chowk	1629	1588	827775.00	714600.00	1545592
Gomtinagar	2533	3668	1638225.00	2382075.00	4026501
Hussainganj	4319	5517	2781000.00	3307950.00	6098786
Indira nagar	2459	2908	1569150.00	1471275.00	3045792
Kanpur road	1287	1770	551250.00	759150.00	1313457
Khurramnagar	1447	2013	872325.00	1064025.00	1939810
Raj bhawan	3167	4022	2402325.00	3051450.00	5460964
Rajajipuram	202	718	96750.00	354825.00	452495
Residency	3808	3937	2276325.00	2372175.00	4656245
Thakur ganj	128	562	57825.00	253350.00	311865
Total	28596	37080	18317250	21487275	39870201

The Management replied (September/November 2010) that due to technical constraint of the old server and limitation of the software, special tariff could not be implemented in billing system of LESA in 2008 and a list of consumers falling under the purview of special tariff was formulated in 2008 and 2009 and was sent to divisions where AC charges were fed into each consumers account through Journal Debit entries. We, however, observed that the data bank did not indicate the nature of debits and fact remains that the software could not be modified to take care of the provision for Air Conditioning Charges.

Non levy of penalty to the consumers not accessible for meter reading

2.3.18 The para 3 of Tariff Order of April 2008 provides penalty of ` 300 per KW per month if the meter is not read due to meter not being accessible in the premises of consumer for two consecutive billing cycles.

We noticed in analysis of the databank made available to us of two divisions using IBM pattern that meter reading could not be taken due to non-access of the meter of the consumers for more than three cycles. The divisions did not issue notice to the consumers to get access to their meter and also did not levy penalty of ` 41.09 lakh during the period from April 2009 to March 2010 as detailed below:

Sl. No.	Divisions	Consumers not accessible above two billing cycle	Range of billing cycles	Rate of penalty in `/kW/month	Penalty not levied (` in lakh)
1.	Cess-I	117	1-40	300	9.32
2.	Cess-II	373	1-73	300	31.77
	Total				41.09

The scrutiny of databank of OLB system revealed that the data relating to consumers where the meter reading could not be taken due to non-access of the meters, was not maintained. In absence of this information in the data bank, further analysis could not be done by us.

The Management replied (September/November 2010) that there was no clear cut listing of NR cases and notices had not been issued to the consumers; hence, penalty was not due. It further stated that instructions had been issued to billing agencies to paste notice on premises of consumers and to divisional officers to charge penalty and in the mean time a system would be designed to incorporate NA/NR comment. The reply is self explanatory of the fact that the OLB system is not capable in billing NA cases due to inadequacy of databank.

Application Control

Input controls and validation checks

2.3.19 To ensure correctness, completeness, and reliability of the database, it is necessary to ensure appropriate input control and data validation during the data entry. This would help in reduction in duplication of efforts and redundancy. We noticed following deficiencies in this regards:

Input Controls

Light and Fan Domestic category consumers

Life line Consumers

2.3.20 The consumers having load of one kW with restriction of consumption of energy up to 150 units has been categorised as lifeline consumers. Rate schedule LMV- 1 para 3 (C) envisaged that the lifeline consumers shall be billed at the rate of ` 1.90 per unit up to 100 units and at ` 2.50 exceeding 100 units up to 150 units and fix charges at the rate of ` 50 per kW.

Input controls were deficient as various types of billings were not done as per the provisions of tariff orders resulting in short assessment of energy charges and electricity duty of ₹ 13.76 crore.

If consumption exceeds 150 units in any month billing in that case was to be done at the rate of ₹ 3 per unit up to 200 units and at the rate of ₹ 3.30 per unit for the consumption exceeding 200 units.

The tariff provisions also prescribed that the fixed charge of ₹ 60 per kW per month was to be billed in case the consumption of the lifeline consumers exceeds 150 units per month or their connected load exceeded 1 kW.

We noticed from scrutiny of databank relating to the period May 2008 to March 2010 that application control was not there in the following types of billing:

- In 550337 cases where current meter readings were zero provisional billings were done for 80 units for which ₹ 120 only was charged whereas ₹ 152 should have been charged at the prevailing rate of ₹ 1.90 per unit. This resulted in short assessment of energy charges of ₹ 1.76 crore. Further, the electricity duty at the rate of ₹ 0.09 per unit was also not levied resulting in short assessment of electricity duty of ₹ 39.61 lakh as detailed in **Annexure-19**.
- In 396858 cases of life line consumers with defective meters, billing was done at the rate of ₹ 120 for every 80 units instead of at applicable rate of ₹ 1.90 per unit. This resulted in short assessment of energy charges of ₹ 1.14 crore. Further, the electricity duty was not billed at applicable rate of ₹ 0.09 per unit which resulted in short assessment of electricity duty of ₹ 18.72 lakh as detailed in **Annexure-20**.

Similarly, short assessment of energy charges in 173689 cases in two off-line divisions under IBM pattern was ₹ 1.23 crore as detailed below:

Name of division	No. of cases	EC levied (₹)	ED levied (₹)	EC to be levied (₹)	ED to be levied (₹)	Difference of EC (₹)	Total difference (₹)
CESS-I	99503	25713720.00	1491361.20	32938592.00	1491361.20	7224872.00	7224872.00
CESS-II	99503	19958511.60	1491361.20	32938592.00	1149591.78	5060429.00	5060429.00
Total	199006	45672231.60	2982722.40	3623245120.00	2640952.98	12285301.00	12285301.00

- In 43455 cases of billings the assessed³ consumption was above 64 units but energy charges were billed uniformly at ₹ 120 in each case of billing. The application control was not applied for tariff rate in these cases. In these cases energy charges of ₹ 1.23 crore were short assessed as detailed in **Annexure-21**.

The Management replied (September/November 2010) that these bills were prepared by the server provisionally after closure of each month for accounting unbilled cases and were correct as per rules and full assessment for total bill period was taken care of when consumer was billed next month on actual reading. The reply does not give reasons for provisional billing at the rate of ₹ 120 for 80 units instead of ₹ 152 at applicable rate of ₹ 1.90 per unit.

- In 88188 cases of billing, the OLB system did not apply the rate of ₹ 2.50 per unit when the consumption exceeded 100 units but remains up to 150 units. This resulted in short recovery of ₹ 3.11 lakh as detailed in **Annexure-22**.
- In 14331 cases where the consumption exceeded 150 units and remained up to 200 units, the rate of ₹ 3.00 per unit was not applied resulting in short assessment of ₹ 19.36 lakh. Similarly, in 307289 cases where the consumption exceeded 200 units, the rate of ₹ 3.30 per unit was not applied. This further resulted in short assessment of ₹ 66.57 lakh as detailed in **Annexure-23**.

³ Where meter is defective and consumption of energy is assessed.

The Management replied (September 2010) that the tariff slabs of life line consumer require watching consumption per kW per month (30 calendar days), the examined cases had bill period more than 30 days and therefore the month's consumption fell within limits of lower rate slabs. It further stated (November 2010) that consumption based rate slabs for domestic life line consumers had been implemented and application control was designed to take care of applicability of the rates. The reasons given by the Management do not hold good as such proportion of units were not applied where days in a month were 30 or less than 30 and rates were not applied correctly in the cases reported by us.

- In 1459 cases the OLB system applied fixed charge of ` 50 instead of ` 60 where the load exceeded 1 kW. This resulted in short assessment of ` 0.80 lakh. In 45687 cases the OLB system applied fixed charge of ` 50 instead of ` 60 where consumption exceeded 150 units. This further resulted in short assessment of ` 4.57 lakh as detailed below:

Name of the division	No. of cases	Fixed charges levied (`)	Total units	Fixed charges to be levied (`)	Difference of fixed charges (`)
Alambagh	4632	231600	1097078	277920	46320
Aliganj	3841	192000	986479	230460	38460
Aminabad	561	28050	95741	33660	5610
Aishbagh	6451	322550	1630632	387060	64510
Bakshi ka Talab	41	2050	9981	2460	410
Chowk	5082	254100	1358499	304920	50820
Daliganj	41	2050	10127	2460	410
Gomtinagar	3660	182900	826863	219600	36700
Hussainganj	4355	217750	1186753	261300	43550
Indira nagar	3282	164100	878747	196920	32820
Kanpur road	3445	172250	719048	206700	34450
Khurramnagar	3697	184850	1050185	221820	36970
Raj bhawan	347	17350	103846	20820	3470
Rajajipuram	1824	91200	366003	109440	18240
Residency	3498	174900	788288	209880	34980
Thakur ganj	930	46500	232596	55800	9300
Total	45687	2284200	11340866	2741220	457020

- In 5048 cases of billing the connected load was above 1 kW in the data bank. Therefore, billing in these cases was to be done as consumers other than life line. We noticed that in 628 cases a sum of ` 0.29 lakh was excess charged, in 1832 cases a sum of ` 2.18 lakh was short charged and in 2588 cases bills were prepared correctly as detailed below:

Name of the division	No. of cases	EC levied (`)	Total units	EC to be levied (`)	Difference of EC (`)
Alambagh	197	255007	83693	264,972.60	9,965.60
Aliganj	40	24086	9861	30,650.70	6,565.10
Aminabad	17	26185	8284	26,317.20	131.80
Aishbagh	133	130114	44761	140,418.00	10,303.80
Chowk	194	212889	78031	246,354.90	33,465.50
Gomtinagar	293	319552	113088	356,727.60	37,176.00
Hussainganj	37	55034	18528	58,948.50	3,914.80
Indira nagar	358	85894	44095	133,857.30	47,963.30
Kanpur road	294	285559	98120	307,230.30	21,671.30
Khurramnagar	185	54579	29964	91,076.40	36,497.90
Raj bhawan	12	5622	2408	7,413.90	1,791.60
Rajajipuram	3	2307	756	2,314.80	8.00
Residency	65	74544	26247	82,740.30	8,196.10
Thakur ganj	4	4876	1574	4,954.20	78.30
Total	1832	1536248	559410	1,753,976.70	217,729.10

The Management stated (September/November 2010) that errors had occurred due to technical constraints of old server and corrected in the new billing software since February 2010. We, however, did not notice corrections in the data bank of March 2010.

- The maximum consumption against one kW load can be 720 units⁴ only. Analysis of OLB database revealed that consumption of energy recorded in meters ranged from 721 to 80693 units in 4865 cases of domestic light and fan consumers as detailed below:

Division	No. of cases	Range (unit)
Alambagh	423	721-29162
Aliganj	345	721-6399
Aminabad	79	726-36555
Aishbagh	423	722-17537
Bakshi KaTalab	5	750-1150
Chowk	328	722-7139
Dalliganj	15	725-5254
Gomtinagar	593	721-80693
Hussainganj	176	723-10596
Indiranagar	385	721-51027
Kanpur Road	404	721-14424
Khurramnagar	391	722-4880
Raj Bhawan	72	721-25810
Rajajipuram	470	721-12949
Residency	354	721-24054
Thakurganj	402	722-23433
Total	4865	

It indicates that the application control has not been designed to alert and mark higher consumption cases for checking actual load connected in premises of consumers to ensure that sanctioned load is not less than actual connected load to avoid loss of fixed charges per KW of the load and risk of damage in distribution network.

The Management replied (November 2010) that an application control was already present in the software for watching the higher consumption by imposing a ceiling on consumption beyond 800 units/kW/month, an alert was raised in form of flagging the consumer as ceiling defective status and on-line MIS report of such cases was generated on monthly basis. The reply is not based on facts as no alert was noticed in the 4865 cases pointed out by us.

- The Supply Code 2005 prescribed that in case meter of consumers ceases to record accurate consumption, billing should be done on average consumption of the three billing cycles preceding the billing cycle in which meter became defective. We noticed that the application control was not designed in the billing software incorporating the aforesaid provisions. As a result, assessment in case of defective meters was done for 80 units and average consumption of three preceding billing cycles (September, October, and November 2009) was not applied for billing for the month of December 2009. This resulted in short assessment of ` 8.09 lakh in the billing for the month of December 2009.

The Management replied (November 2010) that the billing of consumers with defective meters was done on the basis of average consumption of previous

⁴ 1 KW X 24 hour X 30 days X 1 factor = 720 units.

three cycles or on the basis of prescribed 80 or 120 units/kW for domestic or commercial. It further stated that those bills were provisional and difference of assessment was taken care of when meter was replaced. The reply is not based on facts as in the cases pointed out by us, assessment was done on the basis of 80 units although average consumption of previous three billing cycles were available in data bank.

Other than lifeline consumers

2.3.21 Consumers other than the lifeline consumers were required to be billed at the rate of ` 3.00 per unit up to 200 units and at the rate of ` 3.30 per units for units exceeding 200 for all loads. Fixed charge was to be levied at the rate of ` 60 per kW per month as envisaged in the rate schedule LMV-1.

Scrutiny of databank relating to the period May 2008 to March 2010 revealed absence of application control in this category also as we noticed in following billings:

- In 169757 cases of provisional billing relating to the period from May 2008 to March 2010 energy consumption was assumed at the rate of 80 units per kW and energy charges was applied at the rate of ` 120 per 80 units instead of at the rate of ` 3 per unit as per the rate schedule. This resulted in short recovery of energy charge of ` 561.39 lakh and electricity duty of ` 32.46 lakh as detailed in **Annexure-24**.

The Management replied (September/November 2010) that the bills were prepared provisionally by the server after each month's closure only for accounting the left over un-billed consumer in that month and the full assessment for total bill period was taken care of when consumer was billed next month on actual reading. It further stated that after 1 February 2010, the unit rate prescribed in tariff for fixed 80 units had been implemented in new software. We, however, did not notice implementation of prescribed rate of charge in billings for the month of March 2010.

- In 13110 cases of billing⁵ where consumption remained 160 units in each case, the outsourced agency billed at the rate of ` 240 in each case uniformly instead of ` 480 at the applicable rate of ` 3.00 per unit as prescribed under Para 3 of the rate schedule LMV -1. Incorrect application of rates resulted in short assessment of revenue of ` 51.16 lakh as detailed in **Annexure-25**.

The Management replied (November 2010) that those cases had provisional assessment which were made firm (final) on the basis of actual readings when next bills were generated. We view that even for provisional billing there is no reason to apply rate of charge other than that applicable.

- In 200558 cases of billing the OLB system did not correctly apply the rate of ` 3.30 per unit where consumption exceeded 200 units. This resulted in short assessment of energy charges of ` 32.87 lakh and electricity duty of ` 0.07 lakh as detailed in **Annexure-26**.

The Management replied (November 2010) that application control was designed to take care of applicability of rates based on consumption. The reply is not based on facts as in the cases pointed out by us, correct rate based on consumption was not applied.

- In 1065 cases of the two divisions following IBM pattern billing, short assessment of energy charges worked out to ` 12.68 lakh as detailed below:

⁵ Indicated under supply type-10 B in data bank.

Name of the division	No. of cases	Total units	EC levied (₹)	EC to be levied (₹)	Difference of EC (₹)
CESS –II	321	635973	1,642,767.70	2,047,030.10	404,262.40
CESS-I	744	1301888	3326681.80	4189920.80	863239.00
Total	1065	1937861	4,969,449.50	6,236,950.90	1,267,501.40

The Management stated (September 2010) that NA/NR period preceding to the bill had not been included for consideration of period of consumption. The reply is not based on facts as the database did not indicate the fact of NA/NR in the billings pointed out by us and date of previous meter reading before NA/NR occurred.

Billing of non-domestic light and fan consumers

Billing at less than minimum charges

2.3.22 Para 3 (C) of the rate schedule applicable for light and fan commercial consumers (LMV-2) provides that the consumers getting supply from urban feeder or rural feeder exempted from the scheduled rostering shall be billed at minimum of ₹ 300 per kW per month.

We noticed that in 17734 cases of 15 divisions bills relating to the period from May 2008 to March 2010 were prepared by the system for the amount less than the minimum amount. This resulted in short assessment of energy charges of ₹ 5.16 lakh as detailed below:

Name of the division	No. of cases	Minimum amount levied without ED (₹)	Actual minimum charges (₹)	Minimum charges short charged (₹)
Alambagh	546	245621.06	279126	33504.94
Aliganj	711	375725.90	460800	85074.10
Aminabad	3570	2018560.88	2026500	7939.12
Ashbagh	418	171566.75	199500	27933.25
Chowk	717	293331.16	335100	41768.84
Daliganj	5	2567.25	3300	732.75
Gomtinagar	1569	1020119.40	1060800	40680.60
Hussainganj	3965	2800523.14	2838582	38058.86
Indira nagar	524	261807.27	327000	65192.73
Kanpur road	371	186125.55	220500	34374.45
Khurramnagar	363	209656.46	240600	30943.54
Raj bhawan	256	307446.13	340200	32753.87
Rajajipuram	133	47395.20	54000	6604.80
Residency	4477	2572990.97	2633400	60409.03
Thakur ganj	109	35063.06	44700	9636.94
Total	17734	10548500.18	11064108	515607.82

The Management replied (November 2010) that due to errors in old billing software minimum guarantee charges were not watched and promised to take corrective action.

Incorrect categorisation of consumers

2.3.23 The LESA is responsible for supply of energy in the urban area of Lucknow city which is exempted from scheduled rostering. Thus, the billing of the consumer of LESA was to be done as per urban schedule of the tariff approved by the UPERC.

We noticed in analysis of the databank during the period from May 2008 to March 2010 that following categories of the consumers were classified as connected through rural feeder instead of categorizing under urban schedule because of exemption from rostering. This resulted in short assessment of revenue as summarised below:

Incorrect categorisation of consumers resulted in short assessment of energy charges and electricity duty of ₹ 24.39 lakh.

- Out of 546 bills prepared under rural tariff⁶ relating to domestic light and fan consumers, 303 bills i.e. 55 per cent were prepared on metered unit consumption basis. Remaining bills were prepared on fixed amount basis due to non availability of meter reading. A sum of ` 5.83 lakh was short assessed in 303 cases due to treating these consumers connected to rural feeder instead of urban feeder.
- 109 bills were prepared relating to non-domestic light and fan consumers under rural tariff⁷ instead of urban tariff.⁸ This resulted in short assessment of ` 0.61 lakh.
- Rate schedule for public institutions (LMV-4A) issued (27 April 2008) by UPERC is applicable to offices of the Government organisations, Government hospitals/ Government research institutions excluding companies registered under the Companies Act, 1956. Companies registered under the Companies Act are required to be billed under non-domestic light, fan and power category (LMV-2) if load is below 75 KW and under non-industrial bulk loads category (HV-1) if load is above 75 KW and getting supply at 11 KV. Bharat Sanchar Nigam Limited (BSNL) is a Government Company and registered under the Companies Act, 1956. Accordingly, connections to units of BSNL were required to be billed under LMV-2 rate schedule. In 697 bills in respect of BSNL having loads ranging between 15 and 35 kW, rate schedule LMV-4A was applied instead of rate schedule LMV-2. This resulted in short assessment of ` 11.81 lakh⁹ during the period from May 2008 to March 2010. Details are given below:

(Amount in `)

Name of the division	No. of cases	Fix charges levied	Fix charges to be levied	Difference of FC	Energy charges levied	Energy Charges to be levied	Diff of EC
Alambagh	151	327771.50	355800.00	28028.50	2795496.21	2983856.00	188359.79
Aliganj	48	104205.00	108500.00	4295.00	1697427.00	1832019.30	134592.30
Aishbagh	61	140075.00	145150.00	5075.00	1643210.94	1688960.88	45749.94
Bakshi ka talab	4	5400.00	6000.00	600.00	55472.00	59632.40	4160.40
Chowk	77	118855.92	128850.00	9994.08	1676787.67	1783612.91	106825.24
Daliganj	3	5400.00	6000.00	600.00	85092.00	91473.90	6381.90
Gomtinagar	50	116265.00	123000.00	6735.00	2196654.38	2365223.60	168569.22
Indira Nagar	97	202056.00	214100.00	12044.00	2187733.94	2308434.79	120700.85
Kanpur Road	37	110405.69	90750.00	-19655.69	761461.78	810041.74	48579.96
Rahim Nagar	91	158174.00	172000.00	13826.00	1765189.51	1915099.60	149910.09
Rajbhawan	23	41313.33	46000.00	4686.67	750430.14	807755.00	57324.86
Rajajipuram	8	68040.00	50400.00	-17640.00	704448.00	757281.60	52833.60
Thakurganj	47	56430.00	62700.00	6270.00	564996.00	607370.70	42374.70
Total	697	1454391.44	1509250	54858.56	16884399.57	18010762.42	1126362.85

- 553 out of 80748 consumers of domestic light and fan category and 59 out of 70134 consumers of non-domestic light and fan category under IBM pattern billing were categorised under rural billing though they were getting supply from urban feeder. Therefore, billing should have been done under urban schedule. This resulted in short assessment of electricity charges of ` 6.14 lakh during the period from April 2009 to March 2010 as detailed below:

(` in lakh)

Division/category	Bill cases	Supply Type categorised	Chargeable amount	Charged amount	Amount short charged
CESS-I					
Domestic light and fan	424	13 and 17	1.16	0.40	0.76
Non domestic light and fan	24	22 and 24	6.58	1.81	4.77
CESS-II					
Domestic light and fan	129	17	0.42	0.25	0.17
Non- domestic light and fan	35	24	0.78	0.34	0.44
Total short charge					6.14

⁶ Supply type -17.

⁷ Supply type-23.

⁸ Supply type-20.

⁹ EC ` 11.26 lakh and Fixed Charges: ` 0.55 lakh.

The Management replied (September/November 2010) that the consumers wrongly categorised in LMV-1, LMV-2 and BSNL consumers had been referred to the divisions for correcting their tariff and recovering short assessments.

Short assessment of energy in PTWs

2.3.24 Deputy General Manager, Computer Cell vide order of November 2004 directed that in case of defective meter category of Private Tubewells (PTW) consumers, assessment should be done on the basis of average consumption of three billing cycles preceding the cycle in which the meter became defective. In case the meter reading was not available assessment should be done at 100 units per BHP per month.

We noticed in analysis of the databank of CESS-I and CESS-II divisions that in case of 3053 consumers where the total load was 17528 BHP, the meters installed were defective but the assessment was made for 50 units per BHP as the application control was not designed in the billing software for billing at the rate of 100 units per BHP. This resulted in short assessment of ₹ 13.79 lakh during the period from April 2009 to March 2010 as indicated below:

Name of the division	No. of cases	Load (BHP)	Units	Units as per UPPCL order	ED levied (₹)	Minimum charges (₹)	EC to be levied (₹)	ED to be levied (₹)	Difference of EC (₹)	Difference of ED (₹)	Total difference (₹)
C.E.S.S-I	1783	9,719.00	107441	971,900.00	2,595.69	1,262,820.00	1943800	87471	680,980.00	84,875.31	765,855.31
CESS - II	1270	7,809.00	108740	780,900.00	6,029.10	1,013,220.00	1561800	70281	548,580.00	64,251.90	612,831.90
Total	3053	17,528	216181	1,752,800	8,624.79	2,276,040	3505600	157752	1,229,560.00	149,127.21	1,378,687.21

The Management stated in exit conference (September 2010) that instructions had been issued for correct billing. The Management further replied (November 2010) that in cases observed by audit meters had not been installed and hence assessment had been done at ₹ 130/BHP/month as per the provision of tariff. The reply is not based on facts as data bank revealed that meters had been installed in cases pointed out by us; hence assessment should have been done on the basis of 100 units/BHP/month.

Validation checks

Duplication of records in the databank

2.3.25 The databank of online billing should be free from duplication in records so as to make the database reliable and generate correct bills. The OLB system has allotted unique number (known as KNO number) to consumers for identification.

In the analysis of the database (March 2010) we noticed that 2.56 per cent of operative consumers had duplicate KNOs. Similarly, 4.60 per cent of operative consumers had same meter number (shown at 2 to 4 consumers) as detailed below:

Name of the division	Total Number of operative consumers	Duplicate KNOs	Fictitious meter ¹⁰	Meters		
				Repetition of meter numbers	No. of premises	Range
Rajajipuram	24175	668	175	431	1212	2-3
Residency	32894	1179	3	430	881	2-3
Kanpur Road	42716	922	162	967	2117	2-3
Chowk	39442	659	13	458	924	2-4
Aishbagh	35019	386	122	621	1249	2-4
Alambagh	28290	491	0	524	1064	2-4
Aliganj	27907	1065	241	1158	2345	2-4
Gomti Nagar	40050	1469	77	1093	2219	2-3
Hussainganj	21622	634	24	369	742	2-4
Indira Nagar	44858	682	236	1158	2589	2-4
Rahimnagar	28027	911	21	572	1156	2-3
Rajbhawan	10818	497	0	237	484	2-4
Aminabad	14934	461	137	384	780	2-3
Thakurganj	17137	437	3	489	990	2-4
Total	407889	10461		8891	18752	

¹⁰ This denotes imaginary number allotted on release of connection to start billing without meter.

The Management replied (November 2010) that the data bank had no duplicate KNOs and duplicate KNO appeared in places where two bills existed in a month. It further stated that meter numbers were allotted by LESA test labs division-wise and might be repeated in another division. The reply is indicative of fact that software designed is deficient as it is not able to generate single row details for a month leading to exhibition of incorrect number of consumers in a month, it is not based on facts as fictitious meter number existed in databank against same consumers and same meter number existed against 2 to 4 consumers in the same divisions. Thus, the software lacked checks to validate the input data.

Unreliable data in databank

2.3.26 Presence of unrealistic records makes the data bank unreliable and non-acceptable. Similarly, non-availability of required information in data bank makes processing unauthentic, transaction impossible and generation of incomplete/inaccurate report/energy bills.

The data bank of on-line billing contained unreliable data and/or incomplete details in 21.53 per cent of the cases.

We noticed from the analysis (March 2010) of data of 5.20 lakh consumers that the data bank of OLB contained unrealistic data and/or incomplete details in 21.53 per cent of the cases. The deficiencies are summarised below:

- Connection date against 80017 cases was mentioned as 11 November 11.
- Connected load in 18 cases and meter number in four cases were recorded as zero.
- Address of 135 consumers and service connection numbers of 111951 consumers were missing.
- Maximum demand was not recorded in respect of 477 connections of load exceeding 25 KVA where tri-vector meters were installed.

The division wise details are given below:

Sl. No.	Division	Address missing	Connection Date recorded as 11.11.2011	Missing SC no.	MDI not recorded Above 25 KVA load	Connected load recorded as zero
1	Alambagh	1	6472	4750	11	-
2	Aliganj	7	16659	15164	44	1
3	Aminabad	-	4270	-	2	1
4	Aishbagh	1	5309	13023	12	-
5	BakshiKaTalab	-	1224	-	14	1
6	Chowk	-	11092	13580	12	6
7	Daliganj	-	7358	-	1	3
8	Gomti Nagar	81	681	9873	10	1
9	Hussainganj	1	2071	8256	143	-
10	Indira Nagar	29	1156	11195	18	-
11	Kanpur Road	10	803	7786	4	-
12	Khurram Nagar	4	9694	18202	5	2
13	Raj Bhawan	-	2128	473	165	-
14	Residency	1	8256	9647	30	2
15	Thakurganj	-	2624	2	1	1
16	Rajajipuram	-	220	-	5	-
	Total	135	80017	111951	477	18

The Management replied (September/November 2010) that when it was not possible to obtain complete information from decade old papers, data was migrated in on-line database in 2001 with common connection migration date

11.11.11 and efforts were being made to complete the data. It further stated that incompleteness of addresses and connection date did not disqualify from regular and reliable billing, it had been made mandatory to record maximum demand in all cases of loads exceeding 25 kW/KVA and cases of zero load had been referred to division for corrections. We view that incomplete details of connected load and other information in data bank could affect generation of correct reports and affect billings.

Compliance of Terms and conditions of agreements

2.3.27 MVVNL entered into an agreement with e-Suvidha for online billings on 27 July 2006. In term of clause 1.2.8 of the agreement e-Suvidha was responsible for maintaining the OLB system and up-gradation/migration to the billing application with new hardware covering new requirement at LESA data centre. The upgradation work was delayed by e-suvidha and could not be executed up to February 2010. In this connection we observed that:

- The system faced problems due to utilisation of 99 *per cent* of storage up to November 2007 as the incremental data addition of 2 GB was continued on monthly basis. The operation of online billing was done on a system which did not commensurate to the requirement of the billing and created problems that could not be solved by e-suvidha. To resolve the problem LESA had to invite (February 2009) CMC Limited for backend activities of OLB and system administration and maintenance for period of one year. LESA paid a sum of ` 68.12 lakh to CMC Limited which was deducted from the bills of e-Suvidha.
- The Company delayed the up gradation of the OLB system for the period more than two years despite the fact the system was overloaded and was not running accurately. The delays were apparently caused by the Company due to not firming up the environment requirement. The requirement changed from MS.dot.net environment (in February 2007) to oracle 10g platform (June 2007) and the vendor was also not decided till December 2007.
- The OLB system was deleting the logs created by the system to make space in the server.

The Management stated (September/November 2010) that appropriate action for delay in up gradation work by e-Suvidha shall be taken in accordance with penal clause of order and purging of old logs archives was done for creation of space.

2.3.28 Clause 5.4.1 of the agreements envisaged that the billing agencies would carry out one time activities and monthly activities. One time activities included door to door survey of the consumers to update the billing database. In monthly activities the agencies were required to download the billing data from the central server installed at OLB division, take readings at consumers' premises, generate bills through their hand held machines, deliver bills to consumers, receive payment through cheque, if opted so by consumers and upload the billed data at the day end. The agencies were also required to report the divisions on monthly basis the cases where reading could not be taken due to non-access to the meter or for any other reason. The ADF¹¹, RDF¹² and IDF¹³ cases were also to be submitted on monthly basis at the divisional level. The billing software provided by the e-Suvidha has security feature wherein previous meter reading is not visible to the meter reader.

¹¹ Appears defective.

¹² Reading defective.

¹³ Indicated defective.

Scrutiny of the payments made to the handheld billing agencies by the divisions revealed following:

Avoidable payments for hand held billing

2.3.29 The agreements for on-line hand held billing work executed (April 2007) with the three firms¹⁴ provided for meter reading, generation of bills, collection of cheques, their deposit in bank and reconciliation of the bank account all billed at the rate of ` 6.65 per consumer. In this connection we noticed (July 2010) that the Kanpur Electricity Supply Company had awarded (September 2008) the same work to the Sai Computer, Vaxcel Computers (P) Ltd, Ranchi and Computronics India, Lucknow at the rate of ` 6.45 per consumer on which discount¹⁵ of ` one per consumer was given by the parties for switching over to on-line billing. Thus, the Kanpur Electricity Supply Company was getting hand held billing work at the net rate of ` 5.45 per consumer which was lower than that of LESA with same parties during same period. Since the LESA and KESCO are subsidiary companies of Uttar Pradesh Power Corporation Ltd. (UPPCL) and are under common administration system should have been in place to obtain the rates of the sister units but no such system existed. This resulted in excess payment of ` 49.96 lakh during the period from October 2008 to March 2010 at the rate of ` one per consumer as detailed in **Annexure-27**.

The Management replied (September/November 2010) that all distribution companies under UPCCCL were independent and free to float and decide their tenders as per requirements, the scope of work differ in quality and quantity according to geographical area and constraints and there was no binding requirement or necessity for comparing rates from Discom to Discom or from one State to another. We view that the scope of work of KESCO and LESA were same in similar geographical area and the work was executed by same parties at similar time, hence rate of payment for billing agencies engaged by LESA should have been comparable to other distribution companies coming under same holding company (UPPCL).

Avoidable payment for bills in respect of defective meters

2.3.30 The agreement with handheld billing agencies provided that payment per consumer shall be made based on complete monthly activities undertaken by the agency. No payment shall be made for meters not read on account of non-access or for any other reason. Further, clause (ii) of the monthly activity provided that for billing of consumers on the basis of defective meters reported, payment at 50 *per cent* of the agreed rate shall be made. In case of no reading cases, provisional assessment of 80 units per kW per month is done centrally by the system. In case of defective meter the billing is required to be done on the basis of average consumption of three billing cycles preceding the cycle in which meter became defective till the defective meter is replaced by the concerned division and advised to the OLB as per the Supply Code 2005. Thus, the payment for bill preparation of defective meter should not have been made as the bills were prepared centrally by the system.

We noticed that the payment of ` 69.55 lakh at the rate of ` 3.325 per bill (being 50 *per cent*) for 20,91,875 bills on the basis of meter reading of defective meter was made despite the fact that the bill of these consumers were generated by the OLB system at the provisional/ assessed units as

The payment of ` 69.55 lakh to hand held billing agencies was not justified as energy bills were prepared centrally by the OLB system.

¹⁴ Computronics Ltd, KLG Systel Ltd and Sai Computers Ltd, Meerut.

¹⁵ The discount was given as the work of printing of ledgers of all category of consumers, various types of MIS reports and designing of software and its maintenance etc. were excluded while switching over to on-line billing where only meter reading through HH machines were involved.

detailed below. Therefore, the payment of ₹ 69.55 lakh to HH billing agencies was not justified.

Name of the division	Number of bills			
	IDF	ADF	RDF	Total
Alambagh	69854	3991	3139	76984
Aliganj	276656	4492	19901	301049
Aminabad	77305	5607	1577	84489
Aishbagh	155063	8658	10184	173905
Bakshi KaTalab	7045	190	442	7677
Chowk	271485	40633	18181	330299
Daliganj	12125	235	1340	13700
Gomtinagar	105724	1496	2360	109580
HussainGanj	162963	7334	5269	175566
Indira Nagar	143738	4560	10943	159241
Kanpur Road	33543	12123	6082	51748
Khurramnagar	193288	3895	11240	208423
Raj Bhawan	24541	2598	3905	31044
Rajajipuram	20409	731	1759	22899
Residency	226570	21981	8277	256828
Thakur Ganj	74961	8958	4524	88443
Total	1855270	127482	109123	2091875

It was further noticed in audit that the database of OLB did not have field indicating the month since when the meter became defective. In absence of such information the audit could not ascertain the period when the meter remained defective.

The Management stated (September/November 2010) that all the IDF bills were not prepared centrally by the server. It further stated that LESA had two mechanisms for delivery of bills, by HHC agencies after meter readings and generations of bills at site and (by e-suvidha) at billing counters on self reading. In LESA, HH billing agencies had been allotted the job to generate bills including bills of IDF consumers also, deliver it on the spots at consumer's premises and receive payment against these provisional bills; therefore, payment to billing agencies at 50 per cent rate was justified. We are of the view that provisions in the agreement for payment in case of IDF/ADF/RDF is not justified as in such cases provisional bills can be generated centrally till a meter is rectified. It was also noticeable that no payment is made to HH billing agencies in case of NA/NR (no access/no reading) cases although HH billing agencies visit premises of consumers each month.

Payment in excess of work done

2.3.31 According to the terms of payment of the agreement executed with the outsourced agencies, the payment was to be made in case of actual bills generated and issued to the consumers. Scrutiny of records revealed that the division made payment to the outsourced billing agencies on the basis of details of consumers furnished by them without verifying the actual number of consumers from the database.

We noticed from the data bank that the Company paid to billing agency for:

- 4764394 bills of healthy category consumers against 4498385 actual bills and
- 1037288 bills of defective category consumers against 913204 actual bills.

As a result, ₹ 23.11 lakh was paid in excess to the billing agencies during the period from May 2008 to March 2010 as detailed in **Annexure-28**.

The Management replied (September/November 2010) that in order to increase the consumer turn up and ensure billing of each consumer, LESA had provided a parallel facility to consumers to get their bills generated on billing counters on self reading, Hand-Held agencies were fulfilling their part of contract by physically sending their meter readers to consumers premises for generating and delivering bills to them and consumers in some cases might visit counters and get a second bill generated as against the Hand Held bill which was scheduled to be uploaded only at day end by a batch process. It further stated that Hand held generated bill was liable to be rejected by server as one bill for the same consumer had already been inserted and therefore the monthly hand held scrolls contained total count of bills both uploaded and rejected. The Management, however, did not explain the mechanism of verification of claims of billing agencies where databank showed lesser number of bills generated by the billing agencies than that claimed by and paid to them as there is no system to identify that rejected bills were only because of generation of bills at billing centres.

Monitoring Mechanism

Monitoring of OLB system was inadequate and ineffective as the Company has not recruited any IT expert, not has it formed a committee for monitoring.

2.3.32 The Company has created OLB division for monitoring and smooth functioning of the online billing system and performance of the outsourced billing agencies. Apart from above a node has been provided to all the billing divisions for monitoring of the billing of their consumers, correction of the bills and generation of MIS reports. We noticed that the monitoring of OLB system was inadequate and ineffective because of the following reasons:

- The Company has not recruited any IT expert nor has it formed a committee for monitoring of the online billing system. The Company also did not develop a system for periodical inspection of infrastructure of the outsourced agencies.
- The prescribed MIS reports could not be generated due to inadequacy of the OLB system up to February 2010 when data was migrated in new upgraded system.
- The OLB division or the billing divisions did not have access to the databank as the level of authority for the access to the databank has not been prescribed by the competent authority. The audit trail system has also not been created in the OLB system for monitoring the billing work.
- The Company did not have a documented policy prescribing the detailed procedures and working of the OLB system.

The Management replied (November 2010) that MVVNL was addressing the need to form an in-house team of IT experts in the new servers, e-suvidha had been directed to implement a fully functional audit trail.

Lack of disaster recovery and business continuity plan

The Company did not have a disaster recovery and business continuity plan.

2.3.33 The Company did not have a disaster recovery and business continuity plan outlining the action to be taken immediately after a disaster and to ensure that the data processing operation could be acquired immediately.

We noticed that the backup of the database is maintained in the premises of the OLB Division on incremental¹⁶ basis. The backup of the whole database is not maintained at different premises as per standard practices of the IT

¹⁶ Under the incremental system, current data replaces previous data.

environment. The key configuration items viz. hardware, software, personnel and other assets which would be required for continuity of the IT activity in case of a disaster have not been identified and documented. Also in case of default on the part of outsourced billing agency, the Company did not have a recovery plan for continuity of its billing activity.

The Management agreed and stated (September/November 2010) that for safety of backup data, e-Suvidha had been directed to shift the backup server from Dalibagh data centre to e-Suvidha premises and to formulate a functional plan for recovery of system from this backup in case of any eventuality and maintain alternate means of reviving the billing in case of failure/break down.

Non utilisation of Geographical Information System (GIS)

2.3.34 To ensure efficient and effective monitoring, the Company, executed (September 2003) agreements with three billing agencies for GIS mapping at a cost of ` 105.28 lakh. The scope of work of agreement provided that the agencies were to undertake door-to-door survey and update master database including GIS mapping showing roads, streets, lanes and houses or polygon, marking of distribution transformers (DTs), poles, current transformers (CTs) meter installation on low tension side of the DTs, identifying status of meter correctness/legibility of meter number, consumer number, address etc. This also included identifying of power lines leading to the premises of the consumers, allotment of sequence numbers as per actual physical sequence at site by visual inspection.

We observed that though the GIS mapping work was done by the agencies and a payment of ` 75.01 lakh was made by 10 divisions on this account, the system could not be used as there was no integration between billing databank and GIS mapping data bank due to which the whole expenditure became wasteful.

The Management replied (September/ November 2010) that by indexing and electrically addressing all consumers in the data base, hand held billing was started and DT/feeder wise monitoring of consumers could be done. It, however, admitted that integration of developed map could not be successfully done as the technology and required software had not been envisaged at the conception of the project and added that presently the work of survey updations, development and integration of latest GIS maps had been taken up in R-APDRP scheme.

The matter was reported to the Government (October 2010); their replies were awaited (November 2010).

Conclusion

The Company did not formulate and document a formal IT Policy and a long/medium term IT strategy. The system of uploading of billed data is not safe as transfer of data was being made through CD, pen drive or through e-mail. On-line billing software was not designed to take care of various provisions of billings and contained irregular application control. There were discrepancies in mapping of various provisions of tariff. Input control was deficient as various types of billing were not done as per the provisions of tariff. Validation checks were either not there or were deficient. Monitoring of OLB system was inadequate and ineffective. It did not develop a system of periodical inspection of infrastructure of the outsourced agencies. The Company did not have a disaster recovery and business continuity plan. The GIS mapping work, intended for effective monitoring could not be used due to lack of integration of data.

Recommendations

We recommend that:

- **the Company should formulate and document an IT policy;**
- **IT security policy and business continuity plan should be formulated to prevent changes/modifications in database without authorisation;**
- **the compliance of tariff provisions issued by UPERC and its application in the billing software/database used by outsource billing agencies should be ensured and properly monitored;**
- **the Company should formulate disaster recovery plan for immediate operation of data processing at the time of disaster; and**
- **the Company should ensure linkage of GIS software with the billing data bank to have finer details of the network and connected consumers. GIS mapping should be periodically updated.**