Chapter II

2. Performance reviews relating to Government Companies

Haryana Power Generation Corporation Limited

2.1 Working of Units I to VI of Panipat Thermal Power Station

Highlights

While the Company in aggregate for 2003-08 achieved the generation norms of Central Electricity Authority and Haryana Electricity Regulatory Commission in respect of Units II, IV, V and VI, it failed to achieve these norms in respect of Units I and III.

(Paragraph 2.1.8)

Non-operation of plants at full plant load factor during actual hours of usages resulted in short generation of 2896.49 MUs valued at 227.64 crore.

(Paragraph 2.1.9)

Excess time taken for planned overhauling of boilers and turbo generators led to loss of generation of power of 440.89 MUs valued at Rs. 30.02 crore.

(Paragraph 2.1.12)

Due to excessive forced outages there was generation loss of 1377.89 MUs valued at Rs. 115.61 crore.

(Paragraph 2.1.13)

Auxiliary consumption in excess of the norms fixed by Haryana Electricity Regulatory Commission worked out to 132.935 MUs valued at Rs. 35.91 crore during 2004-08.

(Paragraph 2.1.15)

Excess consumption of coal based on HERC stipulated heat rates and calorific value of coal received during 2004-08 worked out to 6.75 lakh metric tonne valued at Rs. 151.16 crore.

(Paragraph 2.1.22)

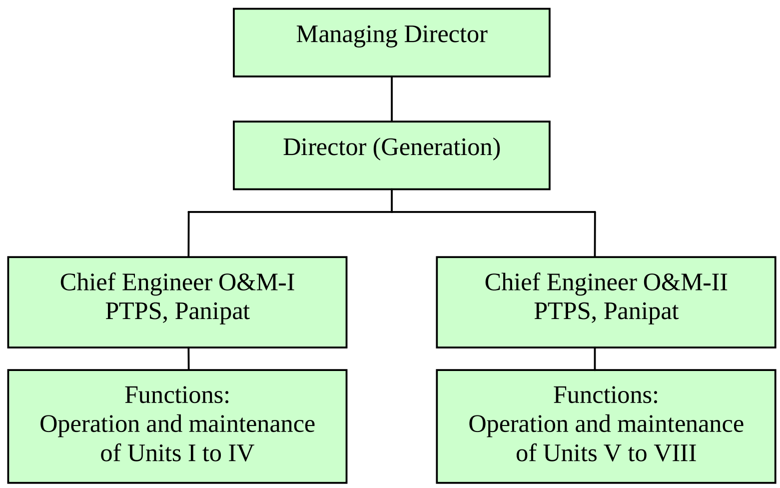
Excess transit loss of coal compared to norms fixed by HERC for the years 2004-08 worked out to 3.44 lakh metric tonne valued at Rs. 78.56 crore.

(Paragraph 2.1.20)

Introduction

2.1.1 Panipat Thermal Power Station (PTPS) of Haryana Power Generation Corporation Limited (Company) has installed capacity of 1,360 MW from eight power generating Units. Installed capacity of Units I to VI covered in this review was 860 MW[*]. Net generation of power by these units during 2003-07[@] was 20,228.004 MUs at aggregate cost of Rs. 5,226.19 crore. The revenue earned thereagainst was Rs. 5,397.35 crore during this period. The power produced was transferred to Distribution Companies for onward transmission to the consumers.

Organisational set up relating to operation and maintenance of generating Units is given below:



Performance of Units I to V and construction of Unit VI was last reviewed in the Report of the Comptroller and Auditor General of India for the year ended 31 March 2001 (Commercial) - Government of Haryana. The Committee on Public Undertakings (COPU) discussed the review in May 2006 and its recommendation relating to sales tax on surface transportation charges is contained in 53 Report presented to the State Legislature on 22 March 2007. The Company has not submitted action taken note to the COPU so far (July 2008).

Scope of Audit

2.1.2 The present review conducted during December 2007 to March 2008 covers operational performance and maintenance of Units I to VI during 2003-08. Records at the headquarters of the Company and Chief Engineers at project site were test checked in audit.

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[*] Units I to IV (110 MW each) and Units V to VI (210 MW each).

[@] Cost data for 2007-08 had not been compiled by the Company.

Audit objectives

2.1.3 The audit objectives were to ascertain whether:

- the plans for renovation and modernisation (R&M) of overaged Units were timely drawn and executed;
- installed capacity of the generating Units was optimally utilised as per norms fixed by Central Electricity Authority (CEA)/Haryana Electricity Regulatory Commission (HERC);
- time allowed for preventive maintenance/capital maintenance of boilers and turbines of the Units was as per norms;
- auxiliary consumption of generating Units was as per norms fixed by CEA/HERC;
- consumption of inputs was managed efficiently so as to achieve low cost of generation;
- principles of material management were followed; and
- environment control measures were undertaken effectively.

Audit criteria

2.1.4 The following audit criteria were adopted:

- guidelines of CEA for optimisation of generation from the existing generating capacity through R&M of over-aged Units;
- residual life assessment (RLA) study reports;
- norms for operational performance fixed by HERC/CEA;
- norms fixed by CEA for energy audit to reduce consumption of various inputs; and
- statutory provisions in respect of stack emissions and utilisation of ash generated by the Units.

Audit methodology

2.1.5 Audit followed the following mix of methodologies:

- analysis of project reports, RLA studies, award and execution of R&M works;
- analysis of operational performance data;
- analysis of data relating to consumption of inputs for generation of power; and
- interaction with Management at different levels.

Audit findings

2.1.6 The audit findings were reported (June 2008) to the Government/Management and discussed in the meeting (8 August 2008) of Audit Review Committee for State Public Enterprises (ARCPSE) wherein representatives of the Government/Company were present. Views of the Government/Management were considered while finalising the review. The audit findings are discussed in succeeding paragraphs.

Operational performance

2.1.7 Operational performance profile of Units I to VI for the five years ending 2007-08 is given in **Annexure 8**. A scrutiny of performance profile revealed the following:

Shortfall in generation as compared to CEA norms

2.1.8 As per CEA's norm, generation of energy per KW of installed capacity during a year should not be lower than 5,500 units. Table below indicates generation of power by the six Units during 2003-08.

Sl. No.	Particulars	Unit I	Unit II	Unit III	Unit IV	Unit V	Unit VI	Total
1	Power to be generated as per CEA norm during 2003-08 (MUs)	3025.00	3025.00	3025.00	3025.00	5775.00	5775.00	23650.00
2.	Actual Generation during 2003-08 (MUs)	2536.73	3348.65	2835.49	3546.68	8040.86	8070.85	28379.26
3.	Deficit (-)/ Surplus power generated (MUs)	(-) 488.27	323.65	(-) 189.51	521.68	2265.86	2295.85	4729.26

The Company had maintained the above norms in Units II, IV, V and VI but could not achieve the same in Units I and III in aggregate for 2003-08. Year wise performance by individual Units revealed that the generation ranged between 2,222 and 5,487 Units per KW in Unit I during 2004-08, 5,198 units in Unit II during 2004-05 and 1,876 and 4,298 units during 2005-07 in Unit III. The shortfall in generation during these periods in these Units worked out to 1,056.98 MUs. The shortfall is attributable to backing down, forced outages and closure for renovation and modernisation and uprating of Unit I, excess time taken in planned overhauling in respect of Unit II and excess time taken in planned overhauling and forced outages for Unit III.

Had these Units also achieved the generation as per norms, the performance would have further improved.

Low plant load factor

2.1.9 Plant load factor (PLF) represents percentage of actual generation to generating capacity. HERC had fixed PLF norms of 65, 65, 55 and 70 *per cent* for Units I to IV during 2004-05, 2005-06, 2006-07 and 2007-08 respectively and 80 *per cent* for units V and VI during 2004-08. Table below indicates generation of power required as per HERC norms by the six Units, actual generation and deficit/surplus power generated during 2004-08:

Sl. No.	Particulars	Unit I	Unit II	Unit III	Unit IV	Unit V	Unit VI	Total
1	Power to be generated as per HERC PLF norms during 2004-08 (MUs)	2459.03	2459.03	2459.03	2459.03	5890.75	5890.75	21617.62
2.	Actual Generation during 2004-08	1927.09	2649.27	2102.27	2788.25	6393.04	6569.61	22430.00
3.	Deficit (-)/ Surplus power generated (MUs)	(-) 531.94	190.24	(-) 356.29	329.22	502.29	678.86	812.38

Units II and IV to VI achieved overall norms of generation fixed by HERC for 2004-08 but Units I and III could not achieve the same during 2004-08.

Performance by individual Units revealed that Unit I during 2004-06 and 2007-08, Unit II during 2004-05 and 2007-08, Unit III during 2005-07, Unit IV during 2004-05 and 2007-08 and Unit V during 2004-06 could not achive the targeted generation. The shortfall in generation during these periods in these Units worked out to 1,198.38 MUs. The shortfall is attributable to backing down, forced outages and closure of unit for renovation and modernisation and uprating in respect of Unit I, excess time taken in overhauling of Unit II, excess time taken in planned overhauling and forced outages in Unit III and reserve shutdowns* in Unit IV and V. Besides running of these Units at partial load on account of tube leakage, flame failure and inadequate furnace pressure also attributed for shortfall in generation.

Shortfall in generation as compared to possible generation of power during actual hours of operation aggregated to 2,896.49 MUs valued at Rs. 227.64 crore.

Generation of power in actual hours of operation during 2003-08 by units I to VI was 28,379.26 MUs against possible generation of 31,275.75 MUs (**Annexure 8**) due to operation of the Units at partial load which resulted in shortfall in generation of power aggregating 2,896.49 MUs valued at Rs. 227.64 crore (exclusive of fuel cost).

During ARCPSE meeting the Management stated that low generation was due to backing down of Units owing to low demand. The reply is not tenable as during these periods the Company was purchasing power from outside sources on short term basis. Had the Company maintained the requisite PLF, it could have saved extra expenditure of Rs. 79.13 crore on purchase of 716.04 MUs at higher rates during 2004-07#.

Plant outages

2.1.10 Outages represent the period during which the generating Unit is not available for power generation. Thermal stations have outages, which may be

* Reserve shutdown means shutdown of the Unit(s) when there is no demand of power in the grid.

\# Loss for 2007-08 could not be worked out due to non-compilation of cost data for the year.

'planned' and/or 'forced'. While planned outages are necessary for maintenance work on boilers, turbo generators (TG) etc; forced outages are due to unforeseen factors and mainly arise from lack of adequate and timely preventive maintenance. Audit analysis of outages revealed as under:

Planned outages

2.1.11 As per the Indian Boilers Act, 1923, boilers are required to be overhauled annually. The *Kukde* Committee constituted by CEA recommended (May 2001) capital maintenance of boiler every alternate year within a period of 30 days and 15 days mini shutdown for overhauling between the two capital overhaulings. The Committee also recommended capital maintenance of the turbo generator (including boiler) once in every five years within 50 days.

During 2003-08 Units I to VI were required to carry out 12 mini overhaulings of boilers, 12 capital overhaulings of boilers and six capital overhaulings of turbo generators (including boilers). Against this schedule, the Company carried out all the 12 mini overhaulings of boilers, nine capital overhaulings of boilers and three capital overhaulings of turbo generators.

The Company did not take up one each capital overhauling of boilers of Units I, II and IV which were due during 2003-04, 2004-05 and 2006-07 respectively and capital overhaulings of turbo generators of Units II, IV and VI which were due during 2007-08, 2007-08 and 2006-07 respectively. During ARCPSE meeting the Management stated that due to acute power shortage and requirement of power in the State, the maintenance of the Units was sometimes postponed. The Management contention is not acceptable as postponement of maintenance of the Units had resulted in excess forced outages as discussed in paragraph 2.1.13.

Excess time taken for overhauling and maintenance of boilers and turbo generators

Excess time taken for planned overhauling of boilers and turbo generators led to power generation loss of 440.89 MUs valued at Rs. 30.02 crore.

2.1.12 Annual shutdowns, mini shutdowns and capital overhaulings of Units I to VI are tabulated in **Annexure 9**. The plant took 236 days (5,669 hours) excess in overhauling and maintenance of boilers and turbo generators resulting in generation loss of 440.89 MUs (based on PLF norm of HERC) valued at Rs. 30.02 crore (excluding fuel cost). Two cases of abnormal delay are discussed below:

- Unit-II was synchronised after refurbishment in March 2003. The Unit was due for overhauling (mini shut down) in October 2004. The Company did not take up the overhauling work and the Unit tripped on 3 January 2005 (18:27 hours) due to failure of grid supply from Bhakra Beas Management Board, Sewah. The Unit could not be started thereafter despite a number of attempts. Bearings number 3, 4 and 5 were opened in the presence of BHEL engineers, and it was found that bearing number 3 was badly damaged and 4 and 5 were cracked. It was suspected that the turbine rotor had been misaligned. A committee consisting of Chief Engineer (O&M), Director CEA, and DGM (Turbine) from BHEL, constituted (January 2005) for investigation concluded that the damage had resulted from dry running of rotor shaft in the bearings. There was no supply of lube oil to the bearings due to failure of direct current (DC), emergency oil pumps (EOP) to operate and also non-availability of DG set on auto start mode. It was further observed by the Committee that routine checking of DC, EOP by operation staff was not fool proof. A work order for repair of turbine and generator was placed (March 2005) on BHEL for Rs. 2.29 crore. The Unit was synchronised (25 April 2005) after repairs at a cost of Rs. 2.54 crore (including service tax).

Non-carrying out the scheduled preventive maintenance coupled with faulty routine checking of DC, EOP and non-availability of DG set on auto start mode had, thus, resulted in excessive cost of repair as compared to normal overhauling cost ranging between Rs. 42 lakh and Rs. 1.30 crore in other Units. Further, due to excess time taken (97 days/2,331 hours) in repairs there was generation loss of 166.67 MUs (based on PLF at HERC norm) valued at Rs. 10.51 crore (excluding fuel cost).

- Letter of intent (LOI) was issued (March 2005) to BHEL for overhauling of low pressure (LP) turbine, inspection of turbine bearings, TG mechanical and electrical works and overhauling of stator excitation system of Unit III at Rs. 59 lakh. As per Work order issued on 8 April 2005, the work was to be completed within 28 days starting from 8 April 2005. After dismantling the turbine and generator, BHEL concluded (April 2005) that the LP rotor could not be repaired at the site as it needed complete dismantlement, reassembly and balancing. The rotor was sent (April 2005) to BHEL, Hyderabad where it was estimated that the repairs would take 4-5 months. Audit observed (March 2008) that despite having a spare LP rotor taken out from the Unit in November 2002, the project authorities did not get the rehabilitation/repairs of the rotor including high speed dynamic balancing done from BHEL during the intervening period for use in emergency. It was only in June 2005 that the Management placed a work order for Rs. 12 lakh on BHEL for assessing the suitability of using this LP rotor. After assessment, BHEL informed that besides slow speed balancing at site, 29 blades required replacement and submitted (June 2005) their offer for repairs at Rs. 42.50 lakh for which the BOD of the Company gave its approval on 29 June 2005. The Unit was commissioned with the repaired old LP rotor on 22 July 2005 after shutdown of the unit for 114 days. The annual overhauling, thus, took excess period of 84 days (2,012 hours) which resulted in power generation loss of 143.86 MUs (at PLF norm of HERC) valued at Rs. 9.70 crore (excluding fuel cost). The Unit worked only for three and half months and had to be closed due to high turbine vibration as discussed in paragraph 2.1.14. Had the Company got the rotor (taken out in November 2002) rehabilitated/repaired well in time and kept it as stand by, this power generation loss could have been avoided.

Forced outages

Excessive forced outages resulted in generation loss of 1377.89 MUs valued at Rs. 115.61 crore.

2.1.13 Despite planned maintenance there were forced shutdowns during 2003-08 for 22,092 hours in Units I to VI. This included 16,930 hours (76.6 *per cent*) on account of 247 shutdowns exceeding 24 hours at a time due to trouble in boilers and related equipment (5,849 hours), fault in turbo generators (8,342 hours), fault in electric equipment (1,457 hours), shortage of coal (351 hours) and other miscellaneous reasons (931 hours) resulting in power generation loss of 1,377.89 MUs (at PLF norm of HERC) valued at Rs. 115.61 crore (net of fuel cost).

Audit analysis of the outages revealed that:

- trouble in boiler and related equipments accounted for 34.55 *per cent* of the forced outages exceeding 24 hours at a time which was mainly due to leakages in various tubes on account of non-replacement of weak tubes during mini shutdowns/annual overhaulings; and
- troubles in turbo generators accounted for 49.27 *per cent* of the forced outages exceeding 24 hours at a time despite annual overhaulings/capital overhaulings which indicated that all the defects were not removed during overhaulings.

The Management stated (July 2008) that the tubes of various sizes and lengths are closely spaced due to design constraints and almost 50 *per cent* of tubes are inaccessible for measurement during overhaulings. It was further stated that the forced outages were due to absence of planned shutdowns as per schedules and delayed implementation of R&M/refurbishment schemes. The contention is not acceptable as the Management should have devised a mechanism to monitor problem prone areas to ascertain the health of the machinery and take remedial action accordingly. Further, the Management should have carried out maintenance of the Units as per schedule and R&M/refurbishment of Units should have been implemented timely.

Inadequate overhauling of Unit-III

2.1.14 After annual overhauling, as discussed in paragraph 2.1.12, the Unit-III was commissioned on 22 July 2005. On 8 November 2005, the turbine developed vibrations beyond permissible limit and the Unit had to be tripped. On checking it was found that blades of stage-3 A and 4 A had broken. In the absence of any firm commitment from BHEL, Hyderabad for return of repaired/modified LP rotor sent in April 2005, the Management decided to repair the existing LP rotor and placed (12 November 2005) order on BHEL. BHEL recommended (24 November 2005) replacement of 49 blades and repair of other blades, replacement of gland fins, slow speed balancing of LP rotor and after complete assembly, trim balancing of the machine etc. The above jobs were completed at a cost of Rs. 63.50 lakh (excluding material cost). The Unit was synchronised on 24 December 2005 with air in generator but had to be tripped on 26 December 2005 due to vibration beyond permissible limit. BHEL was informed accordingly and again trim balancing was done by them and the Unit was synchronized with grid on 28 December 2005. The Unit again tripped on 1 January 2006 due to higher vibration in turbine. Though the offer of BHEL included responsibility for removal of the defects arising due to workmanship for a period of 30 days from first synchronisation after completion of work, the BHEL did not fulfill its commitment and the entire expenses of Rs. 63.50 lakh thus proved unfruitful.

The rotor of the Unit (sent to BHEL Hyderabad in April 2005) reached the plant in May 2006 after repairs at a total cost of Rs. 1.09 crore. The BHEL synchronised this unit on 12 August 2006 at a cost of Rs. 42 lakh.

Non rehabilitation/ repair of the old spare LP rotor led to loss of generation of 425.67 MUs valued at Rs. 35.17 crore.

Thus, failure of the Management in getting the rehabilitation/repair of the old/spare LP rotor in time and resultant make shift arrangement of using this rotor without high speed dynamic balancing led to excessive repair/rehabilitation cost and loss of generation of 425.67 MUs (at PLF norm of HERC) valued at Rs. 35.17 crore (net of fuel cost) due to forced outages (269 days/6,447 hours) during the period from 8 November 2005 to 24 December 2005 and 1 January 2006 to 12 August 2006.

Auxiliary consumption

Auxiliary consumption of power in excess of HERC norms was 132.94 MUs valued at Rs. 35.91 crore.

2.1.15 A part of energy generated is consumed for auxiliary purpose. Percentage of auxiliary consumption to the gross energy in Units I to IV ranged between 11.05 and 12.13 during 2003-08 which was in excess of the norm of 11 *per cent* fixed by HERC for the years 2004-08. Auxiliary consumption in Unit V was in excess of the HERC norms of 9 *per cent* during 2005-06 and 2007-08. In Unit VI, it was more than the HERC norm (9.5 *per cent* during 2004-05 and 9 *per cent* during 2005-08) during 2004-08. Auxiliary consumption in excess of HERC norms worked out to 132.94 MUs valued at Rs. 35.91 crore during 2004-08.

Audit observed that auxiliary consumption in excess of norms in Units I to IV was attributable to excessive forced shutdowns as auxiliaries continue to run and consume power even though the Unit is shut down. The Company had not taken effective steps to bring down the auxiliary consumption within the norms.

The Management stated (July 2008) that running of Units at partial load and low gross calorific value of coal caused frequent forced shutdowns of the Units which led to excess auxiliary consumption. After R&M of Units I, III and IV and by blending of coal with imported coal, the auxiliary consumption would come down. The fact remained that R&M is incomplete in respect of Unit I and it is yet to be taken in respect of Unit III and IV. Thus, in the absence of timely preventive measures, the auxiliary consumption could not be brought down.

Procurement and consumption of coal

Linkage of coal

2.1.16 The allocation of coal and collieries to the thermal power stations is made on quarterly basis by a Standing Linkage Committee (SLC) comprising members from Ministry of Coal, Ministry of Railways, Ministry of Power and

Coal India Limited. The quantum of linkage is based on various factors viz. requirement of coal as per generation target, availability of coal and wagons for movement and unloading capacity of the thermal power stations. Management had been lifting coal from Bharat Coking Coal Limited (BCCL), Central Coalfields Limited (CCL), Western Coalfields Limited (WCL), South Eastern Coalfields Limited (SECL) and Northern Coalfields Limited (NCL).

Audit analysis of procurement and consumption of coal revealed that the Company incurred additional/avoidable expenditure of Rs. 246.55 crore due to rejection of claims for absence of sampling of coal, payment of sale tax on transport charges and on imported coal, non weighment of coal, excess consumption of coal and excessive transit loss of coal as discussed in paragraphs 2.1.17 to 2.1.22.

Settlement of coal claims

2.1.17 PTPS had fuel supply agreement (FSA) with BCCL and CCL up to March 2003 which provided for full compensation to the Company for idle freight to the Railways for under loading of wagons below the carrying capacity and fifty *per cent* compensation for penal freight for overloading of wagons. Besides, compensation on stones in supply and slippage in grade of coal was to be given based on joint inspection. The Company neither renewed the FSA thereafter nor signed a new FSA. WCL had agreed (May 2002) for compensating the Company only for slippage in grade of coal on the basis of joint sampling of coal. Scrutiny of claims lodged and settled by various coal companies revealed the following:

- BCCL and CCL had been settling the claim on account of grade slippage even in the absence of FSA. However, claims of Rs. 98.33 lakh (Rs. 90.39 lakh during 2003-04 and Rs. 7.94 lakh during 2006-07) were not settled by BCCL due to non sampling of the coal.
- Against the claims of Rs. 37.79 crore and Rs. 8.28 crore, BCCL and CCL did not settle claims of Rs. 32.41 crore and Rs. 8.28 crore respectively during 2003-08 for sizing charges, stones in coal, penalty for overloading and shortages of coal. In the absence of FSA, the Company could not force these Companies to make these payments.
- WCL had reconciled the claims upto December 2007. Claims on account of penalty for overloading (POL) of Rs. 94.97 lakh for the years 2003-04 to 2007-08 (up to December 2007), shortages of Rs. 15.15 lakh for the year 2003-04, under loading penalty for the period from April 2006 to December 2007 amounting to Rs. 1.99 crore were not accepted as there was no agreement with the Company for these items. Reasons for not taking up these issues with the WCL were not on record.

The Management stated (July 2008) that FSA is to be finalised jointly with CEA, Coal companies and power utilities but due to lack of consensus FSA could not be finalised. During ARCPSE meeting the Management assured that outstanding claims on account of non sampling of coal, penalty on account of overloading would be rechecked and taken up for settlement with the coal companies.

Avoidable payment of sales tax on surface transportation charges

2.1.18 As per provisions of the Central Sales Tax Act, 1956, sale price means the amount payable to a dealer as consideration for the sale of goods excluding cost of freight and delivery when charged separately. In view of the rule and settled case laws, the element of internal surface transportation charges charged distinctly from sale price do not attract sale tax. Accordingly, Northern Coalfields Limited (NCL) was raising surface transportation charges bills separately and was not charging sales tax on these charges.

The Company, however, was paying sales tax on transportation charges to other coal companies, which was pointed out in para No. 2B.6.1 of the Comptroller and Auditor General's Report (Commercial) for the year ended March 2001. COPU while examining the para had recommended (March 2007) in its fifty third Report for re-examination of this issue.

In disregard to provisions of Central Sales tax Act the Company paid Rs. 2.95 crore as sales tax on surface transportation charges.

Audit noticed that the Company continued to pay sales tax even after COPU's recommendation. During 2003-08 the PTPS paid Rs. 2.95 crore as sales tax to the coal companies (other than NCL) on surface transportation charges.

In its reply and during ARCPSE meeting the Management stated (July 2008) that CST was leviable, as the freight involved is before delivery of coal to the Company. Non-payment of CST would attract levy of service tax. The reply is not tenable as the Company had not been paying either CST or service tax to NCL on surface transportation charges.

Avoidable payment of sales tax on imported coal

2.1.19 Article 286 (1) (C) of Constitution of India prohibits imposition of sales tax on import by State Governments. Section 5(2) of Central Sales Tax Act, 1956 defines the sale during import as a sale or purchase of goods deemed to be in course of import of the goods into the territory of India, only if the sale or purchase is effected by transfer of documents of title to the goods before the goods have crossed the customs frontier of India.

The Company placed (November 2005) a purchase order on Minerals and Metals Trading Corporation of India (MMTC), New Delhi for supply of 3.60 lakh MTs of imported coal. The quantity was subsequently (October 2006) increased to 5.10 lakh MTs. During December 2005 to April 2007, PTPS received 4.64 lakh MT imported coal in seven shipments at a total cost Rs. 179.01 crore including sales tax of Rs. 6.66 crore.

Deficient order for import of coal through MMTC resulted in avoidable payment of sales tax of Rs. 6.66 crore.

It was noticed in audit that the Company while placing the order for import of coal did not foresee the benefit of exemption from payment of central sales tax (CST) by effecting sale in the course of import through 'high sea sale' agreement. Resultantly the Company had to bear the burden of CST of Rs. 6.66 crore on the cost of imported coal.

Thus, due to non inclusion of the provisions of 'high sea sale' in the purchase order with MMTC for effecting sale of coal during the course of import, the

Company incurred an avoidable expenditure of Rs. 6.66 crore. The Management stated (July 2008) that this provision has been included in the purchase order of December 2007.

Excessive transit loss of coal

Transit loss of coal was in excess of HERC norms during 2004-08 aggregated to 3.44 lakh metric tonne valued at Rs. 78.56 crore.

2.1.20 The percentage of transit loss of coal as reported to HERC ranged between 3.23 and 6.58 during 2001-07 which was far in excess of the national norm of 0.8 *per cent* for non-pit head power houses. HERC, however, while approving the generation tariff, allowed transit loss of coal at 3 *per cent*, 2.5 *per cent* and 2 *per cent* in their orders for the years 2004-06, 2006-07 and 2007-08. Actual transit loss thereagainst worked out in audit was 3.70, 4.50, 3.01 and 4.64 *per cent* respectively. Analysis of losses further revealed that transit loss of coal was excess in case of CCL, WCL and BCCL during all the four years from 2004-05 to 2007-08. In case of NCL and South Eastern Coalfields Limited (SECL) the loss was excess during 2007-08. Excess transit loss in respect of various coal companies with reference to norms fixed by HERC was 3.44 lakh metric tonne valued at Rs. 78.56 crore. As HERC did not allow the excess transit loss, the Company was put to a loss of Rs. 78.56 crore.

During ARCPSE meeting the Management stated that appointment of coal agent in March 2006 had reduced the transit loss of coal from six *per cent* to around three *per cent* in 2006-07. The fact, however, remains that loss in transit during 2007-08 had increased to 4.64 *per cent* as against 3.01 *per cent* during 2006-07. Further, the loss had been worked out with reference to HERC norms fixed for different years. The Company needs to take up the matter with transporters (i.e. Railways) to ensure full delivery of coal or compensation in lieu of shortages.

Loss due to non-weighment of 100 per cent quantity

2.1.21 PTPS has two Coal Handling Plants (CHP) for meeting coal requirements of Units I to IV (CHP-I) and Units V to VI (CHP-II) respectively. There are four electronic weighbridges at CHP-II and two mechanical weighbridges at CHP-I. In accordance with terms of agreement executed (April 1999) with the coal companies, where arrangements of weighment do not exist at the loading point and arrangement for weighment is available at unloading point, weighment at unloading point shall be accepted as final.

Mechanical weighbridges at CHP-I were lying defective since September 2003 and had not been repaired and calibrated so far (July 2008). In the absence of weighing facility, average weight of wagons of CHP-I was being assessed based on weighment of half the number of wagons in a rake weighed at the electronic weighbridges in CHP-II.

Non-weighment of 100 *per cent* coal at the unloading point resulted in non recovery of short receipted coal of 29,697 MT valued at Rs. 6.24 crore.

During the period from September 2003 to December 2007, coal received in short was estimated by the Company at 29,696.92 M.T. (BCCL: 17,220.03 MT and CCL: 12,476.89 MT) valued at Rs. 6.24 crore (BCCL: Rs. 3.58 crore and CCL: 2.66 crore). The claims of the Company had not been admitted as 100 *per cent* weighment had not been done at the unloading point. This had resulted in loss of Rs. 6.24 crore to the Company.

The Management stated (July 2008) that with effect from 10 March 2006, the coal agent was supplying information of unweighed rakes and such rakes were being weighed on the electronic weighbridges to claim the shortages from the coal companies. The fact, however, remained that due to non weighment of 100 *per cent* wagons in a rake, claims amounting to Rs. 1.79 crore had not been admitted by the coal companies even after March 2006.

Excess consumption of coal

Based on stipulated heat rate approved by HERC and average calorific value of coal received, the excess consumption of coal was to the extent of 6.75 lakh MT valued at Rs. 151.16 crore.

2.1.22 HERC, while approving the generation tariff for 2004-05 onwards, stipulated heat rate for various Units of the PTPS. Average calorific value of coal, stipulated heat rate, standard consumption of coal per unit of generation, actual generation, standard and actual consumption of coal on the power generated and extra expenditure on excess consumption of coal are tabulated in **Annexure 10**. From the annexure, it would be seen that excess consumption of coal worked out to 6.75 lakh MT valued at Rs. 151.16 crore.

The Management attributed (April and July 2008) excess consumption to running of units at partial load due to poor quality of coal, inherent deficiencies and various equipment constraints. Reply is not acceptable as excess consumption of coal had been worked out taking into consideration the stipulated heat rate fixed by HERC and average calorific value of coal actually received at the plant; inherent deficiencies and equipment constraints should have been timely addressed to arrest the excess consumption of coal.

Unfruitful expenditure on extension of CHP-I

2.1.23 For meeting the coal requirements of Units-III and IV, the erstwhile Haryana State Electricity Board (Board) awarded (June 1982) the work of extension of CHP-I to Alind Industries Private Limited, Hyderabad at Rs. 3.08 crore. The scope of work involved erection and commissioning of:

- extended conveyors 7A/7B for bunker filling along with dust extraction system;
- extended conveyor 4A/4B along with manual unloading hopper;
- new conveyors 9A/9B for stacking of crushed coal;
- new conveyors 12A/12B along with tunnel for reclaiming crushed coal; and
- new conveyors 14A/14B for disposal of coal mills reject.

These works were to be completed by the firm by July 1983. The firm failed to complete the works within the scheduled time and the period was extended (March 1987) up to August 1987. During execution of the work, the cost was reviewed and scope of work extended (April 1988) by Rs. 1.06 crore revising the cost of work to Rs. 4.14 crore.

In the meantime, the firm became financially sick and abandoned the work in April 1987. By the time, the firm was declared sick (October 1989) by Board of Industrial and Financial Reconstruction, expenditure of Rs. 3.76 crore had already been incurred on the work thereby leaving Rs. 38.11 lakh for the left over work. The contractor again took up (October 2003) the remaining work and completed the left over work in September 2005 at Rs. 38.11 lakh against which a sum of Rs. 29.41 lakh was released. During testing and commissioning of the extended portion of coal handling plant in September 2005, water seepage from walls of tunnel of conveyors 12A/12B started and huge quantity of water and mud collected at the tail end of the conveyors due to which testing and commissioning had to be stopped. Work relating to identification of source of seepage of water and slush in conveyor belt 12A/12B tunnel and its rectification was allotted (April 2007) to Geo Constructions, Gurgaon at Rs. 148.28 lakh with completion schedule up to 16 October 2007. Further three phase LT electric supply up to maximum load of 150 KW was to be supplied by the Company free of cost at a single point. The firm submitted (up to 16 October 2007) bills for Rs. 94.61 lakh to the Company for which the Company released a sum of Rs. 64.90 lakh till November 2007. The firm has abandoned the remaining work.

It was noticed in audit (July 2008) that initial civil work relating to conveyor belts 12A/12B tunnels was done by this firm as a sub-contractor of Alind Industries Pvt. Limited, Hyderabad which failed to complete the work successfully.

Thus, allotment of work to a contractor who had failed to commission the work successfully led to further unfruitful expenditure of Rs. 94.61 lakh besides expenses on free electricity supplied to the firm by the Company. As a result of non completion of the extension work of the CHP, the objective of stacking the crushed coal in stock yard and reclaiming the same for firing the boiler and lifting the mill reject coal to the stock yard could not be achieved even after 26 years of conceiving this work.

During ARCPSE meeting (August 2008) the Management stated that the firm had now taken up the work and it would be completed in four months.

Disposal of mill rejects coal

2.1.24 Mill reject coal represents the coal rejected by the bowl mills installed in Units I to V. The table below indicates opening balance, receipt during the year, sold/reused and closing balance of mill reject coal during 2003-08.

Year	Opening balance	Received during the year	Sold/reused during the year	Closing balance
	(Quantity in MT)			
2003-04	149910	27366	9106	168170
2004-05	168170	31815	25408	174577
2005-06	174577	24311	44035	154853
2006-07	154853	22212	9480	167585
2007-08	167585	37694	1475	203804
Total		**143398**	**89504**	

It could be seen from the table that during 2003-08 the mill reject coal had increased from 1.50 lakh MT to 2.04 lakh MT. The increase in mill reject coal was due to partial use/disposal (0.90 lakh MT i.e. 62.94 *per cent* of the additional generated 1.43 lakh MT mill reject coal) during this period. The balance stock of 2.04 lakh MT valuing Rs. 6.93 crore* was still lying with the Company. This indicated lack of efforts for its disposal. The Company had also not worked out the impact of consumption of rejected coal on generation and plant and machinery.

While confirming the facts, the Management stated (July 2008) that mill reject coal was used due to feeding problems of wet coal in the reclaim stock yard and that impact of consumption of mill reject coal on generation and plant and machinery could not be assessed.

Consumption of fuel oil

2.1.25 The table below indicates norms of oil consumption fixed by HERC, actual units generated, standard requirement of oil, oil actually consumed and excess oil consumed during 2004-08:

Sl. No.	Particulars	Unit	Year			
			2004-05	2005-06	2006-07	2007-08
1.	Norms of consumption of fuel oil fixed by HERC (ml/unit)	I to IV	4.50	4.25	4.25	3.00
		V	2.00	2.00	2.00	2.00
		VI	2.00	2.00	2.00	2.00
2.	Actual generation (MUs)	I to IV	2377.645	2226.762	2566.621	2296.319
		V	1467.301	1466.628	1684.064	1775.045
		VI	1481.057	1688.280	1681.443	1718.832
3.	Standard requirement of fuel oil for actual generation (Sl. No. 1 X Sl. No.2) in kilolitre	I to IV	10699.402	9463.739	10908.139	6888.957
		V	2934.602	2933.256	3368.128	3550.090
		VI	2962.114	3376.56	3362.886	3437.664
4.	Oil consumed in kilolitre (Figure in bracket indicates consumption in ml/Unit)	I to IV	12919.835 (5.43)	11720.155 (5.26)	7501.108 (2.92)	6733.474 (2.92)
		V	2446.562 (1.67)	2601.58 (1.77)	1825.926 (1.08)	1775.686 (1.00)
		VI	4428.706 (2.99)	2471.207 (1.46)	909.365 (0.54)	1109.474 (0.65)
5.	Excess consumption of oil (kilolitre) (Sl. No.4 - Sl. No.3)	I to IV	2220.433	2256.416	-	-
		VI	1466.592	-	-	-
		Total	3687.025	2256.416	-	-
6.	Average rate per kilo litre		11440.23	16864.93	20240.86	24009.86
7.	Value of excess consumption (Rs. in crore) (Sl. No. 5 X Sl. No. 6)		4.22	3.81	-	-

Thus, six generating Units consumed excess oil aggregating 5,943.441 kilolitres valued at Rs. 8.03 crore. The excess consumption of oil was attributable to frequent shutdowns which in turn resulted in higher frequency of light-up of units for synchronisation.

* Worked out at a sale price of Rs 340 per MT sold in August 2006.

Residual life assessment, life extension and renovation and modernisation

2.1.26 In pursuance to the policy of Government of India to optimise power generation, the entire refurbishement of Units I to IV was awarded (May 1997) to ABB Kraft werke Berlin GmbH (now ABB Alstom Power). The entire refurbishment work of all the four units was to be completed by 21 November 2000. After taking up refurbishment of Unit II in January 1999, the work was abandoned by the contractor in April 2000. The Unit was subsequently completed by BHEL in March 2003. Out of remaining three Units, the work of Unit III and IV has not been taken up so far. The Company awarded (November 2001) study of RLA/Life Extension (LE) of Unit I at a cost of Rs. 25.30 lakh to Utility Powertech Limited, Noida. The firm recommended (April 2002) extensive refurbishment work of boiler, turbine, generator, auxiliaries, electrical, control and instrumentation system, de-mineral (DM) plant and circulatory water/raw water system.

Instead of implementing the recommendation of the firm, the Company issued (30 August 2005) letter of intent to BHEL for work relating to R&M and uprating of the Unit from 110 MW to 117.8 MW after RLA study (the RLA study had already been got done from Utility Powertech Limited, Noida at a cost of Rs. 25.30 lakh), at Rs. 120 crore (excluding taxes and duties). The commissioning of the Unit was to be completed by 30 March 2007. The Company released 10 *per cent* of contract price (Rs. 12 crore) to BHEL on 28 September 2005. Purchase order for supply of material (Rs. 104 crore) and work order for erection, testing and commissioning (Rs. 16 crore) was issued on 31 July and 1 August 2006, respectively. As per these purchase and work orders the entire R&M and uprating work of the Unit was to be completed by BHEL by 30 March 2007 (i.e. within 8 months). BHEL did not take up the work and requested (July 2007) the Company to shutdown the Unit with effect from 24 September 2007 for five months. The Unit was shutdown on 25 September 2007. In terms of work order, the R&M and uprating of the Unit was to be completed by May 2008. As per terms of the contract, BHEL took (December 2006) an insurance policy at Rs. 79.05 lakh for 12 months (up to 12 December 2007) and the insurance cover for further 6 months (up to 21 June 2008) was taken at Rs. 16.52 lakh which were paid by the Company. The following points were noticed in this regard:

- Rs. 25.30 lakh spent on RLA and LE study were rendered unfruitful as the work of RLA, R&M and uprating of the Unit was taken up with BHEL afresh.
- The Company without issuing detailed purchase and work order and without ensuring completion of R&M and uprating of the Unit by March 2007, released Rs. 12 crore being 10 *per cent* of the contract price in September 2005. BHEL retained this amount for over one year as the material was despatched from November 2006.
- As work has not been completed so far (June 2008) the Company had already incurred expenditure of Rs. 95.57 lakh up to June 2008 on marine cum storage and erection insurance which would further increase till the work is completed.

During ARCPSE meeting the Management stated that the unit would be synchronised by third or fourth week of September 2008.

- The Company had already sustained power generation loss of 112.728 MUs (calculated at PLF approved by HERC) valued at Rs. 7.83 crore (net of fuel cost) till July 2008.

Inventory management

Stores & Spares

2.1.27 The table given below indicates opening balance, receipt, issue and closing stock of stores and spares (other than fuel oil) during 2003-08:

Year	Opening balance	Receipt	Issue	Closing balance	Closing balance equivalent to months' consumption
	(Rupees in crore)				
2003-04	129.17	33.96	31.23	131.91	50.69
2004-05	131.91	50.06	45.26	136.71	36.25
2005-06	136.71	50.31	40.59	146.43	43.29
2006-07	146.43	66.47	52.19	160.71	36.95
2007-08	160.71	74.21	53.85	181.07	40.35

Inventory holding during 2003-08 ranged between 36.25 and 50.69 months consumption with the result that the Company had been incurring carrying cost of Rs. 1.51 crore per month.

Inventory holding ranged between 36.25 and 50.69 months' consumption. As a comparison with the inventory holding of a comparable thermal power station, inventory holding of Guru Nanak Dev Thermal Power Station, Bathinda (GNDP) ranged between 0.96 and 2.16 months' consumption during 2003-07. In addition, stores valued at Rs. 31.63 crore were lying in divisional stores as on 31 March 2008 which were shown as material at site. The Company had not classified its stores either on the basis of items falling in A, B and C categories based on their significance, or in the vital, essential and desirable (VED) categories. It had also not followed the stores control mechanism by fixing the minimum, maximum and re-ordering stock levels to avoid unnecessary stock holdings. The Company had been incurring inventory carrying cost of Rs. 1.51 crore per month calculated at 10 *per cent* per annum (borrowing rate).

Scrutiny of 3,446 store items having monetary value of more than Rs. 50,000 per item revealed the following:

- 543 items valued at Rs. 10.33 crore were lying in stores for more than 10 years.
- 214 items valued at Rs. 14.40 crore were lying in store for the period over 5 years to 10 years.
- 2,689 items valued at Rs. 74.53 crore were lying in store for less than five years.

The Management stated (July 2008) that the comparison of Thermal Power Station, Panipat with GNDP was not relevant because generating units at

Panipat were of different capacities and design (4x110 MW, 2x210 MW and 2x250 MW) whereas GNDP had only four generating units (4x110 MW) and the spares were interchangeable. The fact, however, remains that inventory holding ranging from 36.25 to 50.69 months' consumption was very high. During ARCPSE meeting the Management stated that it would check up the inventory and the items which were not of use would be disposed of.

Fuel Oil

2.1.28 The Company procures low sulphur high stock (LSHS) and high petroleum stock (HPS) oil from Hindustan Petroleum Corporation Limited and Indian Oil Corporation Limited.

The table below indicates opening balance, receipt, issue and closing stock of LSHS/HPS oil during 2003-08:

Year	Opening stock	Receipt	Issue	Closing stock	Closing stock equivalent to months' consumption
	(Rupees in crore)				
2003-04	5.02	21.84	20.52	6.34	3.71
2004-05	6.34	34.42	33.95	6.81	2.41
2005-06	6.81	50.29	43.54	13.56	3.74
2006-07	13.56	26.82	27.05	13.33	5.91
2007-08	13.33	25.38	23.50	15.21	7.77

From the above, it would be seen that inventory holding of LSHS/HPS oil ranged between 2.41 and 7.77 months consumption during 2003-08. The Company had neither fixed the periodicity in months' consumption nor minimum, maximum and re-ordering levels based on the requirements of the plant. Taking into account the lead period of one month and inventory holding requirement of one month, the stock holding should not have been for more than two months. The Company was holding inventory of Rs. 11.29 crore above two months consumption during these years which lead to carrying cost of Rs. 9.41 lakh per month calculated at borrowing rate of 10 *per cent* per annum.

Cost of generation

2.1.29 Unit wise cost of generation and revenue per unit of power sent out during 2003-07 is given in **Annexure 11**. Table below gives summary of net power generated, cost of generation, revenue from generation and surplus/deficit during 2003-07[@].

Particulars	2003-04	2004-05	2005-06	2006-07	Total
Net power generated (MUs)	5349.54	4745.81	4811.62	5321.03	20228.00
Cost of generation (Rs. in crore)	1295.56	1299.94	1288.89	1341.80	5226.19
Revenue from sale (Rs. in crore)	1294.75	1264.38	1321.41	1516.91	5397.25
Surplus/(-) deficit	(-) 0.81	(-) 35.66	32.52	175.11	171.16

[@] Cost data for 2007-08 had not been compiled by the Company.

Though revenue from sale of power (5397.35 crore) was more than the cost of generation by Rs. 171.16 crore during 2003-07 yet the generation cost per unit of power was higher than the tariff per unit fixed by HERC in Units I & II during 2004-05 and 2005-06, Units III & IV during 2005-06 and Unit V during 2004-05 to 2006-07 and Unit VI during 2004-05. Excess cost of generation was due to failure of the Company to adhere to various generation norms approved by HERC as analysed below:

- Low plant load factor (paragraph 2.1.9);
- Excess auxiliary consumption (paragraph 2.1.15); and
- Excess transit loss and excess consumption of coal and excess consumption of fuel oil (paragraphs 2.1.20, 2.1.22 and 2.1.25) leading to higher fuel cost.

Environment safeguards

2.1.30 Scrutiny of records by Audit revealed the following deficiencies regarding environment safeguards required by the Company:

- The concentration of Suspended Particle Matter (SPM) in the ambient air as prescribed (April 1996) by MOE&F was maximum of 500 microgram per cubic meter. Audit noticed that during October 2006 to March 2007 (except March and July 2007) concentration of SPM ranged between 600 and 1,494 microgram per cubic meter. Effective measures were not taken to control the concentration of SPM in the ambient air within the prescribed limits by regular tuning of electrostatic precipitators, proper stacking of crushed coal, proper dumping/disposal of mill rejected coal and making sprinklers functional in the coal handling areas. As per the provision of the Environment (Protection) Act, 1986, thermal power stations should provide online monitoring system to record SPM levels. The project authorities did not provide online monitoring system in Units I to V. The online system provided in Unit VI was not in working condition. The Company was getting the monitoring done through outsourcing on year to year basis.

The Management stated (August 2008) that efforts were being made to control the concentration of SPM in the ambient air within prescribed limits and online monitoring system was being introduced.

- MOE&F prescribed (May 1993) Particulate Matter (PM) level of 150 mg/NM^3 for thermal plants having generation capacity of 62.5 MW and above. The PM level of stack emission of Units I to IV was higher than the prescribed limit since June 2006 (except Units I & II during August 2006 and Unit –II during March 2008) which ranged between 157 and 1,276 mg/NM^3 and was the highest at 570 mg/NM^3 in Units I and II during April 2007 and 1,276 mg/NM^3 in Units III and IV in January 2007. Higher emissions were due to poor quality of coal used (ash content more than 34 *per cent*) and ineffective working of

Electrostatic Precipitators (ESPs) due to poor maintenance. Stack emission of Units V and VI remained within prescribed limit during 2003-08. CEA expressed (October 2007) its concern over excessive PM level in the stack emission and advised the Company to initiate remedial measures to bring down the PM level at stack to or below the norm. The PM level had not been brought under control so far (March 2008) by regular tuning of ESPs.

The Management stated (August 2008) that Unit I was under renovation and modernisation and efforts were being made to bring down the PM level of Units III and IV.

- During their visit (October 2007), representatives of MOE&F, Chandigarh and Central Pollution Control Board, Kanpur observed 10-12 dumps of mill reject coal which were regular fire hazards and asked the plant authorities to dispose them of. Action had not been taken so far and the mill reject coal had accumulated to 2.04 lakh MT as on 31 March 2008.

The Management stated (August 2008) that sale order for disposal of mill reject coal of Unit V had been issued and for disposal in remaining Units, tenders had been floated.

- MOE&F, with a view to protect environment, conserve top soil and prevent the dumping of coal ash, notified (September 1999) that brick kilns within a radius of 50 Km (limit enhanced to 100 Km in August 2003) from the Thermal Power Station would use at least 25 *per cent* of the coal ash on weight to weight basis for manufacturing cement, concrete blocks, bricks panel or for construction of roads, embankments, dams, dykes or for other construction activities. Thermal Power Stations were to submit an action plan to the Central/State Pollution Control Boards and regional office of MOE&F by March 2000 for full utilisation of the ash within a period of nine years. This plan had not been submitted so far (March 2008). The table below indicates production of ash and its disposal during 2003-08.

Year	Ash produced (MT)	Ash disposed (MT)	Percentage of disposal of ash to total ash produced
2003-04	1724469	31100	1.80
2004-05	1646068	167892	10.20
2005-06	2178099	234354	10.76
2006-07	2611362	294040	11.26
2007-08	2365168	220270	9.31

Disposal of ash produced during 2003-08 ranged between 1.80 *per cent* and 11.26 *per cent* only.

The disposal of ash during 2003-08 ranged from 1.80 *per cent* to 11.26 *per cent* indicating lack of efforts by the Company for its disposal.

The Management stated (August 2008) that dry fly ash evacuation system was in the process of installation. The fact however, remains that the Company failed to implement environment safeguards even after lapse of more than eight years and the ash was accumulating in the plant area thereby disturbing the environment.

- With a view to safeguard the environment, the MOE&F had asked (August 2002) the plant authorities to develop green belt on 44 hectare of land. The Company in consultation with Forest Department prepared (May 2004) a scheme for development of green belt on 45 hectare of land within three years and to plant 1.53 lakh trees by spending Rs. 1.59 crore. Subsequently, the cost was raised to Rs. 1.95 crore. Against the total estimated cost of Rs. 1.95 crore, advance payment of Rs. 1.10 crore had been released to the Forest Department up to October 2007. Forest Department submitted utilisation certificate for Rs. 1.01 crore up to August 2007 for planting 61,245 plants. Thus, against plantation of 40.03 *per cent*, the Company had made payment of 56.41 *per cent* and not impressed upon the Forest Department to complete the remaining work so that green belt could be developed.

Conclusion

While the Company in aggregate for 2003-08 achieved the generation norms of Central Electricity Authority and Haryana Electricity Regulatory Commission in respect of Units II, IV, V and VI, it failed to achieve these norms in respect of Units I and III. The Company by and large took up planned overhaulings of the Units but the time taken for overhauling was more than the prescribed time leading to loss of generation. Forced outages were on higher side due to trouble in boilers and turbo generators which mainly occurred due to inadequate maintenance during overhaulings. Auxiliary consumption was higher than the norms fixed by Haryana Electricity Regulatory Commission. There existed no fuel supply agreement with the coal companies for supply of coal resulting in non-settlement of huge claims on account of poor quality and transit loss of coal. Inventory of stores and spares and fuel oil was excessive. The plant failed to observe pollution control parameters fixed by the Ministry of Environment and Forest.

Recommendations

The Company may consider to:

- **take measures to increase generation by increasing plant load factor;**
- **take measures to reduce the cost of generation by reducing consumption of inputs and curtailing transit loss of coal;**
- **ensure timely preventive maintenance and upkeep of the plant equipment to avoid forced shutdowns of generating units; and**
- **implement environment safeguards to bring the various parameters of pollution control within prescribed limits.**

The matter was referred to the Government in June 2008; the reply had not been received (September 2008).

Haryana Forest Development Corporation Limited

2.2 Working of Haryana Forest Development Corporation Limited

Highlights

The Company failed to assure reasonable prices of trees to the farmers as the price fixation mechanism was flawed. As a result purchase of trees from farmers was negligible during 2003-08.

(Paragraph 2.2.9)

The Company has not fixed norms to monitor recovery of timber and fire wood from felled trees. Based on the minimum norms of recovery fixed by Punjab Forest Development Corporation, there was short recovery of timber valuing Rs. 2.88 crore.

(Paragraph 2.2.10)

Despite the fact that most of the staff was on deputation and there was sharp decline in volume of trees felled, the manpower was not rationalised with reference to volume of work. The excess manpower has resulted in extra expenditure of Rs. 1.49 crore during 2003-08.

(Paragraph 2.2.19)

The Company had incurred an expenditure of Rs. 9.49 crore during 2003-08 on labour and transport without evolving a transparent system for engagement of labour and transport contractors.

(Paragraph 2.2.17)

The Company had not made any contribution towards employment generation in rural areas through promotion of forest based and allied industries.

(Paragraph 2.2.24)

Introduction

2.2.1. Haryana Forest Development Corporation Limited (Company) was incorporated in December 1989 under the Companies Act, 1956, as a wholly owned Government Company with the main purpose of assuring reasonable prices to the farmers for their standing trees and other forest produce and also to ensure the welfare of farming community and development of forest based and allied industries. The authorised share capital of the Company is Rupees five crore divided into 50,000 equity shares of Rs. 1,000 each. The paid up share capital of the Company as on 31 March 2008 was Rs. 20.03 lakh.

As per State Forest Reports the total area under forest and tree cover in 2003 was about 6.63 *per cent* which had increased to 7.13 *per cent* in 2005. State Forest Report after 2005 was not available. Since 81 *per cent* of land in the State is agricultural land, the State Forest Policy, 2006 has set a goal to bring forest and tree cover to 10 *per cent* by the year 2010 so as to realise the ultimate goal of 20 *per cent* in a phased manner.

The management of the Company is vested in a Board of Directors (BOD) having not less than two and more than 12 Directors. As on 31 March 2008, the Company had five directors including a Managing Director (MD) and a Chairman. The MD is the Chief Executive of the Company. He is assisted by one General Manager at Head Office and six Regional Managers[*] (RM) in the field. This is the first performance review of the Company.

Scope of Audit

2.2.2. The present performance review, conducted during November 2007 to March 2008, covers the performance of the Company during 2003-08. The records at corporate office and four[$] out of six Regional offices were examined. The selection of Regional offices was done on the basis of simple random sampling without replacement method.

Audit objectives

2.2.3. Audit objectives were to ascertain whether:

- the Company had taken up activities as enshrined in the Memorandum of Association and any additional activities assigned to it by the State Government;
- the Company had been preparing and implementing long term/short term physical and financial plan to carry out its operations efficiently and effectively;
- the purchase price of trees was fixed in a rational manner;
- the felling, conversion and transportation of timber and fuel wood was carried out economically and efficiently;
- the Company had utilised its manpower in efficient manner;
- the activities of the Company led to growth of employment and improvement in financial status of farming and labour community and there existed proper mechanism to measure such growth; and
- effective and efficient internal control/internal audit system existed in the Company.

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[*] Ambala, Gurgaon, Hisar, Jind , Kurukshetra and Rohtak.
[$] Ambala, Gurgaon, Hisar and Kurukshetra.

Audit criteria

2.2.4. The following audit criteria were adopted:

- Objectives of the Company as per Memorandum of Association;
- national/state forest policy, decisions/directions/guidelines of the BOD and the State Government;
- targets/provisions made in annual plan of operations;
- procedure for purchase of trees and auction/sale of round timber/firewood;
- norms for measurement of standing trees and recovery of round timber/firewood on felling and conversion;
- norms for consumption/wastage of raw material for manufacturing activities; and
- financial prudence and best practices in the absence of Company's specific policy.

Audit Methodology

2.2.5 Audit followed the following mix of methodologies:

- scrutiny of records of regional offices in respect of purchase of trees, raw material for manufacturing activity, trading items, sale of round timber/firewood and consumption of raw material, felling and conversion expenditure;
- review of agenda and minutes of the meetings of BOD, monthly reports of RMs;
- review of internal audit reports and internal control systems; and
- interaction with Management of the Company.

Financial position and working results

2.2.6 The Company had finalised its accounts up to 2001-02 and prepared provisional accounts up to 2006-07. The Company had accumulated profit of Rs. 15.12 crore up to 2006-07. Based on provisional accounts, the financial position and working results for the five years ending 2006-07 are given in **Annexure 12.** During the five years, the Company had earned a net profit of Rs. 6.88 crore.

Audit findings

2.2.7. The audit findings were reported (April 2008) to the Government/ Management and discussed (24 July 2008) in the meeting of Audit Review Committee for State Public Sector Enterprises (ARCPSE) where representatives of the State Government and the Company were present. Views of the Government/Management were considered while finalising the review. The audit findings are discussed in the succeeding paragraphs.

Budgetary control

2.2.8. To regulate its operations, the Company prepares annual operation plan detailing budget of sales/turnover and head wise expenditure in respect of operational, trading and other activities. The following deficiencies were noticed in audit.

- The Company did not prepare annual operation plan well before the commencement of the financial year and the delay ranged between four to six months during the five years ending March 2008. The Management stated (June 2008) that process of collection of information from field offices took time and as such annual operation plans were prepared by July each year which were ahead of major activity of the Company i.e. felling of trees which started in October. The reply lacked justification as other activities of the Company like trading, manufacturing and plantation were being carried out through out the year. During ARCPSE meeting the Management assured to advance the preparation of annual operation plans by proper monitoring.
- No activity wise physical targets were fixed to monitor performance.
- Financial budget was not segregated region wise so as to assess the performance of individual regional offices.
- The exercise of preparing annual operation plans lacked due diligence as the profits during 2002-03 to 2004-05 were more than the budgeted figures despite sales being less than budgeted during this period. The Management stated (June 2008) that sometimes more profit was realised in less felling of trees due to increased rates of timber and wood in the auction. The reply is not tenable as the variation in profit was as high as 820 *per cent* and 55 *per cent* during 2003-04 and 2005-06 respectively which defeated the very purpose of preparing annual operation plans.

Tree purchase plan

2.2.9. The Company has a tree purchase plan in which the purchase price for each species is fixed as per girth class. To review the purchase price from time to time, the Company has constituted a standing committee headed by the

Chairman of the Company with Chief Conservator of Forests, Managing Director and two Regional Managers as members. The Company purchases standing trees from the institutions, panchayats and farmers at the prices fixed from time to time. The same price is paid for the trees allotted by the Forest Department.

During the last five years ending 2007-08, the standing volume in cubic meters (cum) of trees felled by the Company from various sources was as under:

Year	Non forest area					Forest area		Total (cum)
	Institu-tions (cum)	Panch-yats (cum)	Farmers (cum)	Total non forest (cum)	Percent-age	Forest depart-ment (cum)	Percent-age	
2003-04	10286	451	376	11113	14.81	63927	85.19	75040
2004-05	18591	1245	921	20757	36.08	36772	63.92	57529
2005-06	9367	54	429	9850	15.46	53878	84.54	63728
2006-07	10385	443	99	10927	15.43	59880	84.57	70807
2007-08	12892	9	262	13163	22.17	46200	77.83	59363
Total	**61521**	**2202**	**2087**	**65810**	**20.16**	**260657**	**79.84**	**326467**

It would be seen from the table that

- the felling of trees from the non forest area had declined from 20,757 cum in 2004-05 to 13,163 cum in 2007-08;

The Company could not ensure reasonable prices to the farmers as the price fixation mechanism was flawed.

- purchase and felling of trees from panchayats was negligible. Even though one of the main objectives of the Company is to assure reasonable price to the farmers for their standing trees and other forest produce, there was no purchase from the farmers during 2003-08 except for only 71 cum of eucalyptus during 2005-06 in Ambala region. Purchase of 2016 cum during 2003-08 related to Khair trees in Ambala region which was due to statutory requirement*. The Management in reply and during ARCPSE meeting stated (June/July 2008) that rates offered by the contractors were generally higher than those offered by the Company as its rates were dictated by its costs and were fixed in order to secure profit for the Company. The same rates were being paid to the Forest Department for trees felled by the Company. Hence, the Company was unable to purchase trees even after adding 20 *per cent* on the purchase price fixed by the Company. From the above, it was clear that the rates offered by the Company were much below the market rates which discouraged the farmers to sell their produce to the Company. Further, the Company was being allocated 26 to 38 per cent of total forest fellings, the remaining felling being done by the Forest department. The price paid to the Forest department for these trees is such as to have a profit cushion for the Company. Since the Company gets sufficient trees allocated for felling on forest land, it has no incentive to buy trees from farmers and other sources after paying them remunerative prices.

* As per provisions of Section 4 of Punjab Land Preservation Act 1900, the Governor of Haryana notified that in areas of District Panchkula, Ambala and Yamunanager of State of Haryana the Khair trees shall be purchased solely by Haryana Forest Development Corporation Limited at the prices fixed by BOD. This order was, however, withdrawn (April 2007) to enable the farmers to get remunerative price of their product.

Following shortcomings, which negated the avowed purpose of encouraging farmers to take to plantation of trees, were noticed in Audit.

- There was no representation of the tree growers in the standing committee to determine the purchase price.
- The fixation of price was not based on raising and maintenance cost of trees which discouraged the farmers to sell trees through the Company.
- Despite constant increase in cost of inputs such as seed, fertilizers, pesticides, labour, machinery, the prices of poplar and eucalyptus trees fixed by the Company during the year 2006-07 were lower than those fixed in the year 2001-02.
- Periodicity for review of prices was not fixed. There was no review of prices of poplar trees from December 2002 to November 2006 and the prices of eucalyptus were not reviewed during July 2003 to December 2005.

The Management in reply stated (July 2008) that the purchase prices were fixed taking into care the rising maintenance cost, extraction and conversion with provision of minimum 15 *per cent* annual profit to the farmers. The plea of the Company is not tenable as the company was fixing purchase price taking into consideration its own conversion cost and profit margin. The purchase rates fixed even in 2006-07 were less than those fixed in 2001-02 despite consistent increase in all the cost components.

Recovery performance of round timber and firewood

The Company had not fixed norms to monitor the recovery of timber and firewood and recovery had declined.

2.2.10. After purchase, the standing trees are felled and converted into timber and firewood grade I and II. The Company had fixed norm for accountal of standing volume of trees. In order to monitor recovery performance of the timber and firewood, girth wise norms are also necessary. The Company had, however, not fixed any norms for recovery of timber and firewood from standing volume. The Company during 2003-08 felled 3.26 lakh cum standing volume of dead/dry and green trees. Recovery performance of round timber and firewood from standing volume of dead/dry and green trees during 2003-08 is tabulated below:

Category of timber/wood	Recovery percentage of round timber and fire wood				
	2003-04	2004-05	2005-06	2006-07	2007-08
Dead/dry					
Round timber	52.14	50.32	50.32	48.57	49.40
Fire wood grade-I	22.23	18.90	18.47	15.21	13.37
Fire wood grade-II	1.63	1.43	1.01	0.96	1.06
Total	**76.00**	**70.65**	**69.80**	**64.74**	**63.83**
Green					
Round timber	55.66	53.13	54.50	54.79	52.77
Fire wood grade-I	43.38	37.15	35.02	34.80	34.14
Fire wood grade-II	29.34	23.55	26.96	23.47	23.53
Total[@]	**128.38**	**113.83**	**116.48**	**113.06**	**110.44**

[@] Recovery of timber and firwood together in respect of green trees was more than 100 *per cent* as the measurement of firewood was done in stacked volume which normally comes more than the estimation in standing volume.

It would be seen from the table that recovery of timber/wood with reference to standing volume of both dead/dry and green trees had been decreasing since 2003-04. The Management had not investigated the reasons for the declining recovery performance. The decline in recovery resulted in a loss of Rs. 2.95 crore due to short recovery of round timber (5,477.52 cum), firewood grade-I (17,660.90 cum) and firewood grade-II (7,293.50 cum) during 2004-08 as compared to recovery attained during 2003-04. Even if the performance was compared with the minimum norms fixed for recovery of round timber by Punjab Forest Development Corporation (PFDC), there was short recovery of 10,919 cum of round timber valuing Rs. 2.88 crore during 2003-08.

There was short recovery of timber valuing Rs. 2.88 crore

The Management stated (July 2008) that no norms for conversion were fixed as the recovery depended upon the condition and form of trees which differ from tree to tree and area to area and its recovery was at par with the production wing of the Forest Department. The plea is not tenable as the audit had commented on the decreasing recovery performance of the Company as compared to the performance attained by it in previous years. Further, the recovery performance of production wing of the Forest Department was 91 and 97 *per cent* against the Company's performance of 86 and 93 *per cent* during 2006-08 respectively.

Due to non fixation of norms, the Company could not investigate the reasons for short fall in recovery and take corrective action to improve the recovery performance. During ARCPSE meeting, the Management assured to take up the matter of prescribing norms for recovery which would serve as a benchmark to assess recovery performance.

2.2.11. Besides felling of trees, the stumps of the trees are also extracted. Scrutiny of records revealed that during 2003-07, 3.44 lakh trees were felled by five RM offices*. The stumps were, however, extracted in respect of 0.93 lakh trees which constituted only 27 *per cent*. The stumps for the remaining 2.51 lakh trees were not extracted without any reasons on record.

The Management stated (June 2008) that stump extraction was not mandatory in felling work, rather it was prohibited in many areas to prevent soil erosion. Stumps were not extracted in areas of eucalyptus, embankment of canals, bounds, distributaries and minors. The reply is not tenable as even after excluding the trees felled under the above categories, stumps of 38,169 trees valuing Rs. 25.70 lakh were not extracted as per data supplied by the Management. Moreover Company had not framed any policy and procedure for extraction and accountal of stumps to avoid possibility of pilferage.

Non extraction of stumps without assigning any reason resulted in loss of Rs. 25.70 lakh.

2.2.12. In contravention of its prevailing practice of auctioning stumps after extraction, the Ambala office, without assigning any reasons, sold 13,443 stumps *in-situ* position during 2003-04 and 2005-06 at an average rate of Rs. 4.50 and Rs. 7.34 per stump against the net realisable value of Rs. 61 and Rs. 145 per extracted stump respectively. Resultantly, the Company incurred a loss of Rs. 14.19 lakh.

Sale of stumps without extraction resulted in loss of Rs. 14.19 lakh.

* Ambala, Gurgaon, Hisar, Jind and Kurukshetra.

The Management stated (June 2008) that size and weight of stumps depended upon the size and species of the tree and on difficult sites, where extraction was necessary, un-extracted stumps were sold in the auction and these stumps were of trees of IV and V size. However, in support of its contention the Management could not make available any record/evidence for audit verification.

Sale of round timber, pulp wood and fire wood from depots in open auction

2.2.13. After felling and conversion, timber and firewood are transported to the sale depots for sale through open auction. During 2002-07, the turnover of the Company from auction was as under:

Year	Rupee in crore
2002-03	11.41
2003-04	10.90
2004-05	10.09
2005-06	11.51
2006-07	13.28

Deficient fixation of reserve price hampered fetching of higher rates in auction.

2.2.14. As per instructions issued (September 2001) by the Company, actual prevailing market price was to be taken as reserve price. During test check of records at Corporate and regional offices it was observed that:

- the reserve price for forest produce proposed by the RMs each month was being approved by the Corporate Office in a routine manner. Neither the RMs indicated the prevailing market price nor was it ascertained by the Corporate Office before approval;
- there was no system of comparison of price obtained during auction with reserve price as the records were not maintained properly to facilitate comparison of auction price with reserve price;

The Management stated (June 2008) that now the Regional Managers have been directed to maintain such records.

- in Ambala region there was no revision of reserve price from October 2006 to September 2007 though the price realised on auction increased month after month. Reserve price for the months from March 2003 to July 2005 was not sent to Corporate office for approval and it was not determined during August 2005, October 2005 to May 2006 and September 2006;
- in Gurgaon region the reserve price for the months from March 2003 to April 2005 was not determined;
- in Hisar region the reserve price fixed in April 2006 was not revised till January 2008; and
- the reserve price of forest produce fixed by the Company was below the price fetched during previous auctions in the regional offices test checked. Fixation of reserve price on lower side without taking into

consideration current market price and last auction rates had vitiated the auction process and hampered fetching of higher rates.

The Management stated (June 2008) that the reserve price was fixed on the average of last three auctions or market trend whichever was less. The reply was not tenable as the auction prices are representative of the market trend whereas the Management fixed the reserve price even less than the rates fetched during earlier auctions.

- The Commissioner Forest during his field visits had also observed (February 2006) that average rate being realised on sale of timber/forest produce through auction was much below the prevailing market price and the procedure being adopted by the field offices of the Corporation encouraged tendency of pooling of prices by the contractors at the time of auction. No corrective measures were, however, taken.

The Management stated (June 2008) that these observations were general in nature and not based on field data or office inspections. The plea is not acceptable as the remarks of the Commissioner Forest were based on field visits. During ARCPSE meeting the Management stated that the reserve price was now being fixed by head office and conveyed to Regional Managers for adherence.

Manufacturing activities

Capacity utilisation of manufacturing units was low due to lack of marketing network.

2.2.15. The Company had two units for manufacturing barbed wires, polythene and woven bags at Kurukshetra and Hisar. The polybag and barbed wire factories at Hisar and Kurukshetra had three polybag machines and three barbed wire making machines each, in working condition. The Company had not fixed yearly production targets for the factories. It was observed that the capacity utilisation of polybag machines ranged between 44.22 *per cent* and 77.44 *per cent* at Kurukshetra and 72.88 *per cent* and 98.46 *per cent* at Hisar during 2003-08. The capacity utilisation of barbed wire machines ranged between 13.32 *per cent* and 46.25 *per cent* at Kurukshetra and 9.20 *per cent* to 61.27 *per cent* at Hisar. The unit offices had supplied the polybags and barbed wire mainly to Forest Department. Efforts to procure orders from private nurseries/other departments/institutions to enhance sales and capacity utilisation had not been made.

The Management stated (June 2008) that the factories were operated in one shift only and efforts were made to procure orders from private concerns but no orders were received. No records in support of efforts made to procure orders from private nurseries/other departments were made available to Audit. During ARCPSE meeting (July 2008) the Management assured to explore the possibility of expanding marketing network of its products so as to increase its capacity utilisation.

Nursery and plantation

Free distribution of plants

The Company incurred Rs. 88.13 lakh on raising of nurseries for free distribution without ensuring compensation from the Government.

2.2.16. The Company incurred expenditure of Rs. 88.13 lakh on raising of nurseries for free distribution during 2001-06 on the instructions (September 2001) of the Forest Department as detailed below:

Year	No. of plants raised (in lakh)	Amount spent (Rupees in lakh)
2001-02	8.31	16.20
2002-03	1.80	9.46
2003-04	11.49	25.06
2004-05	13.97	30.12
2005-06	2.44	7.29
Total	**38.01**	**88.13**

Before taking up this job, modalities with regard to reimbursement of cost were not settled with the Government. When the matter was taken up (July 2003) for grant of subsidy for the above work, the State Government declined (September 2003) to give any grant or subsidy. Despite this, the Company further incurred expenditure of Rs. 37.40 lakh during 2004-06 on raising of nurseries for free distribution without any compensation. The Income Tax Authorities (ITA) disallowed (December 2004, December 2005 and September 2006) the expenditure of Rs. 60.42 lakh incurred during 2001-02 to 2003-04 being not incidental to the running of business of the Company. On this amount the Company had paid income tax of Rs. 26.06 lakh. The ITA did not agree with the contention that free distribution would help in increasing the business of the Company as the beneficiaries were not bound to grow the trees and sell to the Company for felling. Moreover, the Company had kept no details of the persons to whom the plants were distributed.

The Management stated (June 2008) that the State Government declined because the Company had its own funds to supplement the efforts of the Forest Department in distribution of seedlings to farmers to ameliorate the environment and to increase the tree cover in the State. Reply is not tenable as State Government had not directed the Company to use its own funds for the purpose. Moreover, being a commercial organisation, the Company should have emphasised for compensation for this expenditure. During ARCPSE meeting the Management assured that matter would be taken up with the State Government for compensation.

Engagement of labour and transportation contractors

2.2.17 During 2003-08, the Regional offices Ambala, Hisar, Kurukshetra and Gurgaon paid Rs. 9.49 crore to labour and transport contractors for manufacture of poly bags and barbed wire, felling and conversion of trees, transportation, loading/unloading and stacking of timber and firewood as detailed below:

(Rupees in lakh)

Year	Kurukshetra		Hisar		Ambala	Gurgaon	Total
	Manufacturing activity	Felling and conversion	Manufacturing activity	Felling and conversion	Felling and conversion	Felling and conversion	
2003-04	7.47	56.92	7.79	29.56	47.89	30.57	180.20
2004-05	7.17	33.75	7.71	35.73	37.98	27.79	150.13
2005-06	5.93	56.18	8.74	25.70	55.72	17.50	169.77
2006-07	10.49	54.48	15.26	44.71	59.99	29.37	214.30
2007-08	NA	61.99	NA	34.73	97.99	40.16	234.87
Total	**31.06**	**263.32**	**39.50**	**170.43**	**299.57**	**145.39**	**949.27**

Scrutiny of records of payments of felling and conversion charges revealed as follow:

System for engagement of labour and transport contractors lacked transparency.

- There was no transparent system for engagement of labour and transportation contractors, as no public notice or advertisement was given for their engagement and quotations were collected locally. During ARCPSE meeting (July 2008) the Management assured that system of inviting bids from registered contractors would be introduced.
- No formal agreements containing terms and conditions for ensuring compliance of labour laws and payment of minimum wages to labour were entered into with the contractors.

Payment of minimum wages to the labour employed by the contractors was not ensured.

- As required under section 18 of the Minimum Wages Act, 1948 the unit offices had not maintained any record showing number of labours employed by the contractor and payment made to the labour so as to ensure timely and proper payment.
- There was inadequate control over implementation of the labour contracts and payments made thereagainst as evidenced in regional offices, Gurgaon and Kurukshetra, which made an additional payment of Rs. 8.31 lakh in the years 2002-03 and 2003-04 on felling and conversion of trees by paying the contractors the rate of Rs. 175 per cum, applicable for felling and conversion including extraction of stumps, whereas stumps had actually not been extracted in 71.87 *per cent* cases, which should thus, have been paid at the rate of Rs. 95 per cum only.

The Management stated (June 2008) that the rate of Rs. 175 per cum did not include payment for extraction of stumps. The reply is not tenable as this amount included payment for extraction of stumps also as per schedule of rates of the Company applicable during April 2002 to December 2003.

Manpower management

2.2.18 The Company has been carrying out its activities with the help of staff, about 90 *per cent* of them taken on deputation from the Forest Department. The Forest Department has been sending employees at its own discretion and the Company has no say in assessing the suitability/acceptability of the employees. Even the place of posting is decided by the Principal Chief Conservator of Forests (PCCF). Due to this, the Company had also not been adhering to the deputation tenure of three years fixed by the Government of Haryana. As on 31 March 2008, the tenure of 30 out of 105 deputationists ranged between four to sixteen years in the Company. The functional autonomy of the Company in its human resource management was, thus, severely impaired.

The Management stated (June 2008) that the matter to repatriate the employees having completed three years has been taken up with the Principal Chief Conservator of Forests, Haryana.

Per capita productivity had declined due to non rationalisation of manpower with reference to volume of work.

2.2.19 During the five years ending March 2008 the staff strength ranged between 109 and 114. The Company had not fixed norms for manpower deployment with reference to production. Audit observed that the standing volume of trees felled had decreased from 80,296 cum in 2002-03 to 59,363 cum in 2007-08 while staff in position had increased from 109 to 114 during this period. Despite the fact that most of the staff was on deputation and there was sharp decline in volume of trees felled, the manpower was not rationalised with reference to volume of work. As compared to per capita productivity of 736.66 cum of standing volume of trees felled in 2002-03, the annual per capita productivity reduced to 520.73 cum during the year 2007-08 as detailed below:

Year	2003-04	2004-05	2005-06	2006-07	2007-08
Actual man power (excluding MD)	109	110	110	112	114
Standing Volume of trees felled (cum)	75040	57529	63729	70807	59363
Felled volume per Employee (cum)	688.44	522.99	579.35	632.2	520.73
Salary and wages of staff (Rupees in lakh)	120.46	133.94	143.98	152.81	173.05
Average annual emoluments (Rupees in lakh)	1.11	1.22	1.31	1.36	1.52
Manpower required*	102	78	87	96	81
Excess manpower (Nos.)	7	32	23	16	33
Extra expenditure	7.77	39.04	30.13	21.76	50.16
Total extra expenditure					**148.86**

Excess manpower has resulted in extra expenditure of Rs. 1.49 crore.

The excess manpower ranged between 7 and 33 during 2003-08 with reference to per capita productivity in 2002-03. Deployment of excess manpower had resulted in extra expenditure of Rs. 1.49 crore during 2003-08.

The Management stated (June 2008) that the Audit had not taken into consideration the manpower deployed in factories and saw mill. Further, per capita profit increased from Rs. 1.60 lakh during 2002-03 to Rs. 2.03 lakh during 2006-07. The reply is not tenable as the work in factories was being carried out by the Company through contract labour on piece rate basis and only one/two officials each in the two factories at Kurukshetra and Hisar had been given additional charge to look after these activities. The increase in per capita profit was due to non increase in the purchase price of trees as discussed in paragraph 2.2.9.

* On the basis of felling during 2002-03.

Fund management

2.2.20 The guidelines issued by Institutional Finance and Credit Control Department, Government of Haryana in June 1997, *inter-alia*, provided that:

- while making investment of surplus funds the availability of funds must be carefully estimated by taking into account the cash flow, working capital requirement and the period of investment must be chosen accordingly;
- the investment decision must not be made at a level lower than that of MD/Chief Executive Officer in case of Public Enterprises;
- while making investments in banks/financial institutions proper transparent procedure be followed; and
- while making investments of surplus funds, the guiding principles can be the concerned bank's/institutions involvement in financing various development programmes of the State Government.

The Company had no centralised fund management system for prudent investment of surplus funds.

The Company did not have any centralised fund management system. In the meeting of RMs (October 2005) it was decided that RMs would deposit all revenue into the account of the Company at head office and would get funds on demand from head office as per their requirements. This decision had not been implemented so far (February 2008). Investments were made sporadically, without proper authority and without assigning reasons justifying the investment choices. Without obtaining approval of MD, the RM, Hisar invested funds of Rs. 318.75 lakh ranging from Rs. 39.17 lakh in 2002-03 to Rs. 90.46 lakh in 2007-08 (up to November 2007) and the RM, Ambala invested funds to the tune of Rs. 344.50 lakh ranging between Rs. 25 lakh to Rs. 105 lakh during 2002-07 in fixed deposits of various banks. The investment decisions lacked transparency as reasons and justification for making these investments were not recorded.

During ARCPSE meeting the Management apprised that RMs had now been directed to remit surplus funds to the head office for investment.

Internal control

2.2.21 Internal control is a management tool used to provide reasonable assurance that the management objectives are being achieved in an efficient and effective manner. A good system of internal control should comprise, *inter-alia*, proper allocation of functional responsibilities within the organisation, proper operating and accounting procedure to ensure accuracy and reliability of accounting data, efficiency in operation, and safeguarding of assets.

Following deficiencies were noticed in internal control.

- The Company did not have any manual to regulate the purchase, accounting and internal audit functions.

- As per statutory auditors reports on last two (2000-01 and 2001-02) finalised accounts of the Company, the internal control procedures were not commensurate with the size and activities of the Company.
- The Company did not have a suitable mechanism for effective control over recovery performance of round timber and fire wood in the absence of any norm.
- To safeguard the assets, the Company has not prescribed procedure for physical verification of fixed assets and inventory of raw material, finished goods and forest produce. The Management stated (June 2008) that the registers were frequently checked by the officers. The fact, however, remained that procedure for physical verification has not been defined by the Management.
- Control register to record the payments to labour for felling and conversion, transportation, loading, unloading and stacking, had not been maintained to link the payment with actual quantum of work done. The Management assured (June 2008) that the control register would be prepared in future.
- The RMs had not maintained register of FDRs indicating the name of bank, date of FDR, amount of FDR, maturity value, date of maturity and actual date of encashment.
- Sale and stock reconciliation statement is required to be prepared at the year end to ensure accuracy of stock balances and prevent any chances of shortage/pilferages of stock. During checking of sales of poly bags with the stock register maintained at Hisar factory, it was noticed that during 2003-08 (upto December 2007), 97.55 quintals of polybags stock valuing Rs. 9.47 lakh was issued in excess of the sales quantity invoiced and booked. Thus, pilferage of polybags valuing Rs. 9.47 lakh could not be ruled out. Matter had not been investigated to fix responsibility.

  The Management stated (June 2008) that the rates of sale had been different at different times of the year which had not been taken into consideration in audit. Reply is not tenable as the changes in rates and total production including wastage as recorded in stock register had been taken into consideration while working out the excess quantity. During ARCPSE meeting, the Management assured that the matter would be got re-examined and results apprised to Audit.
- As required under forest manual, receipt of forest produce and its sale was not reconciled quarterly.

The accounts of the Company were in arrear in the absence of qualified staff.

- The accounts of the Company were in arrears from 2002-03. Audit observed that there was no qualified officer to head the Accounts & Finance Department to supervise and monitor the accounting functions at Head Office and Regional offices. Standing Committee on Public Enterprises sanctioned (November 2002) six posts of accountants out of which four posts were to be filled up on deputation from Forest Department and two from other Government Departments and State Public Enterprises. Still, there was no accountant during 2002-04 in the Company and deployment ranged between one and three accountants during 2004-08. Thus, inadequate capacity in the field of accounts caused the accounts of the Company to be in arrears.

Internal audit

2.2.22 The Company had not prepared internal audit manual prescribing the scope and extent of internal audit checks. Internal audit of the Company is being conducted by firms of Chartered Accountants. The internal audit function in the Company suffered from the following deficiencies:

- As per guidelines (November 2002) of the Bureau of Public Enterprises, the internal audit reports were to be put up to BOD for taking corrective action. The reports, were, however, not put up to the BOD;

  The Management assured (June 2008) that internal audit reports would be compiled and put up before the BOD for corrective measures in future.

- Neither the head office nor the unit offices prepared inventory of internal audit observations for monitoring and pursuance;

- In the absence of internal audit reports for the period from June 2002 to March 2003, June 2004 to December 2004, December 2005 to June 2006 and ending December 2006 in respect of all the RM offices and head office, it could not be ensured that the internal audit was actually conducted;

  The Management stated (June 2008) that internal audit reports were not prepared by the auditors in conventional way. From 2005-06 the reports were submitted regularly.

Evaluation of performance

2.2.23 The Company was formed with the main objectives to assure reasonable prices to the farmers for their trees and to ensure welfare of farming and labour community with the development of forest based industries. The Company was no doubt earning profits but these profits were contributed by Government departments/institutions. Almost entire purchase of trees was from Forest department and other Government institutions at the prices fixed by the Company itself which were far below the market price. The entire turnover of manufacturing and trading activities was from the Forest Department. The Company was lagging behind in pursuing its main objectives as discussed in succeeding paragraphs.

Generation of employment opportunities in rural areas and development of forest based and allied industries.

The Company had not made any contribution towards employment generation in rural areas through promotion of forest based industries.

2.2.24 The MOA of the Company envisaged generation of employment opportunities in rural areas besides, promotion of forest based and allied industries. It was observed in audit that the Company had not made any contribution towards employment generation in rural areas through promotion of forest based and allied industries. The Company had neither set any targets for employment generation in rural areas nor maintained any data base about employment generated in rural areas. It was further observed in audit that the Company had not provided any technical know-how or financial assistance in the form of capital, loan or credit to the individuals, firms, companies or institutions for promotion of forest based and allied industries. Management stated (June 2008) that the Company generates direct and indirect employment from its production and other activities. Reply is not tenable as the Company had neither set any target for employment generation nor maintained any data base about employment generated in rural areas.

Stabilisation of timber and fuel wood prices in open market

2.2.25 The Company had not developed separate regulated timber market to stabilize the timber and fuel wood prices to ensure transparency in transactions and to protect the tree growers from exploitation by middlemen. The Company had also not developed and strengthened market intelligence and information system to create data base for the benefit of tree growers and wood consumers. The Company had not taken adequate steps for formation of tree growers' co-operatives to get better deal for their produce. The Management stated (June 2008) that development of timber market has been assigned by the Government to the Agriculture Marketing Board. After establishment of timber market, the formation of tree growers association would be taken up.

Transfer of related technology to farmers

2.2.26 In order to promote agro-forestry it was one of the main objectives of the Company to transfer forest related technology to the farmers. Audit observed that neither was any budget provision approved by the Company nor any expenditure incurred to train and educate the farmers about new trends and techniques in nursery raising, plantation and maintenance of agro-forestry, optimum use of land and water resources and marketing to get better and quality forest produce to enhance their income level.

The Management stated (June 2008) that farmers were apprised of technology of felling and conversion of trees by unit offices of the Company and for that no budget was required. The reply is not tenable as no records substantiating this contention were available in the RM offices.

Conclusion

The Company has been earning profits consistently despite meager capital base. But it failed to achieve the envisaged objectives like

improvement of financial status of farming and labour community through promotion of agro forestry, transfer of forest related technologies to farmers, generation of employment opportunities in rural areas and promotion of forest based and allied industries. The Company had not fixed norms to monitor recovery of round timber and fire wood from the felled trees. There was no transparent system for engagement of labour and transportation contractors. Account and finance wing was not in existence in the absence of which fund management was poor and accounts were in arrears. Internal control system of the Company was deficient.

Recommendations

- **Annual operation plan with financial outlay and physical targets be prepared before the commencement of financial year.**
- **Price fixation system for purchase of trees may be streamlined to ensure reasonable price to the growers.**
- **Species wise and girth wise norms for recovery of round timber and fuel wood should be prescribed to bring efficiency in these operations.**
- **The system of fixation of reserve price for sale/auction may be streamlined.**
- **Arrears in accounts should be cleared and Internal Control system should be strengthened.**
- **The Company may re-organise its functions and activities in the light of its objectives.**

The matter was referred to the Government in April 2008; the reply had not been received (September 2008).

Haryana Power Generation Corporation Limited

2.3 Power Purchase Management

Highlights

Increasing demand for power in the State could not be met fully despite purchase of power in excess of approval by HERC as average daily power cuts increased from 8.4 lakh units in 2003-04 to 78 lakh units in 2007-08.

(Paragraph 2.3.7)

The Company purchased 11.21 to 14.40 *per cent* of the available power from costly short term sources against HERC approval for purchase of 0.36 to 7.96 *per cent.*

(Paragraph 2.3.13)

The Company signed unfavourable Power Purchase Agreement with Power Trading Corporation for purchase of power from Himachal Government which resulted in extra expenditure of Rs. 101.48 crore.

(Paragraph 2.3.18)

The Company could not realise average cost of sale of energy resulting in loss of Rs. 636.09 crore upto March 2007 due to transmission losses and interest payment in excess of HERC approval in Annual Revenue Requirements.

(Paragraph 2.3.21)

The Company purchased 8.73 MUs of power from Maruti Udyog Limited Gurgaon by slowing down/boxing up its own units resulting in extra expenditure of Rs. 1.81 crore.

(Paragraph 2.3.17)

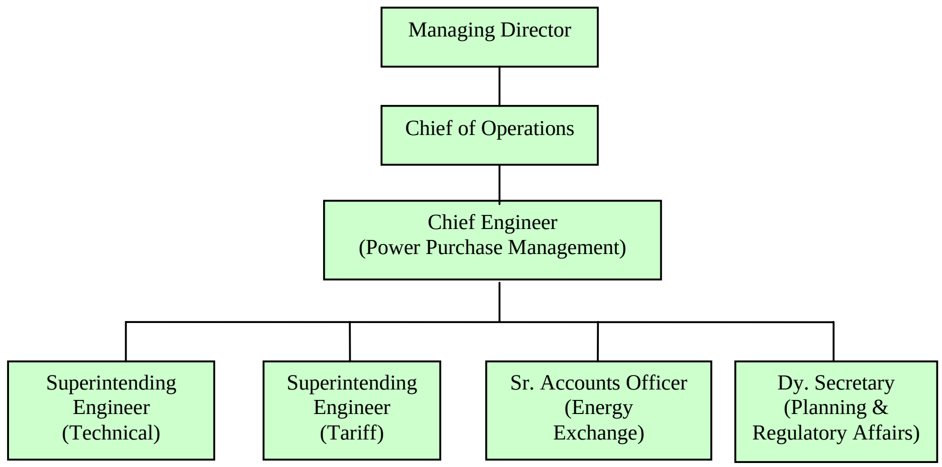
Scheduling of power through liquid fuel from Faridabad Gas Power Plant of NTPC resulted in extra cost of Rs. 27.94 crore in comparison with the rates of short term power available to the Company.

(Paragraph 2.3.15)

Introduction

2.3.1 Pursuant to the Haryana Electricity Reforms Act, 1997, restructuring of the erstwhile Haryana State Electricity Board (HSEB) was implemented by the State Government in August 1998. The generation activities were transferred to and vested in Haryana Power Generation Corporation Limited (company), while the transmission and distribution activities were transferred to Haryana Vidyut Prasaran Nigam Limited (HVPNL). In view of statutory requirement of the Electricity Act, 2003 for separation of trading from transmission functions, the State Government transferred the rights relating to procurement and bulk supply/trading of electricity from HVPNL to the Company from June 2005. The Company sells power to two distribution companies (Discoms) viz. Uttar Haryana Bijli Vitaran Nigam Limited (UHBVNL) and Dakshin Haryana Bijli Vitaran Nigam Limited (DHBVNL). From April 2008, the State Government has assigned the rights relating to procurement of electricity/Unscheduled Interchange (UI) drawals and trading of electricity to the two Discoms.

The organisation chart for Power Purchase management in the Company is as below:



Scope of audit

2.3.2 The performance audit conducted during February - April 2008 covers management of energy purchased by HVPNL/Company during April, 2003 to March, 2008. The records of the Company relating to purchase of power and payments were examined with a view to analyse the power purchase management in the Company.

Audit objectives

2.3.3 The review was conducted with a view to ascertain whether:

- energy was purchased economically and efficiently with reference to assessment of demand and the terms and conditions of agreements;
- the grid standards as specified by Central Electricity Authority (CEA)/ Central Electricity Regulatory Commission (CERC) were followed;
- the short term power purchases were resorted to judiciously and by following the prescribed guidelines; and

- steps were initiated to fulfill the growing demand for power by making long term power purchase arrangements and augmentation of own generation capacity.

Audit criteria

2.3.4 The following audit criteria were adopted:

- procedures and guidelines laid down by the Central Electricity Regulatory Commission (CERC), CEA and Haryana Electricity Regulatory Commission (HERC);
- provisions of the Electricity Act, 2003, Indian Electricity Grid Code (IEGC) prescribed by CERC;
- tariff orders issued by HERC; and
- long term/short term Power Purchase Agreements (PPAs).

Audit methodology

2.3.5 Audit followed the following mix of methodologies:

- examination of Annual Revenue Requirement Returns (ARR) submitted by the Company and guidelines/directions issued by HERC;
- study of agenda and minutes of meetings of Board of Directors, Technical Evaluation Committee and Power Augmentation Committee; and
- study of records of load dispatch centre so as to examine grid discipline.

Audit findings

2.3.6 The audit findings were reported (July 2008) to the Government/Management and discussed (11 August 2008) in the meeting of ARCPSE where representatives of the State Government and the Company were present. Views of the Government/Management were considered while finalising the review. The audit findings are discussed in the succeeding paragraphs.

Assessment of demand

2.3.7 Demand projections of energy are made keeping in view the past consumption of energy, load growth, transmission and distribution losses and availability of power from various sources. In order to plan power procurement for future, both the demands met and felt[♣] during the corresponding period in the previous year are enhanced by assuming eight *per cent* annual growth. The total availability of power from long term power contracts is assessed and for bridging the gap between projected demand and supplies, arrangements for procurement of power through short term purchase and banking[♦] are made. The projected demand for the year is submitted to HERC, through ARR, for approval in the related tariff orders. On the basis of demand made by the Company, HERC approves the quantum of energy to be procured considering the availability of power from different sources. The table below indicates the demand projected by the Company, demand approved by HERC, actual purchase of energy and average daily cuts imposed during 2003-08.

(in MUs)

Year	Demand for purchase of power	Purchase of power approved by HERC	Actual power purchased/ consumed	Excess over HERC approval	Average daily cuts imposed	Cuts imposed during the year	Cuts as a percentage of total consumption
2003-04	20068	19051.00	20498.88	1447.88	0.84	307.44	1.50
2004-05	23300	21208.48	21460.01	251.53	1.60	584.00	2.72
2005-06	24413	21248.59	23243.77	1995.18	4.10	1496.50	6.44
2006-07	25738	23863.21	25125.35	1262.14	5.60	2044.00	8.14
2007-08	27240	26373.00	27082.58	709.58	7.80	2854.80	10.54

Assessment of demand was unrealistic as average daily power cuts increased from 0.84 MUs to 7.8 MUs.

Despite actual purchase of power being more than that approved by HERC, the average daily power cuts in the State increased nine folds from 0.84 MUs during 2003-04 to 7.8 MUs during 2007-08. Percentage of power cuts to total consumption increased from 1.50 during 2003-04 to 10.54 during 2007-08 which reflected unrealistic assessment of demand of power.

During ARCPSE meeting the Management stated that demand was increasing by about 15 *per cent* per annum whereas estimates were prepared with 8 *per cent* growth. For the year 2008-09 the demand has been taken with 14 *per cent* growth over the demand felt during 2007-08. The fact remains that the demand of power was not realistically worked out which resulted in increased power cuts.

Purchase of power

2.3.8 HVPNL/Company purchased 117410.59 MUs at a cost of Rs. 26,299.56 crore during the years 2003-08 as detailed in **Annexure 13.**

The State Government in January 2006 constituted 'Haryana Power Utility Augmentation Committee' to deal with power purchase proposals and allied matters. The main functions of the Committee are to:

♣ represents demand met plus power cuts imposed.
♦ implies barter of power.

- plan for power purchase for Discoms on long, medium and short term basis;
- work out the availability of power and arrive at the net surplus / shortfall;
- work out the MW/ hours of the day during which power shall have to be purchased;
- identify possible sources from which power can be procured; and
- discuss and negotiate barter arrangement with neighbouring states.

Since its constitution (January 2006), 13 meetings of the Committee had been held upto March 2008.

Sources of power

2.3.9 The Company, besides its generation units, has the following major sources for procurement of power:

- Central Power Sector Undertakings (CPSUs) namely NTPC Limited (NTPC), National Hydro Power Corporation (NHPC), Nuclear Power Corporation (NPC) and Satluj Jal Vidyut Nigam (SJVN).
- Share in three projects of Bhakra Beas Management Board (BBMB) viz. Bhakra (39.5 *per cent*), Dehar (32 *per cent*) and Pong (16.6 *per cent*) and 33.33 *per cent* in Indraprastha Power Station (IPS).
- Independent power producers (IPPs) outside and within the State.
- Direct purchases and through licensed power traders like PTC India Limited, NTPC Vidyut Vayapar Nigam Limited (NVVNL), Tata Power Trading Company Limited, Reliance Energy Trading Limited etc.

Purchase procedure

The Company, taking into account its generation, makes arrangements for procurement of energy on long term basis by entering into power purchase agreements. After ascertaining shortfall, efforts are made to fulfill it from short term sources at the prevailing market rates.

Long term power purchase

2.3.10 The agencies developing Central Sector projects approach the beneficiary States, with salient features of the project conceived by them, for obtaining consent for purchase of power. PPA is signed subsequently with the approval of Board of Directors and HERC. Tariff in such cases is determined by CERC.

2.3.11 Prior to notification (January 2006) of Tariff policy, power from projects being developed in the private sector was being contracted through

MOU route[*] after considering the expected tariff and other features of the project. The Company had signed agreements (September 2006) with PTC India Limited, a trading company, for purchase of power from Budhil, Amarkantak,Teesta-III and Karcham Wangtoo projects through MOU route. The Tariff policy (2006) of Ministry of Power provides that procurement of power from private sector projects should be through tariff based competitive bidding. The guidelines allow for two types of bidding process that can be adopted viz. Case-1 where the location, technology or fuel is not specified by the procurer and Case-2 for hydro power projects, load centre projects or other location specific projects with specific fuel allocation. Accordingly, the Company has started (May 2006) the process through competitive bidding for procurement of power on long term basis under Case-1. Selection of bidders for procurement of 2,113 MW power under Case-1 had been completed. Bidder for setting up a 1,320 MW Themal Plant at Jhajjar with super critical technology under Case 2 had also been selected.

Short term power purchase

2.3.12 The Company assesses availability from all long term sources based on past experiences and additions**,** if any**,** in the existing capacity. After ascertaining shortfall, efforts are made to fulfill it from short term sources. For procuring power from short term sources, the Company has been inviting monthly tenders. Due to poor responses to monthly tenders, Company processes individual offers received on day-to-day basis from surplus utilities directly or through licensed traders.

Volume of power purchased

2.3.13 The volume of power purchase approved by HERC and actual purchase there against during 2003-08 is given in **Annexure-14**:

The Company was meeting only 41.86 to 50.90 *per cent* of the State's power demand from own units and shared projects.

During 2003-08, power generated from own units/shared projects was 56,492.76 MU which constituted 41.86 to 50.90 *per cent* of the total power (1,17,410.59 MU) available in the State.

Guidelines for load forecast, resource plan and power procurement process issued (July 1999) by HERC require the utility to make long term planning with a view to ensure that:

- there exists a system of demand side management, forecast for each category of load as per tariff classification, loss of each year and seasonal and time of day change in load shape for forecast period;
- all consumers connected to its transmission or distribution system will receive adequate, safe and economical supply of power; and
- secured and reliable power is supplied at economically viable rate to all consumers while satisfying the supply planning and security standards.

[*] MOU route means agreements entered into bilaterally without inviting bids.

Guidelines further provide for short term power purchase only for emergency support, so that the Company should endeavor to minimise cost to the consumers.

Short term purchases constituted 11.21 to 14.40 *per cent* against the HERC approval of 0.36 to 7.96 *per cent*.

It was noticed in audit that:

- short term purchases which were costlier, constituted 11.21 to 14.40 *per cent* of the total available power during 2003-08 against the percentage of 0.36 to 7.96 approved by HERC;
- except for 2005-06, the purchase of power from central sector was less than that approved by HERC;
- the generation from own and shared projects was also below that approved by HERC except in the year 2003-04 and 2006-07. These shortfalls placed additional financial burden due to expensive short term purchases of power and drawal of unscheduled energy from the grid;
- the unscheduled interchange was as high as 5.06 to 10.38 *per cent* of the total purchases during these five years. The weighted cost of this energy was Rs 3.34 per unit, which indicated that bulk of this power was drawn at the grid frequency of around 49.52 hertz against the ideal frequency of 50. This was reflective of high load conditions in the grid. Drawal of unscheduled power under these conditions could only aggravate grid indiscipline*.

Availability from central sector, own units and shared projects was less than the target which placed additional financial burden due to expensive short term purchases of power and drawal of unscheduled energy from the grid.

Own generation

2.3.14 The Company failed to achieve generation target fixed by HERC during 2004-05 and 2005-06 by 348.31 MUs and 889 MUs which was available at the rate of Rs. 2.61 and Rs. 2.77 per unit respectively. This shortfall was attributable to low plant load factor (61.69 *per cent* in 2004-05 and 57.77 *per cent* in 2005-06 as against the norms of 65 *per cent*) and excessive outages (17,757 hrs in 2004-05 and 12,500 hrs in 2005-06) of thermal generating units. To recoup the shortfall in own generation, the Company had to purchase costly short term power at an average rate of Rs. 2.80 and Rs. 3.61 per unit during 2004-05 and 2005-06 respectively resulting in extra expenditure of Rs. 81.30 crore.

In its reply and during ARCPSE meeting the Management stated (August 2008) that generation was lower than the targets due to the Units being old, non-maintenance/overhaul of Units due to pressure of demand for power and non-achievable targets fixed by the HERC.

The Company had, however, gone into appeal against the tariff orders of HERC for the year 2007-08 only.

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* Drawal of energy beyond permissible frequency.

Faridabad gas based power plant (FGPP)

2.3.15 432 MW FGPP of NTPC being a dedicated plant for the State, supplies its entire generation to the Company. The prime fuel is natural gas, while reclassified liquified natural gas (RLNG) and liquid fuel (Naptha) can also be used as substitute fuel. NTPC is responsible for arranging natural gas for running the plant. If the plant does not have enough natural gas to generate at full capacity, the Company has the option to schedule generation of power through RLNG and liquid fuel involving higher cost.

The Company procured costly liquid fuel generation and incurred extra expenditure of Rs. 27.94 crore in comparison with the available short term power.

Audit observed that during 2007-08 against the target of 2,910 MUs fixed by HERC, the plant generated 2,059 MUs on natural gas at a cost of Rs. 1.03 per unit. To cover the shortfall of 851 MUs, the Company procured 211 MUs through RLNG and 275 MUs through liquid fuel at the average cost of Rs. 3.66 and Rs. 8.06 per unit respectively. Remaining 365 MUs were purchased at the rate of Rs. 6.23 per unit through short term agreements. In view of exorbitant rate of generation through liquid fuel, the Company should have resorted to short terms purchases. Generation cost of 275 MUs through liquid fuel was higher by Rs. 27.94 crore in comparison with the rates of short term power available to the Company.

Over drawal of power

2.3.16 Energy is transmitted through the regional grid upto the connection points of the Company. For regulating the grid and to allow other States to draw energy as per their schedules, the Company is required to follow grid discipline as per IEGC of the CERC. A schedule of quantum on day ahead basis (called scheduled energy) is fixed by Regional Load Dispatch Centre (RLDC). The Company is required to restrict its day to day net drawal of energy from the regional grid within this schedule. Any excess drawal invites payment for the unscheduled interchange at higher rates as fixed by the CERC from time-to-time.

The Company had drawn 8446.65 MUs of UI power from grid at weighted average rate of Rs. 3.34 against weighted average rate of total purchase of Rs. 2.24 per unit.

Audit noticed (April 2008) that the Company had violated the provisions of the grid code and had drawn 8,446.65 MUs of unscheduled energy against 1,08,963.94 MUs of scheduled energy during 2003-08. For drawal of unscheduled energy the Company had to pay weighted average rate of Rs. 3.34 per unit against the weighted average rate of Rs. 2.24 per unit of total purchase. The HERC had also reiterated from time to time that UI drawals under low grid frequency added to grid indiscipline besides being expensive.

In its reply and during ARCPSE meeting the Management stated (August 2008) that under drawal/over drawal of power was inevitable on account of plant outages. However, the Company had made best possible efforts to follow the guidelines of the grid code.

Power purchase at higher cost

2.3.17 HVPNL had entered (January 2005) into PPA with Maruti Udyog Limited (MUL) Gurgaon for purchase of 20 MW spare power from latter's gas based captive power plant at Rupees four per unit for a period of 2-3 months commencing from 17 January 2005 subject to availability of gas and spare capacity in the plant. As HVPNL was to purchase only spare power, the PPA did not contain any penalty clause either for non-supply by MUL or for non drawal of power by HVPNL. MUL supplied 183.79 lakh units of power from 17 January 2005 to 17 April 2005 for Rs. 7.35 crore.

The Company purchased 8.73 MUs from captive power plant of MUL at the time when company's own generating units were backed down due to low demand incurring avoidable expenditure of Rs. 1.81 crore.

Audit noticed (June 2006) that on the one hand HVPNL had been directing Company's generating units to slow down/box* up its generation due to high frequency/low demand but was simultaneously drawing power from MUL at higher rates. As the HVPNL had the option of not drawing the power, it could have avoided drawal of 8.73 MUs during 23 January 2005 to 11 April 2005 from MUL when the Company's generating units were backed down/boxed up due to low demand. Extra expenditure on the power so purchased worked out to Rs. 1.81[@] crore in comparison with its own generation cost.

Management in its reply and during ARCPSE meeting stated that MUL power was availed to avoid congestion in Gurgaon area which was one of the isolated overloaded pockets which did not have enough infrastructure to meet the demand even in lean seasons. Further, only 41 *per cent* of available power was scheduled. The reply is self contradictory as this power was availed only for three months and that too only in one year whereas such conditions would be prevailing in all the years.

2.3.18 The Company entered (18 April 2007) into an agreement with PTC for purchase of 100 MW, round the clock, power during May - October 2007 from Government of Himachal Pradesh at the rate of Rs. 7.15 per unit excluding transmission losses/charges and proportionate share of supplementary charges of SJVNL. The estimated landed cost of the power was Rs. 7.40 per unit. As per agreement, the Company was required to accept day ahead schedule and as per compensation clause of the contract, the Company was to pay for the total energy offered/made available by PTC. In case of non-scheduling/short-scheduling of power, the Company was to compensate for short fall in off take vis-à-vis offered quantity at full tariff rate.

Audit noticed that the Company had not accepted such stringent condition (full compensation for non/short scheduling) in purchase of power from any other source. While entering into the agreement, the Company did not impress upon the PTC to soften the compensation clause in view of the very high rate of power. As per contemporary agreements, in case of default on either side a compensation of Re. 0.50 to Re. 1.00 per unit was payable in some cases whereas in other cases no compensation was leviable at all.

There was adequate availability of power from the grid at comparatively cheaper rates (Rs. 2.70 to Rs. 4.25 per unit), as evident from the fact that the Company surrendered power from short term contracts during April - September 2007. However, due to unfavourable agreement with PTC for HP Power, the Company had to procure 309.849 MUs valuing Rs. 225.37 crore during this period at an average rate of Rs. 7.28 per unit against prevalent UI rate ranging from Rs. 2.70 to Rs. 4.25 per unit resulting in extra expenditure of

* Denotes shutting down of generation unit due to low demand.

@ 8.73 MUs x (per unit cost of MUL power Rs. 4.00 – variable cost of own generation Rupees 1.93 per unit).

The Company entered into power purchase agreement with stringent condition of penalty and incurred extra expenditure of Rs. 101.48 crore in purchase of short term power.

Rs. 101.48 crore. Further, own units of the Company had to be backed[$] down (May - September 2007) due to lack of demand resulting in loss of generation of 11.012 MUs at Rs. 2.80 per unit.

During ARCPSE meeting the Management stated (August 2008) that HP power had to be procured due to projections of shortage of power during April - September 2007. This contention is not tenable as the Company could have avoided the stringent conditions of penalty at full tariff rate on shortfall in scheduling in view of the availability of offers at comparable rates with maximum penalty of Rupee one per unit on the shortfall quantity.

Banking of power

2.3.19 The demand for power in the State varies during different seasons. During paddy season (July **-** September), consumption for irrigation is very high while in winter months (November **-** April) the demand is relatively low. The power utilities of various States have evolved a mechanism for barter of power known as 'banking of power' depending upon their seasonal requirements. Under this system the utility supplies surplus power during a particular period to deficit utilities and receives it back during its own deficit period on mutually agreed terms. The Company had banking arrangements with Himachal Pradesh State Electricity Board, Power Departments of Tamilnadu, Maharashtra, Jammu & Kashmir and Uttarakhand Power Corporation Limited (UPCL) during 2004-08 directly or through traders.

2.3.20 The Company entered into banking arrangements with UPCL in April 2007. As per terms of the agreement, the Company received 38.85 MUs of power during May - August 2007. During this period the grid position was comfortable and the average cost of available UI power was Rs. 2.86 per unit. The Company availed UI power and surrendered contracted short term power from six[*] traders and saved around Rs. 72.43 crore even after payment of compensation of Rs. 14.14 crore at the rates ranging from Re. 0.50 to Re. 1.00 per unit as per agreements. Audit noticed that though there was no compensation clause in the banking agreement, the Company did not surrender power from UPCL. This banked power was returnable from the month of October 2007 onwards with 5 *per cent* additions. During November 2007 to March 2008, 140.50 LUs were returned to UPCL. The average cost of available UI power during this period was Rs. 5.64 per unit. Thus, the Company had to incur extra expenditure of Rs. 3.91 crore till March 2008 alone for returning the banked power at the prevalent UI rate. Had the Company discontinued borrowing of power from UPCL when it was available at cheaper rates from other sources, this extra expenditure could have been avoided.

The Company incurred extra expenditure of Rs. 3.91 crore in banking arrangement despite availability of cheap power.

During ARCPSE meeting, the Management stated (August 2008) that UPCL power was availed to honour the long term banking relations instead of looking into the commercial aspects. The reply is to be viewed in the light of the fact that the Company had not drawn any power from 1 August 2007 to

$ Denotes slowing down of a generating unit due to lack of demand.

* Adani Enterprises Limited, JSW Power Trading Company Limited, Karam Chand Thapar and Brothers (CS) Limited, Reliance Energy Trading Limited, Tata Power Trading Company Limited, Vinergy International (Pvt) Limited

17August 2007 despite UPCLs readiness to supply power.

Cost of power

2.3.21 The cost of purchase of power is based upon price determination procedure of respective Power Purchase Agreement (PPA) signed with the power generator/trader. In case of CPSUs or other generators supplying power to more than one State, CERC determines tariff with varying fixed and variable cost for each of their power stations in terms of PPAs with them. HERC determines the tariff of Company's own units on the basis of application for ARR for generation business filed by the Company. In respect of BBMB projects, the Company has to bear the share of net O&M cost.

HVPNL/Company purchased 90,846.39 MU valuing Rs. 19,299.17 crore of energy during 2003-07 which was sold to Discoms. The cost of sale vis-à-vis average sale price per unit and loss suffered during this period is tabulated below:

Sr. No.	Particulars	HVPNL		HPGCL	
		2003-04	2004-05	2005-06	2006-07
1	Purchase of energy (MU) ♣	20763.70	21713.57	23243.77	25125.35
2	Sale of energy (MU)	19815.87	20589.82	22239.47	23958.00
3	Purchase cost (Rs. in crore)	3500.45	4336.87	5190.14	6103.45
4	Other cost (indirect)$ (Rs. in crore)	204.64	206.83	104.84	145.95
5	Total cost (3+4) **(Rs. in crore)**	3705.09	4543.70	5294.98	6249.40
6	Average purchase cost per Unit (Rs.) (5/1 * 10)	1.78	2.09	2.28	2.49
7	Value of energy sold (Rs. in crore)	3374.90	4409.90	5283.43	6101.70
8	Average cost of sales (Rs. per unit) (5/2 *10)	1.87	2.21	2.3808	2.61
9	Average sale price (Rs. per unit) (7/2 * 10)	1.70	2.14	2.3757	2.55
10	Loss per unit (Rs.)	0.17	0.07	0.0051	0.06
11	Total loss (Rs. in crore) (2 * 10)	336.87	144.13	11.34	143.75

The Company could not recover entire cost of power from Discoms and suffered loss of Rs. 636.09 crore.

HVPNL/Company could not realise the average cost of sale of energy resulting in loss of Rs. 636.09 crore during the four years upto March 2007. The Company, a deemed trading licensee, procures power on behalf of Discoms. After recovery of cost of power purchased, transmission losses, wheeling and open access charges, the Company should not incur any loss on power sold to Discoms. However, there were losses during all these years. The factors responsible for the losses were high transmission losses and increase in indirect cost viz. interest on borrowings over the amount approved in tariff orders by the HERC as discussed in the succeeding paragraphs.

Transmission losses

2.3.22 The details of energy received, sold to Discoms, targets of transmission

♣ Figures of 2003-04 and 2004-05 are inclusive of HVPNL share in the common pool of power from BBMB.

$ Indirect cost represents expenditure as booked in profit and loss account except cost of power purchase.

losses fixed by HERC and excess losses worked out by audit are tabulated below:

(MUs)

Sr. No.	Particulars	HVPNL		HPGCL	
		2003-04	2004-05	2005-06	2006-07
1	Purchase of energy	20763.71	21713.57	23243.77	25125.35
2	Transmission losses as per HERC	934.37 (4.50%)	1003.17 (4.62%)	1045.97 (4.5%)	1105.52 (4.4%)
3	Energy available for sale (1-2)	19829.34	20710.40	22197.80	24019.83
4	Actual energy sold	19815.87	20589.82	22239.47	23958.00
5	Excess transmission loss (3-4)	13.47	120.58	(-) 41.67	61.83
6	Average sale price per unit (Rs.)	1.70	2.14	2.38	2.55
7	Value of excess transmission losses (Rs. in crore)	2.29	25.80	Nil	15.77

Transmission losses incurred in excess of that approved by HERC resulted in loss of Rs. 43.86 crore to the Company.

From the above table it is evident that the actual transmission losses suffered were more than those allowed by HERC. Resultantly, there was potential loss of revenue of Rs. 43.86 crore during 2003-07. As the licensee had no control over the transmission lines within and outside the State, this loss should not have been borne by it. However, the Company did not approach the Appellate Authority for recovery of actual transmission losses from the Discoms.

During ARCPSE meeting (August 2008), the Management stated that an appeal had been filed against the tariff order for 2007-08. No action had, however, been taken by the Company for the earlier years.

Interest on borrowings

2.3.23 A Bulk Supply Agreement (BSA) was entered into between HVPNL and Discoms in August 2004. With transfer of trading business and procurement of power to the Company from HVPNL in June 2005, the BSA was assigned to the Company. The clauses with regard to payment, *inter-alia*, provide that monthly billing statement rendered by HVPNL/Company shall be due and payable by Discoms not later than 30 days after the date of statement. Further, in the event of non payment within 90 days of the date of statement, Discoms shall pay a delayed payment surcharge on the unpaid amount due at the rate of 11 *per cent* per annum computed on daily basis. The Company's receivables were Rs. 2,416.27 crore and Rs. 2,387.99 crore at the end of March 2007 and March 2008 which were equivalent to 4.75 months' and 4.27 months' billing respectively. While approving the ARR for 2006-07, HERC expressed concern about mounting receivables because of sluggish payments by Discoms. Finance charges approved by HERC, actual finance charges incurred by the Company and rebate availed by the Company on timely payments of power purchase bills are tabulated below:

(Rs. in crore)

Year	Finance charges approved by HERC	Actual finance charges	Rebate availed by the Company on timely payment of power purchase bills	Uncovered Finance charges
1	2	3	4	5 (3-2+4)
2005-06	32.02	103.34	40.21	31.11
2006-07	39.12	144.50	46.03	59.35
2007-08	51.15	114.26	48.53	14.58
Total	**124.29**	**365.10**	**138.77**	**105.04**

Incidence of interest charges in excess of that approved by HERC resulted in loss of Rs. 105.04 crore to the Company.

It is evident from the table that due to delay in payments by Discoms the Company suffered loss of Rs. 105.04 crore during 2005-08 even after availing rebate on timely payment to power suppliers.

During ARCPSE meeting, the Management stated (August 2008) that incidence of interest charges was high due to accumulation of Fuel Surcharge Account claims.

Future planning and capacity addition

2.3.24 The most important factor in the process of economic growth of a country is the availability of energy. The degree of economic growth, per-capita income and per-capita consumption of energy have positive corelation with each other. Category wise actual consumption of energy in the State during 2003-06 and consumption forecast from 2006-12 as per the survey conducted by 17 Electric Power Survey Committee of CEA is given in the **Annexure 15.**

The total installed generation capacity available (March 2008) with the State was 4,368.01 MW out of which 1,887.40 MW was own generation and the balance was from State's share in Central power generating stations and from long term power purchase contracts. The actual available capacity varied between 2,500 MW to 3,300 MW during different seasons depending upon inflow at hydro stations and planned/forced shut downs of the generators. The demand varies between 2,800 MW and 4,800 MW in various seasons and during off peak and peak hours. The CEA has projected a peak demand of 6,839 MW during 2011-12. The annual capacity addition contracted/planned upto the end of eleventh plan is given in **Annexure 16.**

Besides, the Company started (May 2006) the process for procurement of 2,113 MW power on long term basis through competitive bidding as per guidelines contained in the Tariff policy. Finalisation of this procurement process would further increase the capacity of the Company.

The following points were noticed in this regard:

- The sources contracted for long term power **(Annexure 16)** included thermal power stations* located outside the Northern Region for which the Company would have to bear inter-regional transmission losses and wheeling charges on long term basis besides increasing variable cost.
- The Company signed (September 2006) a power supply agreement (PSA) with PTC for purchase of entire power (after excluding free power to Himachal Pradesh) from 70 MW Budhil Hydroelectric Project being developed by Lanco Green Power Pvt. Limited, in Himachal Pradesh at a cost of Rs. 2.28 per unit (landed cost Rs. 2.48 per unit). The scheduled date of commissioning of this project was envisaged as December 2008. As per PSA, the delivery point is 400 KV pooling sub station of Power Grid Corporation of India (PGCIL) located near Bharmour (HP), where title of billable power shall pass from PTC to the Company. It was noticed that the evacuation of power of Budhil project is linked with commissioning of Chamera-III Hydro Electric Project of NHPC which is scheduled to be

* Kahalgaon Thermal Plant Stage-I, Eastern Region, share 24MW from 2007-08, Kahalgaon Thermal Plant Stage-II Eastern Region share 12 MW from 2008-09 and Amarkantak Thermal Plant, Chattisgarh, share 300 MW from 2009-10

commissioned in August 2010. PGCIL intimated (August 2007) Lanco Green Power that cost of advancement of pooling station and single circuit line upto Chamera II would be around Rs. 180 crore (against earlier estimate of Rs. 110 crore to Rs. 120 crore) which would have to be borne by it. Lanco Green Power has given its consent to PGCIL to undertake the work with the understanding that increase in transmission charges shall be borne by the beneficiaries. In view of the above, the transmission charges during the initial years (till commissioning of Chamera-III Project) are estimated to be Re. 1.00 per unit against earlier estimate of Re. 0.35 to Re. 0.50 per unit. Thus, the competitiveness of tariff for the power from Budhil at the time of signing the PSA was not realistic. The actual effect of additional transmission charges on the agreed tariff shall be known after commissioning of the project.

During ARCPSE meeting, the Management stated (August 2008) that the extra transmission charges would be off set by cheaper rate of the power. The fact, however, remains that the Company failed to assess the situation properly and would have to bear extra transmission charges till commissioning of Chamera-III Project.

Conclusion

The Company incurred loss in trading of electricity due to non realisation of average cost of sale of energy due to transmission losses, payment of interest on borrowings in excess of HERC approval, excessive reliance on costly short term power purchase and extra financial burden due to signing of unfavourable PPA with PTC for purchase of power from Himachal Pradesh Government. The Company failed to assess its power requirements realistically as the average daily power cuts increased consistently despite purchase of power in excess of approval by HERC. The Company might have to incur excessive transmission losses and wheeling charges in future due to long term power agreements executed for power from outside the northern region.

Recommendations

Management may consider:

- **developing a mechanism for realistic forecast of demand for energy;**
- **minimising reliance on short term sources for bridging the gap in demand and supply;**
- **taking up the matter with HERC for allowing full recovery of legitimate expenses incurred in power purchase particularly transmission losses and finance charges; and**
- **making serious efforts to achieve optimum generation from own Units.**

The matter was referred to the Government in July 2008; the reply had not been received (September 2008).