Chapter-II
Performance Audit

CHAPTER-II
PERFORMANCE AUDIT

2 Sawra Kuddu Hydro Electric Project

Executive Summary

For execution of Sawra Kuddu Hydro-Electric Project, Pabbar Valley Power Corporation Limited (PVPCL) was created in August 2004. Subsequently with the constitution (July 2007) of Himachal Pradesh Power Corporation Limited (HPPCL), PVPCL was merged with HPPCL in August 2007.

Highlights

The project initially estimated to cost ₹ 558.53 crore is now anticipated to be completed at a cost of ₹ 1,165.10 crore by July 2017 involving cost overrun of ₹ 606.57 crore with consequential increase in *per* MW cost from ₹ 5.03 crore to ₹ 10.50 crore and *per* unit cost of ₹ 2.34 to ₹ 6.95. As the anticipated generation cost would be much higher as compared to the average sale rate of ₹ 3.43 *per* unit and in view of this; project may become commercially unviable on commissioning.

(*Paragraphs 2.1 and 2.7)*

GoI transferred funds equivalent of ₹ 491.16 crore received from the ADB to the State Government for this project in the shape of grant and loan in the ratio of 90:10 which was converted in to loan by the State Government carrying interest at the rate of 10 *per cent per annum.* The conversion of grant in to loan placed an extra interest burden of ₹ 126.04 crore on project cost.

(*Paragraph 2.6.2)*

The change in design of the diversion barrage had an impact of ₹ 100.73 crore on the overall cost of the project.

{Paragraph 2.7.2(i)}

The Company did not recover Liquidated Damages amounting ₹ 11.59 crore in terms of agreement from the contractor for delay in completion of works before rescinding the contract.

{Paragraph 2.8.2 (iv) (a)}

Delay in rescinding the work of HRT by the Company resulted delay in commissioning of the Hydro Electric Project besides non-availing of the benefit of defect liability period of Diversion Barrage, Intake structure & Descending Arrangements and Power House packages.

{Paragraph 2.8.2 (v)}

Non-restriction of price variation of 20 *per cent* on each consignment of supply in the bidding document resulted in avoidable expenditure of ₹ 8.79 crore.

(*Paragraph 2.9.1)*

Introduction

2.1 Sawra Kuddu Hydro-Electric Project (SKHEP) was conceived as a run of the river development on Pabbar River (a tributary of Yamuna River) in Shimla district of Himachal Pradesh. A Special Purpose Vehicle (SPV) named as Pabbar Valley Power Corporation Limited (PVPCL) was created (August 2004) for execution of Hydro Electric Projects (HEPs) in Pabbar Valley and subsequently PVPCL was merged (August 2007) with Himachal Pradesh Power Corporation Limited (HPPCL) on its constitution (July 2007).

Techno Economic Clearance (TEC) for the project with installed capacity of 110 MW (now 111 MW) was accorded (November 2004) for ₹ 558.53 crore (March 2003 price level) inclusive of interest during construction (IDC) of ₹ 63.29 crore. The cost of the project was revised to ₹ 1,165.10 crore in September 2009. The project was designed to operate as a peaking station to generate 385.78 million units (MUs) during 90 *per cent* dependable year and 506.61 MUs during 50 *per cent* mean year[1]. The execution of the project was divided into four packages[2] and all are under execution (August 2014).

The project was scheduled to be commissioned in December 2011 but due to non-completion of various construction works is now expected to be completed by July 2017. The performance audit of this project was conducted at construction stage to analyse the reasons for delay and its impact on project viability.

Organisational set up

2.2 The monitoring and control at Government level is done by the Principal Secretary (Multi Purpose Projects & Power – MPP&P) to the Government of Himachal Pradesh. The execution of civil and electro-mechanical works of the project was under the overall control of the General Manager, Sawra Kuddu (HEP), who is assisted by three Assistant General Managers, (Civil / Mechanical) and one Assistant General Manager

---

1 For Mean and Dependable years, the run off the river data collected for any number of years is arranged in descending order. Mean year is the middle year. 90 *per cent* Dependable year is the 90/100th year of total years for which data is collected.

2 Head Race Tunnel, Diversion Barrage and Intake, Power House and Electro-Mechanical Equipment.

(Electrical). The General Manager reports to the Managing Director of the HPPCL.

Audit objectives

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

- project was conceived and designed to supply electricity in a cost effective manner;
- the award and execution of project was managed economically, effectively and efficiently;
- the manpower requirement was realistic and its utilisation optimal; and
- there was a proper monitoring system in place to review the execution of project.

Scope of Audit and Methodology

2.4 A performance audit was conducted from April 2014 to July 2014 to cover the execution of Sawra-Kuddu HEP since inception. Audit examination involved scrutiny of records relating to this project at Corporate Office, Shimla and GM Sawra-Kuddu at Hatkoti. Records relevant to approvals, statutory clearances, award, execution and environmental impact were scrutinised.

The performance audit commenced with an entry conference with the Principal Secretary (Power), Government of Himachal Pradesh and Managing Director of the Company on 23 April 2014 explaining scope of audit, audit objectives and criteria. Audit findings were issued to the Management / Government in the form of draft report for their comments on 28 August 2014. Exit conference was held with the management on 15 October 2014 and their replies received on 27 October 2014 have been incorporated suitably.

Audit Criteria

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

- Guidelines issued by the Central Electricity Authority (CEA), Ministry of Power and Central Water Commission (CWC), Central Vigilance Commission (CVC), State Government, Laws relating to Environment and Provisions of Electricity Act, 2003.
- Detailed Project Report (DPR); Reports of Experts for exploration of project and quality control.

- Standard procedures for award of contracts and guidelines issued by the Asian Development Bank (ADB).
- Agreements entered into with various contractors.

Audit Findings

2.6 Financial Management

2.6.1 Funding

For execution of this project a loan of ₹ 453.00 crore was sanctioned (March 2003) by the Power Finance Corporation (PFC) and a loan of ₹ 587.85 crore (contracted value of Barrage, civil & electro mechanical works relating to Power House) from Asian Development Bank (ADB) through Government of India (GoI) under Himachal Pradesh Clean Energy Development Programme. A sum of ₹ 851.62 crore had been incurred by the Company on this project so far (May 2014).

Year wise allocation of budget and expenditure incurred there against during the last five years is given in ***Table 2.1***:

Table-2.1

Year	Civil works			Electro Mechanical works		
	Budget	Expenditure	Percentage utilisation	Budget	Expenditure	Percentage utilisation
	(₹ in lakh)			(₹ in lakh)		
2009-10	-[3]	4287.85		-[3]	00.00	
2010-11	8582.00	10095.43	117.63	5170.00	1307.75	25.29
2011-12	20850.00	11638.53	55.82	9994.22	6416.13	64.20
2012-13	14060.00	8392.45	59.69	5091.00	4788.31	94.05
2013-14	10417.56	8802.30	84.49	2697.01	2469.91	91.58

It could be seen that in case of Civil Works percentage utilisation of budget ranged between 55.82 and 117.63 *per cent* and in case of Electro Mechanical works between 25.29 and 94.05 *per cent*. Main reasons for shortfall in utilisation of budget were delay in supply of drawings to the contractor, delay in providing civil fronts and lack of monitoring by the management.

2.6.2 Charging of interest on grant

Against ₹ 587.85 crore (sanctioned loan from ADB) the GoI transferred funds equivalent to ₹ 491.16 crore (up to March 2014) to the State Government for

[3] Budget for the year 2009-10 was not allocated by the Company.

execution of this project in the shape of grant and loan[4] in the ratio of 90:10. However, the State Government treated the entire amount as a loan to HPPCL by charging interest at 10 *per cent per annum* as *per* the agreement executed (November 2008) by the State Government with the Company. Thus, conversion of grant of ₹ 442.04 crore drawn up to March 2014 in to loan placed extra interest burden of ₹ 126.04 crore on project cost thereby defeating the very purpose of providing grant by the ADB under Clean Energy Development Programme.

The Management stated that the matter has been taken up with the State Government (May 2014) and their response was awaited (October 2014).

2.6.3 Non-booking of establishment cost

Audit noticed (July 2014) that proportionate establishment cost of corporate office, design offices and data center amounting ₹ 44.89 crore out of the total accumulated expenditure of ₹ 137.86 crore (establishment cost ₹ 112.61 crore and expenses related to data center ₹ 25.25 crore) incurred on its 11 ongoing projects up to March 2014 had not been booked to the project. On booking of this cost to the project overall project cost would increase with consequential increase in *per* unit cost of generation.

The Management stated (October 2014) that the decision for allocation of the cost on the basis of total expenditure incurred against each project would be taken during the current financial year.

2.6.4 Irregular booking of unrelated cost

The office and residential accommodation initially constructed (May 2007) by PVPCL for SKHEP is now being used for construction of another project (Chirgaon-Majhgaon HEP) and the Company had booked the entire construction cost of ₹ 1.04 crore against SKHEP. Non-transfer of the cost to the concerned project had resulted in avoidable increase in project cost by ₹ 1.04 crore.

The Management stated (October 2014) that the matter regarding booking of above expenditure to Chirgaon - Majhgaon HEP was under consideration.

2.6.5 Less booking of ₹ 30.32 lakh to Local Area Development Activities

As *per* the provisions of Hydro Power Policy, 2006 issued by the State Government, the Company made provision of ₹ 16.92 crore towards Local Area Development Fund (LADF) against the project. The Company executed certain works on behalf of Local Area Development Committee (LADC) by incurring an expenditure of ₹ 2.75 crore up to May 2014.

---

[4] At an interest rate of *9 per cent per annum.*

Audit noticed (June 2014) that departmental charges (DC) at the rate of 11 *per cent* amounting to ₹ 30.32 lakh on expenditure incurred (₹ 2.75 crore) had not been charged on the works executed by the Company under the scheme. This resulted in less booking of ₹ 30.32 lakh to LADF and the company would have to pay this amount extra towards LADF.

The Management stated (October 2014) that the present policy of LADF which supersedes all the previous policies / guidelines on LADF, does not specifically stipulate charging of departmental charges. Further, the accepted principle in respect of departmental charges was that the works which were executed on deposit work basis for other departments attracted departmental charges.

The reply itself points to charging of DC on deposit work on behalf of other departments. These works had been executed by the Company as deposit works on behalf of Local Area Development Committee, as such DC should have been recovered.

Time and Cost overrun

2.7 The Techno-Economic Clearance (TEC) for the construction of the project was accorded (November 2004) by HPSEB with loan of ₹ 390.97 crore and equity of ₹ 167.56 crore with commissioning period of 54 months after award of civil works. The civil works were awarded in December 2011 and the project is expected to be completed at a cost of ₹ 1,165.10 crore by July 2017 involving cost overrun of ₹ 606.57 crore. The date of award of various works, due date of completion, present status and delay / time overrun under each of the components ending March 2014 is detailed in **Appendix 2.1** which shows that the delay in completion of works ranged between 27 to 69 months. The percentage increase in cost of main components ranged between 31 and 1,692 *per cent* as *per* details given in **Appendix 2.2** and overall increase in cost was 109 *per cent.* The time and cost overrun resulted in increase in *per* MW cost from ₹ 5.03 crore to ₹ 10.50 crore and *per* unit cost (without considering royalty) increased from ₹ 2.34 to ₹ 6.95 at revised cost of ₹ 1,165.10 crore against the average sale rate of power being sold[5] by the State Government through Power Trading Corporation (PTC) at ₹ 3.43 *per* unit. The generation cost was much higher and would increase further after adding royalty and wheeling charges. Thus, this project may become commercially unviable project to the Company.

The reasons for delay in completion of works were slow progress of work by the contractors, inadequate / non provisioning of certain items of works in the DPR, subsequent change in designs / scope of work and late handing over of sites by the Company to contractors. Also, in view of revision in cost to

[5] During the period from 2010-11 to 2012-13.

₹ 1,165.10 crore, TEC from CEA was required which has not been obtained by the Company so far (October 2014).

The delay in execution of project not only resulted in generation loss / increase in *per* MW cost but also led to avoidable increase in project cost as discussed in succeeding paragraphs:

2.7.1 Generation loss

The delay of more than five years (January 2012 to June 2017) in completion of project had not only resulted in increase in cost but also result in generation loss of ₹ 727.77 crore[6] including deferment of free power share of ₹ 87.33 crore to the State Government besides non-achievement of social objective of providing additional power to the public.

2.7.2 Other factor contributing increase in project cost

(i) Changes in design

In the approved DPR there were provisions of ₹ 43.19 crore and ₹ 11.10 crore for construction of conventional Diversion Barrage & Intake Structures (DBID) respectively considered on maximum flood level of 3,000 cumecs. On this level, Length of the Barrage was fixed at 118 meter, top of the Barrage at elevation (EL) of 1,426.00 meters and Full Reservoir Level (FRL) at EL 1,423.50 meters with storage capacity of 136 Hect-m sufficient for four hour peaking.

Audit noticed (July 2014) that designs of Barrage and Intake were changed from conventional to Piano Key Weir (PK Weir) based on revised flood level of 6,880 cumecs resulting in increase in quantities of items to be executed. Due to change in design, the top of the Barrage was reduced to EL 1,424.00 meters from 1,426.00 meters, consequently FRL was reduced from EL 1,423.50 meters to 1,417.95 meters whereas the storage capacity had been shown increased as 140.45 Hect-m which was not possible as the storage capacity of the reservoir decreases with decrease in FRL. This change in design had an impact of ₹ 100.73 crore on the overall cost of the project for which the work was awarded to contractor[7] during August 2009.

Further, on the basis of earlier FRL and storage capacity, generation of 385.78 million units (MUs) during 90 *per cent* dependable year was envisaged. The reduction in FRL and storage capacity of the reservoir will now result in recurring loss to the project on account of lesser generation during lean season. The impact of reduction in storage capacity on the generation had not been assessed by the company while according the approval for change in design.

---

6 385.78 MUs x 5.5 Years x ₹ 3.43 = ₹ 727.77 crore (at an average sale rate of PTC).
7 M/s Patel Engineering Limited.

The Management stated (October 2014) that the adopted design in DPR was based on flood level of 3,000 cumecs noticed during 1997. However, the standard project flood level of 6,880 cumecs was calculated on the basis of guidelines of the CWC and IS-11223 for a structure falling in the category of 'intermediate' *i.e.*, having hydraulic head of 12m to 30m. Further, in the course of detailed construction stage survey the river bed level was not found uniform across the river width. These errors in DPR when rectified resulted in gain in overall storage even with reduction of FRL besides reduction in land acquisition requirement by 5.406 Hac valuing ₹ 4.43 crore.

Reply points toward the facts that the DPR was not prepared after considering all the required parameters in terms of CWC guidelines. Further, the guidelines and IS-11223 quoted in the reply were for calculation of designed flood for storage dams whereas in this case the project was designed with diversion barrage and weir for which IS-6966 (Part-I)-1989 was applicable.

(ii) Avoidable payment of Demand Charges

The HPSEBL sanctioned power load of 4,873.128 KW with the contract demand of 5,142.95 KVA[8] required for execution of various components of the project. Out of this, 2,623.5 KW load with contract demand of 2,915 KVA was for construction power of Head Race Tunnel (HRT). Due to slow progress of work of HRT by contractor[9], the work was rescinded in January 2014. As the Company was aware of the fact that the balance works of HRT would be awarded after preparing and inviting fresh tenders and the whole process was not likely to be completed before July 2014, as such the contract demand should have been got reduced immediately on rescission of work. Non-reduction of contract demand resulted in an avoidable expenditure of ₹ 53.73 lakh[10] on payment of demand charges during the period from February 2014 to August 2014.

The Management stated (October 2014) that action for reduction of contract demand was initiated in January 2014 and the delay was on the part of HPSEBL. The reply was not acceptable as the company failed to deposit the required fee for reduction of contract demand which was actually deposited in August 2014.

Award and Execution of Civil Works

2.8 The civil works of the Project mainly comprises of construction of Reservoir, Trench Weir, De-sanding Arrangements, Power Intake, HRT, Surge Shaft, Pressure Shaft, Power House (PH) and Tail Race Tunnel *etc.* These works were divided into three packages and were awarded to two contractors for a total cost of ₹ 552.78 crore. Audit scrutiny of contract

8 A/c No. SKP BS-1.

9 M/s Aban Coastal Joint Venture.

10 Requirement as worked out by the HPPCL to 72 KVA i.e., 2,915 KVA-72 KVA= 2,843 KVA x 90% x ₹ 300/- *per* kva x 7 months.

agreements entered with these contractors and records relating to execution showed cases of extra / avoidable expenditure of ₹ 12.10 crore besides non recovery of Liquidated Damages (LD) of ₹ 55.28 crore due to non-compliance of various contractual provisions as discussed in the following paragraphs:

2.8.1 Award of Civil Works

(i) Potential loss of interest due to non-insertion of appropriate clause in the bidding document

The Company while preparing the bidding documents for Power House (PH) and DBID packages linked the recovery of advance with the progress of work instead of time bound manner so as to safeguard its financial interests.

Audit noticed (June 2014) that the Company released interest free advance of ₹ 21.85 crore to contractor[11] against two packages[12] during February 2009 to May 2010 by linking its recovery with the progress of work. As the funds arranged by the Company for these works carried interest at a rate of 10 *per cent per annum* as such it was not prudent on the part of the Company to release the same to contractor without interest for indefinite period (depending on the progress of work).

Thus, failure of the company in inserting the suitable clause in the bidding documents before getting approval from ADB resulted in potential interest loss of ₹ 3.96 crore[13] for the period from February 2009 to November 2011.

The Management stated (October 2014) that the clause regarding time bound recovery has now been inserted in the HRT package based upon the standard document of the Company. The reply of the management is not acceptable as the Company should have incorporated the provision of its standard document in the bidding document of the above contracts. Further Central Vigilance Commission (April 2007) has also indicated for time bound recovery of advances.

(ii) Avoidable loss

Clause 12.3 of Particular Conditions of Contract (PCC) agreement executed (September 2009) with the contractor[14] for the DBID provided that the rates for the quantities in excess of 125 *per cent* would be analysed on current market rates. However, the rates of few items, such as rock bolts, wire mesh, short crete and dewatering *etc*. were kept out of the scope of above mentioned clause and were allowed to be paid on the contractual rates even beyond the limit of 125 *per cent.*

---

[11] M/s Patel Engineering Limited.

[12] Power House and Diversion Barrage, Intake Structure and De-sanding arrangements packages.

[13] Interest loss has been worked out at 10 *per cent per annum* as being paid on the ADB loan obtained for this project.

[14] M/s Patel Engineering.

Audit noticed (June 2014) that during execution, the quantities of dewatering (up to 62nd RA bill) had increased by 1,018 *per cent* (49,81,814 Kwh against the awarded quantity of 4,45,600 Kwh). The contractor was being paid on contractual rate of ₹ 30 *per* Kwh against the analysed market rate of ₹ 11 *per* Kwh. Had the item of dewatering been kept within the ambit of above limit, payment of ₹ 8.41 crore to the contractor could have been avoided.

The Management stated (October 2014) that since the quantity of dewatering remains highly uncertain hence prescribing deviation limit for the same does not sound logical, however, the suggestion of audit would be considered for compliance in future projects.

The reply itself points to the fact that quantity of dewatering are highly uncertain and should have been included in the deviation limit clause to safeguard the interest of the Company. Further the company did not consider the experience of Larji HEP where dewatering quantities increased by 2,635 *per cent*.

2.8.2 Execution of Civil Works

The scrutiny of records relating to execution of civil works showed that the Company incurred an avoidable / extra expenditure as discussed in the following paragraphs:

(i) Payment without analysing the market rates

Sub clause 12.3 (i) read with sub clause 12.3 (iv) (c) of the Particular Conditions of Contract (PCC) executed (February 2009) with contractor[15] for construction of PH provided that the rates for quantities in excess of 125 *per cent* may be revised on the basis of prevailing market rates at the time the quantities exceeded the limit.

Audit noticed (July 2014) that the quantities of Surge Shaft exceeded 125 *per cent* during August 2009. Similarly quantities of underground excavation and concreting of Pressure Shaft also exceeded the above limit during February 2011 and November 2012 respectively but payments for these items were being made at the awarded rates. An amount of ₹ 3.21 crore was paid to the contractor on quantities in excess of 125 *per cent* against the above mentioned items without analysing the market rates in violation of the contractual provision.

The Management stated (October 2014) that as *per* the phrase 'may be' used in the clause was optional and not obligatory on the part of the contractor to supply the actual rates of inputs for arriving at the current market rates. In this case the contractor had not furnished the same thus, the rates could not be analysed.

---

[15] M/s Patel Engineering Ltd.

The reply was not acceptable as the provisions of the agreement were applicable to both the parties and either party could opt for revision of rates so as to safeguard its financial interests.

(ii) Avoidable / extra payment

Due to increase in quantities of open excavation in DBID package beyond 125 *per cent* limit, the rate of the same was analysed at ₹ 193 *per Cum* on current market rates as *per* provisions of the agreement as against the awarded rate of ₹ 220 *per Cum*. The same was approved by the management during September 2012 and payments to the contractor were released accordingly.

Audit noticed (July 2014) that the rates of ₹ 193 *per Cum* were further revised to ₹ 226 *per Cum* in June 2013. The rates were revised, by altering the parameters of overtime payments to labour, carrying capacity and speed of tipper mentioned in the construction methodology submitted by the contractor before award of work.

Thus, revision of rates and adoption of different criteria during September 2012 and June 2013 for analysing market rates had resulted in extra payment of ₹ 34.00 lakh to the contractor.

The Management stated (October 2014) that the rates were revised after taking into account the actual input of the contractor and speed during empty haul and carriage as actually observed at site. Further the muck carrying capacity of the tipper considered earlier by the contractor in his construction methodology was not theoretically possible.

The reply was not acceptable as the rates were revised by altering the parameters mentioned in the construction methodology and its theoretical possibility was accepted by the Company before award of contract.

(iii) Overpayment on substituted items

Clause 12.3 (iv) (a) of the PCC of DBID package stipulated that the rates for substituted items should be derived from the rate of nearest similar item specified in the Bill of Quantities (BOQ). During execution M-70 grade concrete (800 kg) was substituted with M-55 grade concrete (500 kg). Rate of the substituted items (₹ 5,320 *per Cum*) was derived by taking the average of rates of M-70 (800 kg) and M-40 (650 kg) and subtracting the value of difference in quantity of cement required.

Audit noticed (July 2014) that in terms of quantity of cement required for M-55 grade concrete, nearest similar items available in BOQ was M-25 (450 kg) at the rate of ₹ 4,640 *per Cum* and in terms of *ibid* clause the rates of substituted item of M-55 (500 kg) were required to be derived from the rates of M-25 by adding value of difference in quantity of cement at the rate of ₹ 5.50 *per* kg (provided in the agreement) which worked out to

₹ 4,915 *per Cum*. This resulted in over payment of ₹ 13.85 lakh on execution of 3,420.937 Cum. up to 62^{nd} RA bill paid in June 2014.

The management stated (October 2014) that the rates of M-55 were derived from the nearest concrete mixes and M-55 falls between M-40 and M-70 and the rate has been derived by considering the average of these two grades.

The reply was not acceptable as the requirement of cement for M-55 grade was 500 Kg which was nearest to M-25 (450 Kg) as such rates should have been derived from it and not from M-40 (650 Kg) and M-70 (800 Kg).

(iv) Non recovery / levy of Liquidated Damages

(a) Clause 47 of General Conditions of the Contract (GCC) of the HRT package, awarded to contractor[16] during June 2007 with completion period of July 2011, stipulated that if the contractor failed to complete the work within the stipulated time, the contractor shall pay liquidated damages (LD) for such default a sum equivalent to 0.5 *per cent* of the contract price for every week or part of a week of delay in completion of works. The total amount of the liquidated damages payable to the company shall be subject to maximum 10 *per cent* of the contract price.

Audit noticed (July 2014) that the contractor failed to complete the work within the stipulated period and applied (August 2012) for extension of time up to 31 March 2014 (988 days). On analysing, the delay of 440 days was attributed by the Company on the part of contractor for which 10 *per cent* LD were recommended during September 2012. Pending decision of the BOD for recovery, the work was rescinded from the contractor in January 2014 without recovery of LD. Now after rescission of contract, chances of recovery of LD amounting ₹ 11.59 crore from the contractor were bleak.

The Management stated (October 2014) that during the currency of contract levying of LD would have been a retrospective step and not in the interest of the work. Now since the work have been rescinded, LD would be recovered from the contractor after conclusion of arbitration proceeding.

The reply was not acceptable as this situation could have been avoided by timely recovering of LD out of BG or from running bills of the contractor before rescinding the contract.

(b) Similarly contractor[17] failed to complete the works of PH & DBID packages awarded in January 2009 and August 2009 with completion period of June 2012. The Company allowed extension of time in both the contracts up to December 2013 and September 2013 respectively without levy of LD. The completion period was further extended provisionally up to

[16] M/s Aban Coastal Joint Venture.
[17] M/s Patel Engineering Limited.

September 2014 and December 2014 without prejudice to the right of the company to recover liquidated damages amounting to ₹ 43.69 crore as *per* provisions of the contract (Clause 8.7 read with clause 14.15 (b) of General Condition of the Contracts).

The Management stated (October 2014) that the recovery of LD was not effected as it could have created hindrance in completion of the work. However, after completion of the work LD would be imposed on the contractor after assessing the reasons for delay.

The reply was not acceptable as the Company should have initiated action for levy of LD so as to safeguard Company's interest as the contractor failed to complete the work despite three extensions.

(v) Undue favour to the contractor

The construction of HRT and Adits was awarded (June 2007) to contractor[18] for ₹ 115.92 crore, 24.17 *per cent* below the estimated cost of ₹ 154.60 crore with scheduled completion period of July 2011. The contractor failed to achieve the desired progress of work from the very beginning (June 2007). The Company instead of rescinding the work extended financial help to the contractor amounting to ₹ 29.53 crore (advances, direct payments to suppliers / labour) over and above the contractual provisions. Though Company issued show cause notice in June 2008 for getting the work done through a third party at the risk and cost of the contractor yet the work was actually rescinded in January 2014.

The balance works estimated to be completed in 32 months had not been awarded so far (July 2014) though other components are expected to be ready by December 2014. Timely decision to rescind the contract and awarding the remaining work to other contractor could have resulted in completion of the works by December 2013 considering 48 months (including 6 months for retendering and award) for completion as envisaged earlier. Even if the balance works were now awarded (October 2014) the commissioning of the project is not likely to be achieved before July 2017.

Further, DBID and PH works expected to be completed by December 2014 can only be tested after completion of HRT. The defect notification period in both the works was twelve months after completion of works. As the testing of these works would not be possible before completion of HRT as such the company would not be able to avail the benefit of defect liability clause of the agreement without getting the period extended up to the completion of HRT.

[18] M/s Aban Coastal Joint Venture.

Thus, delay in rescinding the work had resulted in overall delay in completion of project and would also result in non-availing the defect liability period of DBID and PH packages.

The Management stated (October 2014) that the work was not rescinded in the first instance as re-awarding process was very time consuming and the Company intended to avoid that delay.

The reply of the management is not acceptable as the Company could not achieve the anticipated results thereby leading to delay in completion of the project.

Award and Execution of Electro Mechanical Works

2.9 The Electro Mechanical works of the project were awarded to contractor[19] in February 2009 at a total cost of ₹ 150.99 crore. The scrutiny of records relating to award and execution of these works revealed cases of avoidable and extra expenditure of ₹ 30.61 crore as discussed below:

2.9.1 Award of Electro Mechanical Works

Condition no. 3 of Section-1 Appendix-2, of the E&M Package awarded to a contractor stipulated ceiling of 20 *per cent* of the aggregate "contract price" for price adjustment. The company while awarding (March 2010) E&M package of HEP (Kashang HEP) to the same contractor had imposed 20 *per cent* limit on each consignment. Similarly, Beas Valley Power Corporation Ltd. (BVPC) had also awarded E&M package (February 2007) for Uhl-III HEP to BHEL with price variation limit of 20 *per cent* limit on each consignment.

Audit noticed (July 2014) that non-restriction of price variation limit on each item enabled the contractor to claim price variation of ₹ 11.11 crore on the supply of 3 transformers costing ₹ 11.58 crore. This could have been restricted to ₹ 2.32 crore had the Company imposed 20 *per cent* ceiling on each consignment. This has resulted in avoidable expenditure of ₹ 8.79 crore.

The Management stated (October 2014) that the situation of contractor getting higher price variation payment has arisen due to abnormal increase in the price indices of the base material and due to delay in handing over of civil fronts besides non-availability of necessary infrastructure for transportation of heavy material.

The reply is not acceptable as this could have been avoided by restricting the price variation to each consignment at the time of preparing bidding documents.

[19] M/s Andritz Hydro Private Limited.

2.9.2 Execution of Electro Mechanical Works

(i) Avoidable accumulation of liability due to delay in providing civil fronts

The contractor could not commission the Generating Units (E&M Package) within stipulated completion period of June 2012 due to delay in providing civil fronts by the Company (ranging between 416 days and 1,088 days) as *per* agreed schedule (August 2010 and October 2011). The main reasons for delays were delay in widening of road / strengthening of old bridges for transportation of heavy and over dimensional equipment. On the basis of revised schedule for providing civil fronts by the Company, the three units were planned to be commissioned by June 2014.

Audit noticed (July 2014) that due to delay in providing civil fronts by the Company a liability of ₹ 27.06 crore on account of extension of project schedule under clause 40.3 Section-IV of the G.C.C. had accumulated. Out of the total claim of ₹ 27.06 crore submitted by the contractor, ₹ 10.48 crore was for extension of warranty period, Bank Guarantees and Insurance cover of the machinery for 24 months up to June 2014. The payment had, however, not been released (July 2014) to the contractor.

The company admitted (October 2012) the facts regarding failure in providing civil fronts duly developed within scheduled period and delay in transportation of heavy equipment and allowed extension of time to the contractor up to December 2014. The Management further stated (October 2014) that the claim was under examination and would be finalised as *per* the provisions of the contract.

(ii) Interest loss on delayed adjustment of excess payment

As *per* clause 4.1.2, chapter 4 of document 3A of the E&M package, there was a provision of 270 meters bus duct**.** Material dispatch clearance certificate (MDCC) for 270 meters was issued to the contractor by the Company on 12 October 2012 after inspection at site. However, after receipt of erection key diagram (25th October 2012) from the contractor the length of bus duct was seen to be 173 meters instead of 270 meters.

Audit noticed (June 2014) that on the basis of MDCC, the contractor recovered 60 *per cent* payment in October 2012 on the value of 270 meters against dispatch of material. Besides, 15 *per cent* advance was released in the month of March 2009 on the total value as *per* the agreement which included the value of duct. The contractor was also paid Price Variation Claim (PVC) on 270 meters. An amount of ₹ 87.91 lakh was paid in excess to the contractor on 97 meters. However, the Company has recovered ₹ 19.10 lakh in February 2014 and ₹ 68.81 lakh in May 2014, without any interest.

Thus, release of excess payments without adjustment resulted in interest loss of ₹ 12.29 lakh[20] .

The Management stated (October 2014) that manual adjustment for excess or less quantity of materials dispatched / received was not possible. Reply was not acceptable as the excess payment could have been adjusted against any other payments due to the contractor.

(iii) Avoidable loss due to delay in transportation of equipment

The Company placed (February 2009) an order for the supply of electro mechanical material to contractor[21]. The material was to be supplied by August 2011 for which the road / bridges between Chailla and Project site were to be strengthened at certain points. After issue of dispatch instructions (between November 2010 and December 2011) the contractor supplied heavy machinery valuing ₹ 34.82 crore which reached Chandigarh / Parwanoo in March 2012. The Company released 75 *per cent* (15 *per cent* at the time of agreement and 60 *per cent* at the time of dispatch of material) payment of ₹ 26.11 crore of the machinery value. However, these equipments could not be transported to the project site for want of up gradation / strengthening of road / bridges at certain points and had to be stored at Parwanoo and Chandigarh warehouses. The Company had to bear ₹ 1.70 crore towards lease rent (March 2012 to December 2013), loading / unloading and transportation cost for storing them. The improvement of road and strengthening of bridges as required was got done by the Company from a contractor between March and May 2013 by incurring an expenditure of ₹ 65.21 lakh. The transportation of material to the site was completed in December 2013.

Thus, failure of the Company in initiating timely action for improvement of road and strengthening of bridges resulted in avoidable payment of lease rent of ₹ 1.70 crore, price escalation of ₹ 4.12 crore on commissioning of the equipments after scheduled completion period and interest loss of ₹ 4.75 crore on the 60 *per cent* payment released, besides blocking of funds amounting to ₹ 26.11 crore for the period from March 2012 to December 2013.

The Management stated (October 2014) that the issue cropped up due to involvement of multiple departments and reasons beyond the control of the Company. The reply was not acceptable as Company should have placed the supply order only after ensuring its transportation up to the project site.

---

20 ₹ 19.10 lakh x 274 days x 10 *per cent per annum* + ₹ 68.81 lakh x 576 days x10 *per cent per annum.*

21 M/s Andriz Hydro Private Limited.

Manpower Management

2.10 The audit analysis of manpower requirement *vis a vis* actual deployment in the project revealed the following:

(i) Deployment of staff in excess of sanctioned strength

Scrutiny of sanctioned strength of different categories of staff *vis a vis* actual manpower deployed showed that the Company had deployed excess staff during the period from April 2008 to June 2014 as detailed in **Appendix 2.3.** This had resulted in avoidable increase in project cost by ₹ 2.89 crore on account of pay and allowances paid to the above staff during the same period.

(ii) Deployment of staff without any requirement

Audit scrutiny further showed that the Company had deployed seven field staff (mason, Mixer operator & Air compressor operator) at project site though all the works were being executed through contractors. In addition to above, the Company had also deployed one auto helper and one store keeper without having any auto workshop and store.

The Company had incurred ₹ 1.13 crore on their pay and allowances during January 2006 to June 2014, which had resulted in avoidable increase in project cost by ₹ 1.13 crore.

The Management admitted (October 2014) that some posts were not sanctioned but the existing staff has been gainfully deployed in various other projects and the manpower has been kept within the overall sanctioned strength. The reply was not acceptable as manpower should have been deployed as *per* the category wise sanctioned strength / requirement.

Quality Control

2.11 In order to ensure the quality of the works, the Company had established a quality control cell at project site besides monitoring by the concerned engineers deployed for supervision of works. During audit (July 2014) the following deficiencies were noticed:

(i) Expenditure on excessive over breaks

During execution of HRT works the contractor could not achieve the desired alignment of HRT and in the overt of the tunnel over breaks in excess of the permissible limit of 7.5 *per cent* (clause 6.5 (iv) of technical specifications of the contract) occurred. In the initial stages the over breaks were up to 20 *per cent*. Similarly, in the invert of the tunnel there were undercuts (not been paid) and resultantly the desired slope of the tunnel could not be achieved which required rectification. As *per* above clause, if for any reason, other than accepted geological reasons, excavation was carried out beyond pay line, the contractor was liable at his own cost for removing the excess material and backfill the voids.

Audit noticed (July 2014) that the excessive over break was the result of poor workmanship on the part of contractor coupled with inadequate supervision by the designated staff during excavation of the HRT. Contractor instead of backfilling the voids had left the spaces unfilled in certain reaches before recession of the work in January 2014. Due to this, quantities of concrete lining included in the BOQ for the balance work of HRT to be awarded had increased by 25,340 Cum for overt lining. For the execution of these extra quantities the company would have to bear an extra cost of ₹ 19.74 crore[22].

The Management stated (October 2014) that all the work would now be got done at the risk and cost of the contractor.

(ii) Non rectification of substandard work

The project consultant[23] in their site inspection report submitted in January 2011 had pointed out certain deficiencies in the quality of certain works of Barrage and Intake such as short / excess concrete cover or damaged water stops seals which could affect long life of the project.

Audit noticed (July 2014) that these deficiencies had not been rectified by the contractor in terms of conditions of the contract (Clause 4.9 of general condition of document II) as was evident from the Project Performance Monitoring Report of the Consultant submitted in April 2014. Non-removal of defects as pointed out by the consultant within three years, reflected the lack of seriousness towards the quality of works.

The Management stated (October 2014) that all the shortcomings as brought out by the consulting firm have been rectified. The reply was not acceptable as no documentary evidence thereof was furnished to audit.

Environmental Issues

2.12 *Avoidable payment to consultant*

The Company hired (December 2007) the services of consultant[24] for completion of required documentation and legal formalities for selling Carbon Credits in respect of SKHEP which included preparation of Project Concept Note (PCN) and Project Design Document (PDD). All the expenditure towards validation as well as registration of project activities with Clean Development Mechanism (CDM) Executive Board / United Nation Framework Convention on Climate Control (UNFCCC) was to be borne by Zenith Energy Services Private Limited (ZESPL) for which they were entitled to 10 *per cent* Certified Emission Reduction (CERs) generated during 1[st] three years of operation. Consultant was responsible for the CDM Project Cycle till the registration of the project with the UNFCCC. On the request of

22 Calculated on the basis of rates analysed by the company for the same work.
23 Lahmeyer International (India) Limited.
24 M/s Zenith Energy Services Private Limited (ZESPL).

Consultant, the Company paid registration fees of ₹ 28.24 lakh to UNFCCC on his behalf during December 2012. This payment was treated as interest bearing advance to the consultant at the rate of 12.25 *per cent* compounded annually. Further, condition no. 3 of agreement stipulated for payment of compensation of ₹ 30.00 lakh to the consultant in case of delay in commissioning of project beyond two years or stoppage of project implementation due to any other reason.

Audit noticed (July 2014) that due to delay in completion of the entire expenditure incurred on hiring the services of consultant amounting to ₹ 30.00 lakh was rendered infructuous as the Company would have to engage the consultant again for initiating the same process for selling the CERs on completion of the project.

The Management stated (October 2014) that the payment of compensation to consultant would be included in the counter claim being filed against the contractor.

Non completion of transmission line

2.13 For evacuating power to be generated by this project, the Company deposited ₹ 6.47 crore with the Himachal Pradesh Power Transmission Corporation Limited (HPPTCL) in August 2011. The works of construction of transmission line and associated works had been awarded by the HPPTCL between September 2012 and October 2013.

Audit noticed (June 2014) that as *per* award, scheduled completion period of transmission lines was June 2015. The physical progress against all the works awarded was nil up to July 2014 for want of forest clearance. The Company was not monitoring the progress of work and even month wise progress was not called for from the HPPTCL. Thus, payment of ₹ 6.47 crore in August 2011 without ensuring necessary clearances required to start the works resulted in interest loss of ₹ 1.83 crore from August 2011 to May 2014.

The Management stated (October 2014) that the amount was deposited to commensurate the completion of line with the project and could not have been withheld with the presumption that the project would got delayed.

The reply was not acceptable as the Company should have deposited the amount only after ensuring necessary clearances so as to avoid blockade of borrowed funds.

Conclusion

The Project scheduled for commissioning in March 2012 could not be completed and is now expected to be commissioned by July 2017. The abnormal delay in completion contributed towards increase in project cost from ₹ 558.53 crore to ₹ 1,165.10 crore. Non-adoption of standard contract clauses / procedures and suitable clauses while preparing the bidding documents, subsequent changes in design and poor workmanship by contractors *etc*. contributed towards increase in cost. While awarding and executing various civil contracts, the Company did not comply with various contractual provisions which resulted in avoidable payments to the contractors. The main reasons for delay were non-handing over of civil fronts to contractor and delay in rescinding the work from defaulting contractor. The delay in rescinding the contract would result in consequential delay in commissioning of the HEP. The Company also failed to monitor the works of the contractors. Overall, there was a greater need for supervision, control and sustained monitoring at all levels.

Recommendations

The Company may consider:

(i) ensuring compliance to the contract clauses/guidelines;

(ii) ensure synchronisation of civil and electro mechanical works during various stages of execution so as to avoid delay due to mismatch in construction activities and consequent financial losses; and

(iii) strengthen monitoring mechanism to avoid poor workmanship / substandard work by the contractors and taking timely action.

The above points were reported to the State Government in August 2014; their reply was awaited (November 2014).