

## Section-2B

### Haryana Power Generation Corporation Limited

#### Performance of Units I to V and construction of Unit VI of Panipat Thermal Power Station

##### Highlights

Panipat Thermal Power Station (PTPS) of the Company has six generating Units with a total designed capacity of 860 MW.

*(Paragraph 2B.1)*

The Plant Load Factor (PLF) of Units I to IV during the five years up to 2000-01 varied between 21.90 and 57.25 per cent (except for Unit IV in 2000-01) which was below the All India average of 64.40 per cent (1996-97) and 64.70 per cent (1997-98). The percentage of actual generation to possible generation of Units I to IV with reference to hours actually run during the five years up to 2000-01 ranged between 51.12 and 74.54 resulting in shortfall in generation of 4050.63 MUs of power valued at Rs 789.58 crore.

*(Paragraph 2B.4.1(iv) and (v))*

There was frequent tripping of Units due to failure to effect planned annual overhauling leading to excessive forced shutdowns (21.24 per cent of total available hours for generation) entailing a loss of 2828 MUs of power valued at Rs 553.11 crore.

*(Paragraph 2B.4.2.2)*

In spite of completing (March 1994) 33 activities of Renovation and Modernisation schemes at a cost of Rs 13.92 crore in Units I & II, the actual generation was 2855 MUs against potential generation of 3863 MUs during the five years up to 1999-2000.

*(Paragraph 2B.8)*

Unit II was shutdown on 21 January 1999 for refurbishment works undertaken by ABB Alstom Power, Germany. The Unit could not be recommissioned up to 30 June 2001 due to stalemate caused in the execution of the contract resulting in loss of potential generation of 897.68 MUs valued at Rs 179 crore. Besides, the investment of Rs 115.78 crore remained locked up.

*(Paragraph 2B.8.1)*

**Due to termination of the contract for refurbishment works, the PTPS could not fully utilise the foreign loan of Deutsche Mark (DEM) 138 million and paid commitment charges of Rs 2.08 crore. Besides, Rs 3.10 crore were paid to Power Finance Corporation towards guarantee fee.**

*(Paragraph 2B.8.1 (ii & iii))*

**The erstwhile Board/Company revived (March 1998) the contracts which were put on hold in May 1995 to complete Unit VI by March 2000 at an estimated cost of Rs 854.36 crore. The Unit was actually synchronised on 31 March 2001 with a revised estimated cost of Rs 874.74 crore entailing an increase of Rs 57.82 crore towards interest during construction due to delay in completion of Unit by one year.**

*(Paragraph 2B.9)*

**While reviving (June 1998) the contract for consultancy services awarded (November 1989) to Tata Consulting Engineers Bangalore, completed work of the value of Rs 0.38 crore could not be salvaged, rendering the expenditure infructuous.**

*(Paragraph 2B.9.1)*

**PTPS did not draw the loan of Rs 300 crore from Power Finance Corporation for Unit VI as per agreed drawal schedule and paid avoidable commitment charges of Rs 0.29 crore.**

*(Paragraph 2B.9.3)*

## **2B.1 Introduction**

Panipat Thermal Power Station (PTPS) of Haryana Power Generation Corporation Limited (erstwhile Haryana State Electricity Board) has six generating Units with a total designed capacity of 860 MW. Four Units of 110 MW each under Stage I (Units I and II), Stage II (Units III and IV) and one Unit of 210 MW under Stage III (Unit V) were commissioned in November 1979, March 1980, November 1985, January 1987 and March 1989, respectively, whereas one Unit of 210 MW under stage IV (Unit VI) was synchronised only in March 2001.

## **2B.2 Organisational set-up**

The PTPS was an integral part of the erstwhile Board up to 14 August 1998. After reorganisation of the Board, it has become an integral part of Haryana Power Generation Corporation Limited (HPGCL) a wholly owned Government Company under the Companies Act, 1956. The Managing Director is the Chief Executive of HPGCL. The day-to-day affairs of PTPS are looked after by two Chief Engineers (Operation & Maintenance and Construction).

### **2B.3 Scope of Audit**

Working of the PTPS was last reviewed in the Report of the Comptroller and Auditor General of India for the year 1994-95 (Commercial)-Government of Haryana. 'Fuel Management' and 'Performance of Electrostatic Precipitators' at Panipat and Faridabad Thermal Power Stations were reviewed in the Reports of the Comptroller and Auditor General of India for the years 1997-98 and 1998-99 (Commercial)-Government of Haryana respectively. The review on the working of PTPS was discussed by the Committee on Public Undertakings (COPU) during 1997-98 and their recommendations thereon are contained in 43rd Report presented to Haryana Vidhan Sabha on 28 January 1998.

The present review conducted during the period November 2000 to March 2001, covers the performance of Units I to V for the five years up to 2000-01 and construction of Unit VI.

### **2B.4 Performance of Units I to V of the power station**

#### **2B.4.1 Generation**

The power plant has four Units (Units I to IV) of 110 MW each and one Unit (Unit V) of 210 MW. Operational performance of the five Units for the five years up to 2000-01 has been indicated in Annexure-11. A close scrutiny of the performance profile would reveal as follows:

(i) Unit II of the PTPS was placed under shutdown with effect from 21 January 1999 for refurbishment work under Renovation and Modernisation Scheme. The Unit was yet to be re-commissioned (June 2001) as discussed in paragraph 2B.8.1 (*infra*).

(ii) Percentage of plant availability of Units I to V during the five years up to 2000-01 varied between 36.77 and 89.27 *per cent* which was below (except that of Unit 1 during 2000-01, Unit IV during 1998-99 & 2000-01 and Unit V during 1996-97, 1997-98 and 1999-2000) the All India average (79 and 79.40 *per cent*), Punjab (80.80 and 88.10 *per cent*) during 1996-97 and 1997-98 and the norms of 80 *per cent* recommended by the Rajadhyaksha Committee appointed (1980) by the Government of India.

(iii) The generation of power per KW of installed capacity ranged between 1918 units and 5483 units for Units I to IV as compared to the standard of 5500 units laid down in the Seventh Annual Electric Power Survey conducted (1972) by Central Electricity Authority (CEA) because of low plant availability.

(iv) Plant Load Factor (PLF) of Units I to IV during 1996-97 to 2000-01 varied between 21.90 and 57.25 *per cent* (except Unit IV in 2000-01) which was below the;

**The generation of power by Units I to IV was low due to low plant availability and plant load factor**

- norm of 58 *per cent* recommended by the Rajadhyaksha Committee; and
- all India average (64.40 and 64.70 *per cent*) and Punjab (65.70 and 69.10 *per cent*) during 1996-97 and 1997-98.

(v) The percentage of actual generation to possible generation of the Units (except Unit V) with reference to hours actually run during 1996-97 to 2000-01 ranged between 51.12 and 74.54 which resulted in shortfall in generation of power aggregating 4050.63 Million Units (MUs) valued at Rs 789.58 crore.

The reasons for poor performance of Units I to IV are discussed in paragraphs 2B.4.2, 2B.4.2.1 and 2B.4.2.2 (*infra*).

(vi) A part of energy generated is consumed for auxiliary purposes and is not available for sale. Percentage of auxiliary consumption to actual generation ranged between 12.63 and 14.76 (Units I and II), 12.51 and 12.91 (Units III and IV) and 10.11 and 11.15 (Unit V) during the five years up to 2000-01 as against the norms of 6.5, 8 and 9 *per cent* respectively as envisaged in the project reports of these Units and 9.5 *per cent* prescribed by the CEA. Auxiliary consumption in excess of norms in Units I to IV was due to excessive forced shutdowns of the Units, inherent deficiencies in equipments and use of obsolete technology. Auxiliary consumption in excess of norms of 9.5 *per cent* prescribed by CEA reduced the availability of power for sale by 306.90 MUs and deprived the Company of potential revenue of Rs 60.60 crore during last five years up to 2000-01.

#### 2B.4.2 Plant outages

**Forced outages of Units I to IV increased due to irregular planned shutdown of the Units**

Table below indicates the hours available, actual hours operated and outages during the five years up to 2000-01:

Sl. No.	Particulars	1996-97	1997-98	1998-99	1999-2000	2000-01
1.	Total hours available	43800	43800	43800	43920	43800
2.	Actual hours operated	27461	27160	25807	26036	25726
3.	Plant availability rate ( <i>Per cent</i> )	62.70	62.01	58.92	59.28	58.74
4.	Shutdown (Hours)					
	(a) Reserve	2042	550	1545	883	99
	(b) Planned	4162	3181	6402	11297	10058
	(c) Forced	10135	12909	10046	5704	7745
5.	Percentage of					
	(a) Reserve shutdown to available hours	4.66	1.26	3.53	2.01	0.23
	(b) Planned shutdown to available hours	9.50	7.26	14.61	25.72	22.96
	(c) Forced shutdown to available hours	23.14	29.47	22.94	12.99	17.68

It would be observed from the above that:

\* Reserve shutdown is on account of closing of the plant due to low demand/surplus power in the grid.

(i) The Plant availability rate decreased from 62.70 per cent in 1996-97 to 58.74 per cent in 2000-01.

(ii) Forced shutdown ranged between 22.94 to 29.47 per cent during 1996-97 to 1998-99. It declined to 12.99 per cent in 1999-2000 as the Unit II was placed under planned outages (January 1999) for refurbishment works and it again increased to 17.68 per cent in 2000-01.

#### 2B.4.2.1 Planned outages

Planned outages represent time taken for overhauling of boilers and turbo-generators. As per the Indian Boiler Act, 1923, a boiler is required to be overhauled once in a year. Kulkarni Committee appointed by the Government of India recommended (April 1975) that the annual overhaul of a boiler was to be limited to a period of 28/30 days. In case of turbo-generator, the Committee had recommended a period of 42 to 56 days for its overhauling to be taken up in three to five years. It was observed in audit that the planned annual overhauling of the Units was not carried out regularly by the PTPS authorities. During the five years up to 2000-01, the planned annual overhauling of Units I and II was taken up only once and that of Units III, IV and V was taken up twice. The overhauling of Unit I was taken up after a gap of five years from previous overhauling. However, excess time taken for overhauling of the Units during the five years up to 2000-01 is tabulated below:

Unit	Period of overhauling	Number of days taken during overhauling against the norm of 30 days (Boiler) and 56 days (Turbo-generator)		Excess time taken (In days)
		Boiler	Turbo generator including Boiler	
I	19 February 1998 to 15 April 1998	56	-	26
III	14 September 1996 to 21 December 1996	-	99	43
IV	2 February 1997 to 3 May 1997	-	91	35
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Excess time taken in overhauling of boiler of Unit-I and of Turbo Generators of Units III and IV was 104 days which resulted in generation loss of 159.490 MUs valued at Rs 27.85 crore.

The Management stated (March 2001) that the recommendations of Kulkarni Committee do not hold good for PTPS as regular shutdown of Units was seldom allowed due to acute shortage of power in the State/Northern Grid. Delayed overhauling of Units increased quantum of work in overhauling/repair entailing extra time.

The reply of the management is not tenable as non-allowing of shutdown of the Units for planned annual overhauling increased tripping of the Units leading to forced shutdown as discussed in paragraph 2B.4.2.2 (*infra*).

### **2B.4.2.2 Forced outages**

During the five years up to 2000-01 there were forced outages of 46539 hours (21.24 per cent of total available hours). This included 35768 hours on account of major shutdowns exceeding 24 hours at a time due to trouble in boiler and related equipment (14960 hours), fault in turbo-generator (6633 hours), fault in electric equipment (7889 hours) shortage of coal (3054 hours), shortage of oil (906 hours) and other miscellaneous reasons (2326 hours) resulting in generation loss to the extent of 2828 MUs valued at Rs 553.11 crore.

A few cases of forced outages analysed in audit are discussed below:

#### **(i) Damages to generator stator**

**Failure to tighten the sagged conductor or shift it outside the Ash Dyke area resulted in damage to generator stator and consequential loss of generation**

The generator of Unit III of the PTPS got damaged (15 February 1998) due to earth fault. The erstwhile Board entrusted (April 1998) the job for rewinding of generator stator to Bharat Heavy Electricals Limited (BHEL). The BHEL reported (June 1998) that problem in the stator was due to repeated stress on account of grid disturbances. It was noticed (February 2001) in audit that grid disturbance was due to frequent/excessive tripping of 220 KV Thermal-Sewah Circuits I and II on account of accumulation of ash in Ash Dyke area to a height of 5 to 6 meters under the towers located in that area. Engineer in Chief, Operation-II, Delhi of the erstwhile Board requested (July 1998) the Chief Engineer (Construction), Panchkula to get the sagged conductor between the towers located in that area tightened and to shift the line out side the Ash Dyke area as a permanent solution. The sag between the circuits was tightened (July 1998) as a short term measure. Further, as a long term measure the action to shift the circuits in the Ash Dyke area was taken up (April 1999) by Haryana Vidyut Prasaran Nigam Limited (HVPNL) with Power Grid Corporation of India Limited. Further progress in the matter was awaited (March 2001).

The damaged stator was got repaired from the BHEL at a cost of Rs 3.35 crore and the Unit was commissioned on 8 September 1998. The Unit remained shutdown for 4908.5 hours resulting in loss of potential generation of 373.551 MUs valued at Rs 78.51 crore.

Thus, failure of the Chief Engineer PTPS to regularly monitor the Ash Dyke area and take necessary measures to prevent the overhead transmission lines from fouling with the Ash Dyke area resulted in damage to generator stator and consequential loss in power generation for which responsibility had not been fixed (March 2001).

#### **(ii) Loss due to non-availability of spare rotor**

Unit III of the PTPS, while running at 65 MW capacity, tripped on 13 December 1999. On checking by BHEL, the rotor of the Unit was found damaged due to earth fault. The rotor was got repaired from BHEL, Hyderabad after incurring an expenditure of Rs 1.22 crore and the unit was recommissioned in August 2000. It was noticed (February 2001) in audit that

the Company had one defective rotor lying with it since February 1997. The repair of this rotor was included in a contract, relating to 'Refurbishment of 4 x 110 MW Units' awarded (23 May 1997) to M/s ABB Kraftwerke Berlin GmbH. As per the contract, the rotor was to be repaired by 15 January 1999 but due to stalemate caused in the execution of the contract as discussed in paragraph 2B.8.1 (*infra*), the Company decided (January 2000) to take out the above said job from the scope of the contract. The said job was then allotted (May 2000) to BHEL and the repaired rotor was awaited by PTPS (March 2001).

The belated action of the Company in repairing the rotor put the Company to a loss of potential generation of 406.965 MUs valued at Rs 80.58 crore due to forced shutdown of the Unit between 13 December 1999 and 29 August 2000.

### 2B.5 Cost appraisal

Cost of generation per unit, cost per unit of power sent out for the five years up to 2000-01 has been indicated in Annexure-12.

**High cost of generation resulted in loss of revenue of Rs 243.59 crore**

It was noticed that the cost per unit of power available for sale ranged between 196.59 paise and 247.25 paise during 1996-97 to 2000-01. As against this, the average revenue per unit ranged between 155.29 paise and 236 paise during 1996-97 to 2000-01 resulting in a loss of Rs 243.59 crore. Reasons for high cost of generation are attributable to:

- low PLF in Units I to IV (paragraph 2B.4.1 *supra*);
- excess auxiliary consumption (paragraph 2B.4.1 *supra*); and
- excess consumption of coal (paragraph 2B.6 *infra*).

### 2B.6 Excess consumption of coal

The project reports for Stage I and II (Units I to IV) envisaged the following heat rate at varying loads on the turbines:

Load (MW)	110	95	65
Heat rate (K. cal/KWH)	2169	2153	2232

The Project Report for Stage III (Unit V) indicated heat rate of 1988.02 K. cal/KWH at full load of 210 MW. The efficiency of boiler for Units I to IV and Unit V had been taken as 87 *per cent* and 86 *per cent*, respectively. Consumption of coal required as per standard adopted for actual generation, actual consumption of coal and excess consumption of coal for the five years up to 2000-01 has been indicated in Annexure-13.

It was noticed that during the five years up to 2000-01, there was excess consumption of 26.31 lakh tonne coal valued at Rs 428.39 crore. Reasons for excess consumption of coal called for (February 2001) were awaited in audit (September 2001).

**2B.6.1 Avoidable payment of sales tax on purchase of coal**

Sales tax at 4 per cent on sale price of coal including surface transportation charges (STC) from colliery head to rail head was being charged by the coal companies from PTPS on the coal supplied by them.

According to the Central Sales Tax Act, 1956, sale price shall mean the amount payable to a dealer as consideration for the sale of any goods inclusive of any sum charged for any thing done by the dealer in respect of the goods at the time of or before the delivery thereof other than the cost of freight or delivery or the cost of installation, in case where such cost is separately charged. Thus, the sale price under the said Act means only the amount payable to a dealer as consideration for the sale of goods excluding cost of freight and delivery incurred prior to delivery. This view was upheld (March 1970) by the High Court of Andhra Pradesh in State of Andhra Pradesh Vs. the Bengal Coal Company (27 STC 213) and the High Court of Orissa (February 1974) in Orient Paper Mills Limited Vs. State of Orissa (35 STC 84). In view of the rules and settled case laws, the element of internal surface transportation charges incurred prior to delivery would not attract sales tax.

**PTPS incurred extra expenditure on payment of sales tax on surface transportation charges of coal**

During the period from 1996-97 to 2000-01 (up to October 2000) the PTPS paid Rs 84 lakh by way of sales tax to the coal companies on STC which was not actually required to be paid in view of the settled case laws as quoted above. The Management stated (March 2001) that the sales tax on STC was rightly being paid as it was being paid by all power utilities all over India. The reply was not tenable in view of the settled case law on the subject.

**2B.7 Inventory control**

The table below indicates the inventory holding of spares, consumables (other than fuel), cement and steel at PTPS for five years up to 2000-01:

Year	Opening stock	Receipts	Consumption	Closing stock	Closing stock equivalent to monthly consumption
(Rupees in crore)					
1996-97	43.25	15.41	16.82	41.84	29.9
1997-98	41.84	14.98	13.55	43.27	38.3
1998-99	43.27	28.24	20.10	51.41	30.7
1999-2000	51.41	25.46	21.74	55.13	30.4
2000-01	55.13	20.01	19.83	55.31	33.5

**PTPS had large inventory holdings of stores and spares including unused items from 1982-83 to 1995-96**

It would be observed that the inventory holding ranged between 29.9 and 38.3 months' consumption, whereas inventory holding of Guru Nanak Dev Thermal Plant (Punjab State Electricity Board) Bhatinda ranged between 4.71 and 6.65 months' consumption during the same period. The Company had not classified its stores on the basis of items falling in A, B and C categories according to their value. It had also not fixed the minimum, maximum and



reordering levels of inventory to evaluate the excess inventory holdings. It was noticed (February 2001) in audit that 836 items of stores and spares valued at Rs 2.21 crore pertaining to the period from 1982-83 to 1995-96 were lying unused. Action to identify obsolete/surplus items had not been taken (March 2001).

## **2B.8 Renovation and modernisation**

In order to overcome problems/constraints adversely affecting the generation of Units I and II of 110 MW each commissioned in November 1979 and March 1980 under Stage-I, Renovation and Modernisation (R & M) Schemes under Phase I (38 activities having revised approved cost of Rs 20.55 crore) and Phase II (9 activities having revised approved cost of Rs 16.58 crore) were approved by the Planning Commission in March 1987 and November 1990 respectively. The Company had completed (March 1994) the execution of 32 activities of Phase I and one activity of Phase II at a cost of Rs 11.02 crore and Rs 2.90 crore respectively, yet the actual generation during 1994-95 to 1999-2000 was 2855 MUs against potential generation of 3863 MUs. Three activities under Phase I were deleted. Six activities under Phase II have been covered under refurbishment work (discussed in paragraph 2B.8.1 *infra*). Actual expenditure on remaining ongoing three activities of Phase I and two activities of Phase II up to February 2001 was Rs 32.53 crore and Rs 19.83 crore respectively. Two ongoing activities relating to replacement of electrostatic precipitators and uprating of milling system of Unit II, completed (November 1999) at a cost of Rs 24.43 crore could not be commissioned as the Unit II was under shutdown since January 1999 for refurbishment works.

### ***2B.8.1 Refurbishment of Units I to IV***

In pursuance to the policy of Government of India to optimise power generation, a comprehensive R & M Scheme was adopted by the erstwhile Board for rehabilitation of the existing four Units of 110 MW each at PTPS. Competitive bids were invited (August 1995) and the following contracts were awarded (23 May 1997) to ABB Kraftwerke Berlin GmbH (now ABB Alstom Power), being the successful lowest bidder:

- (a) 'CIF contract' for import of goods with ABB Kraftwerke Berlin GmbH (exporter) for a total price of Deutsche Mark (DEM) 101.11 million (Rs 232.55 crore excluding taxes and duties).
- (b) 'Ex-works contract' for local supplies and services with Asea Brown Boveri Limited, New Delhi (local supplier) for a total price of Rs 60.12 crore (excluding taxes and duties).
- (c) 'Overall agreement' with the exporter and local supplier covering issues related to both 'CIF contract' and 'Ex-works contract':

15 per cent of the total contract price was payable as interest free advance and the balance 85 per cent was payable as per clause 6 of the Special Conditions

of the Contract (SCC). The contract came into force with effect from 21 November 1997 with the release of 15 *per cent* advance payment of DEM 12.25 million (CIF contract) and Rs 8.05 crore (ex-works contract). ABB Alstom Power (contractor) had guaranteed to enhance the capacity of the four Units (Units I to IV) from 110 MW to 118 MW each with the objective to achieve a PLF of 85 *per cent* and improve the heat rate of the Units from 3339 K.Cal./KWH to 2051 K.Cal./KWH (which would result in savings in consumption of coal by 33 gms. per KWH). The main areas included in the scope of work of the contract were:

- improvement of coal handling plant;
- replacement of damaged and worn out parts of the boilers;
- use of modern rotors for HP, IP and LP turbines to improve efficiency and
- renewal of some instrument and control equipments on boilers and turbines.

The entire refurbishment work of all the four Units was to be completed by 21 November 2000. As per the schedule of refurbishment work, Unit II (first target Unit) was placed under shutdown and handed over to the contractor on 21 January 1999. Refurbishment of the Unit was to be completed by 20 May 1999.

The contractor carried out (June/July 1998) assessment studies of the Units in consultation with PTPS authorities and the CEA. Based on the assessment studies, the contractor submitted (November 1998) bill of material/bill of works including additional scope of work which was beyond 10 *per cent* contingency provided in the contract and for which the contractor demanded (January 1999) Rs 50 crore. The Company did not agree to the price demanded and this issue could not be resolved.

Number of contentious issues cropped up due to ambiguity in clauses of the contract relating to format and amount of security package, bank guarantee, price justification for additional items, supply of mandatory spares by the contractor etc. As a result, payments to the contractor against supplies and services were not released though material valued at DEM 26.35 million (Rs 60.60 crore) was received at the project site up to 31 March 2000.

**Expenditure incurred on refurbishment of units I to IV was rendered unfruitful due to termination of contract by ABB Alstom Power, Germany**

The Company sought (February 2000) the intervention of the Ministry of Power, Government of India for sorting out the outstanding issues between the Company and the contractor. The work of sorting the issues was assigned (March 2000) by the Government to the CEA. Meanwhile, the contractor terminated (17 April 2000) the contracts with the Company on the ground of non-release of their dues amounting to DEM 17.39 million (CIF contract) and Rs 11.09 crore (ex-works contract). The Ministry of Power/CEA held a number of meetings and discussions with the contractor and the Company to resolve the disputed issues and revive the terminated contract but no break through could be made and the stalemate prevailed (March 2001). The

Company had made a total investment of Rs 115.78 crore up to February 2001 on the refurbishment of Unit II. The termination of the contract and shutdown of Unit II led to the following consequences:

(i) The shutdown of Unit II from 21 January 1999 resulted in potential loss of 897.68 MUs of power valued at Rs 179 crore up to June 2001. Besides, the investment of Rs 115.78 crore remained locked up.

**Under utilisation of foreign loan resulted in payment of commitment charges**

(ii) For the financing of refurbishment work of Units I to IV of the Power Plant, the erstwhile Board (now the Company) entered (July 1997) into loan agreements with Kreditanstalt Fur Wiederaufbau (KfW), a German bank, for loans aggregating DEM 138 million (Covered\* loan: DEM 104 million and commercial\*\* loan: DEM 34 million). Besides interest, the loan carried commitment fee at 0.25 *per cent* per annum on the undrawn portion of the loan up to 1 February 2001, the date of closure of the loan. As ABB Alstom Power terminated the contract on 17 April 2000, the loan drawn and utilised by the Company was DEM 29.38 million only. As a result of under utilisation of loan, the Company had already paid commitment charges of Rs 2.08 crore (DEM 0.91 million) up to March 2001.

(iii) For repayment and discharge of payment obligations in terms of loan agreement entered into with KfW as referred to in paragraph 2B.8.1(ii) above, the erstwhile Board entered into a payment guarantee agreement (PGA) with Power Finance Corporation (PFC). In terms of the PGA, the Company was to pay to PFC guarantee commission at rate of 2 *per cent* per annum on the balance of principal amount of loan from KfW outstanding at the beginning of half yearly periods. The Company paid guarantee fee of Rs 3.10 crore (DEM 1.39 million) to PFC up to March 2001.

### **2B.8.2 Avoidable payment of commitment charges**

The PFC had financed various R&M activities of the PTPS. The loans sanctioned by PFC carried commitment charges at the rate of one *per cent* per annum from the date of signing of the loan agreement till actual drawal of the loans as per quarterly drawal schedule agreed to by the Company (erstwhile Board) for each loan case.

**Non-adherence to the drawal schedule of loans sanctioned by PFC for various R&M activities resulted in payment of commitment charges**

It was observed (March 2001) in audit that the erstwhile Board/Company did not draw loans according to agreed quarterly drawal schedule in respect of loans relating to uprating of milling system of Units I and II (Rs 10.50 crore), replacement of electrostatic precipitators of Units I and II (Rs 14.32 crore) and refurbishment of Units I to IV (Rs 39.33 crore). Due to non-drawal of loan according to the quarterly drawal schedule, the Company had to make avoidable payment of commitment charges to the extent of Rs 29.15 lakh from May 1997 to March 2001.

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\* Covered loan: to enable PTPS to pay to the exporter in DEM, 85 *per cent* of the total price of the CIF- contract.

\*\* Commercial loan: to enable PTPS to pay to the exporter in DEM, 15 *per cent* of the total price of the CIF – contract and to the local supplier in INR the total price against ex-works contract.

## **2B.9 Construction of Unit VI**

With a view to bridge the gap between availability and demand of power in the State, the erstwhile Board decided (September 1983) to install one unit (Unit VI) of 210 MW under stage IV at PTPS at an estimated cost of Rs 238.27 crore. On the advice of CEA, the Planning Commission accepted (July 1989) the feasibility of the scheme to install Unit VI of 210 MW at the estimated cost projected by the erstwhile Board. As per projection, the Unit was to be commissioned departmentally in December 1993. Due to paucity of funds with the State Government/erstwhile Board, the State Government decided (December 1994) to implement this project through joint venture with M/s IESTL, New Delhi and all ongoing project works were put on hold in May 1995. The joint venture as envisaged did not materialise. The State Government again directed (January 1998) the erstwhile Board to complete the Unit departmentally by March 2000 and mobilise funds for the purpose from PFC and other financial institutions. The erstwhile Board revived (January 1998) with effect from March 1998 various contracts that were put on hold in May 1995. The revised cost of the Unit was estimated at Rs 854.36 crore. The Unit was not completed by the scheduled date of March 2000 and was synchronised in March 2001 with a revised estimated cost of Rs 874.74 crore. The actual expenditure up to March 2001 was Rs 872.16 crore. The revised estimated cost of Rs 874.74 crore included an increase of Rs 57.82 crore towards interest during construction due to delay in completion of the project by one year.

A few illustrative cases of infructuous/extra expenditure noticed in audit are discussed below:

### ***2B.9.1 Infructuous expenditure***

The erstwhile Board awarded (November 1989) a contract for providing consultancy service for Unit-VI of PTPS to M/s Tata Consulting Engineers (TCE), Bangalore. The contract included the work relating to Design and Engineering services for which TCE was to be paid Rs 96.75 lakh.

TCE commenced (November 1989) the work as per the contract but due to failure of the erstwhile Board in arranging funds, the construction work of the Unit came to a standstill (July 1994). By that time TCE had completed 67.2 per cent of the work relating to design and engineering services for which they were paid Rs 76.52 lakh. Subsequently, the State Government directed (January 1998) the erstwhile Board to take up the project work departmentally. Accordingly, the erstwhile Board decided to revive (January 1998) the consultancy contract with the TCE.

TCE asserted (March 1998) that due to long interruption of work the salvageable value of completed design and engineering work (67.2 per cent of total work) was only 33.8 per cent and agreed (April 1998) to complete the residual work for Rs 2.05 crore and the earlier contract of November 1989 was revived in June 1998.

**Stalling of construction work of Unit VI resulted in infructuous and additional expenditure on consultancy services**

Thus, due to the vacillating policy of the State Government and the erstwhile Board in construction of Unit VI, the cost of design and engineering services increased by Rs 1.85 crore which included expenditure of Rs 38.03 lakh relating to the work which could not be salvaged (66.2 *per cent*) and was rendered infructuous.

### **2B.9.2 Extra expenditure in the construction of cooling tower**

The erstwhile Board allotted (March 1992) the work of construction of the natural draft cooling tower for Unit VI to M/s Gammon India Limited, Mumbai for a lump sum cost of Rs 12.85 crore. The composition of the cost was: (i) design and drawing : 10 *per cent*, (ii) Board's material: 30 *per cent*; (iii) contractor's material: 20 *per cent*; (iv) contractor's labour: 25 *per cent* and (v) overhead and profit: 15 *per cent*. Price variation due to upward and downward change in the rates of labour and/or prices of material was governed by a price escalation formula. In the price escalation formula, the components 'X' (labour cost) and 'Y' (material cost) were fixed as 25 and 20 *per cent* respectively of the total cost. The price variation adjustment on account of the escalation formula was limited to 4 *per cent* (Rs 51.40 lakh) of the total lump sum price during the tenure of the contract (24 months) i.e. up to March 1994.

The work commenced in May 1992 was abandoned by the contractor in November 1992 due to paucity of funds with the erstwhile Board. During this period, the contractor did some earth excavation works and submitted drawings for the contracted work (value: Rs 1.40 crore).

After the decision of the State Government (January 1998) to take up the Unit for construction by mobilising funds from PFC and market borrowings, negotiations were held (January 1998) with the contractor and the original contract (July 1992) was revived (February 1998) with the completion date as 26 February 2000 with the following amendments in the price variation clause:

- (i) In the price escalation formula, the components of 'X' (labour cost) and 'Y' (material cost) were revised to 30 *per cent* and 22.5 *per cent* respectively without any change in the base month of September 1991.
- (ii) Escalation was payable without any ceiling limit as against ceiling of 4 *per cent* applicable in the original contract.

**Revival of the stalled contract for construction of cooling tower resulted in unjust payment to the contractor**

As a result of the above amendments, the cost of the original contract increased by Rs 5.15 crore. It was observed (February 2001) in audit that there was no change in the drawings or the scope of work of the natural draft cooling tower as such the increase in the value of the components 'X' and 'Y' of the price escalation formula was not justified. As a result of these changes, extra payment of Rs 68.57 lakh was made to the contractor.

### **2B.9.3 Payment of commitment charges on loan**

For the construction of Unit VI, PFC sanctioned (15 April 1998) a loan of Rs 300 crore repayable with interest in 40 equal quarterly instalments due on 15 April, 15 July, 15 October and 15 January every year commencing from 15 October 2000.

As per terms of the loan agreement, commitment charges at the rate of one *per cent* per annum were payable from the day of signing of loan agreement till actual drawal of the loan. The Company did not draw the loan according to the agreed quarterly drawal schedule resulting in avoidable payment of commitment charges to the extent of Rs 28.67 lakh.

#### **Conclusion**

The operational performance of Units I to IV of PTPS was poor and below the norms. Poor generation combined with excessive auxiliary consumption and deployment of excess manpower contributed towards high cost of generation in PTPS. Renovation and Modernisation scheme undertaken by the erstwhile Board at huge cost to improve the performance of these Units did not produce the desired results. The refurbishment work taken up (May 1997) for Units I to IV through a foreign contractor could not be completed as planned due to dispute with the foreign contractor who had terminated the contract itself. The dispute could not be sorted out in spite of intervention of the Government of India and CEA. As a result, substantial investment was locked up in certain works put on hold besides huge loss of potential generation and payment of commitment charges/guarantee fee on loans. Due to indecisiveness on the part of the State Government regarding the construction of Unit VI, this could be synchronised in March 2001 after a huge time and cost overrun besides failure to generate power as envisaged.

The Company needs to complete the refurbishment of Units I to IV at an early date so as to improve the performance of PTPS and reduce the cost of generation.

The matter was referred to the Company and the Government in May 2001; their replies had not been received (September 2001).