Uttar Pradesh Jal Vidyut Nigam Limited

2C. Implementation and Performance of Small and Mini Hydel Projects

Highlights

Uttar Pradesh Jal Vidyut Nigam Limited (JVN) was established in April 1985 to establish/operate/maintain hydel generating stations, tie-lines, sub-stations etc. JVN completed 11 projects after a delay of 17 to 86 months at an increased cost of Rs.49.58 crore. Nine projects were behind the schedule of completion by 3 to 116 months.

(Paragraphs 2C.1.1 and 2C.2.1)

In Belka and Babail projects (each of 3 MW), there were delays in acquisition of land, approval of drawings and start of work causing increase in the cost of the project as claims of Rs.1.61 crore had to be admitted.

(Paragraph 2C.2.2)

Execution of projects was marked by (i) extra expenditure of Rs.0.82 crore in earth work (ii) avoidable payment of Rs.0.54 crore on extra lead (iii) loss of Rs.4.96 crore due to under insurance and (iv) wasteful expenditure of Rs.1.04 crore due to excessive earth cutting.

(Paragraphs 2C.4.2.1 to 2C.4.2.3, and 2C.4.2.5)

There was shortfall in capacity utilisation in nine completed projects, ranging between 3 and 61 per cent involving a shortfall in generation of 690.89 lakh units of energy. Against envisaged outages of 3 per cent, the actual outages were more and resulted in a loss of Rs.0.88 crore.

(Paragraph 2C.5.3)

Use of double circuit transmission line instead of required single circuit line resulted in infructuous expenditure of Rs.1.53 crore, use of higher specification poles resulting in excess expenditure of Rs.44 lakh and electrification of non-existent villages at a cost of Rs.22 lakh.

(Paragraphs 2C.6.2 to 2C.6.4)

Mismanagement of activities further resulted in avoidable liability for refund of subsidy (Rs.40.53 lakh), avoidable interest liability (Rs.7.21 crore) and non-realisation of energy sold (Rs.10.90 crore).

(Paragraph 2C.7.1 to 2C.7.3)

2C.1.1 Introduction

Uttar Pradesh Jal Vidyut Nigam Limited (JVN)[59] was established in April 1985 as a wholly owned State Government Company. The main objective of JVN was to establish/operate/maintain hydro-electric generating stations, tie-

[59] JVN was known as Uttar Pradesh Alparthak Evam Laghu Jal Vidyut Nigam Limited till November 1998.

lines, sub-stations and connected transmission lines for promoting use of electricity within the State[60].

The generation cost of small and mini hydel projects is low due to low investment, low generation cost, short gestation period and subsidised capital cost for the projects in hills[61]. It also has the added advantage of utilising available water resources as input without disturbing ecology and environment. In view of this, JVN undertook construction of 7[62] small (above 2 MW) and 13 mini hydel projects (up to 2 MW) from December 1987 having aggregate capacity of 35.55 MW. In addition, three micro projects with an installed capacity of 1.20 MW (Harsil, Gauri and Suringad) were taken over (1999-00) from erstwhile Uttar Pradesh State Electricity Board. Thus, JVN had 23 project as of March 2000.

2C.1.2 Organisational set up

At present, the overall management of JVN vests in a Board of Directors comprising a whole time Chairman-cum-Managing Director (CMD), two whole time directors (Technical and Finance) and seven part time directors. CMD is the chief executive of JVN for managing day to day activities and is assisted by the Director Technical (DT) and Director Finance (DF)[63]. A General Manager with headquarters at Lucknow (GMH) and another General Manager with headquarters at Dehradun assist the DT in planning, implementation and operational functions and in civil works respectively. Up to 13 January 2000, the accounting functions were also being looked after by the GMH.

2C.1.3 Scope of Audit

The implementation and operational performance of 20 small and mini hydel projects (out of 23) were reviewed during August 2001 to February 2002 for a period of five years from 1996-97 to 2000-01. DPRs and other records (cash book, payment vouchers, measurement books, store records, drawings and designs, progress report etc.) relating to execution of works alongwith MIS were examined during audit. Main findings are:

- Lack of planning, leading to delays and losses (Paragraphs 2C.2.1 to 2C.2.5);
- Undertaking of commercially uneconomic projects (Paragraph 2C.3.1);
- Avoidable construction costs (Paragraph 2C.4.2);
- Injudicious procurement of MRC system (Paragraph 2C.6.1);

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60 Out of 23 projects, 20 mini hydel projects were transferred to newly created (9.11.2000) Uttaranchal state and thus, only three small projects (Belka, Babail and Sheetla) remained with JVN thereafter. In addition, 13 large hydro projects were transferred to JVN from 14.1.2000 and Deokhet mini project was abandoned mid way.

61 Subsidies are not available in case of such projects in plains.

62 Including Belka, Babail and Sheetla projects in plains (under construction).

63 Posted from 14.01.2000.

- Erection of double circuit line instead of single circuit line (Paragraph 2C.6.2); and
- Mis-management leading to financial losses (Paragraph 2C.7).

These points are discussed in the succeeding paragraphs:

2C.2 Planning and implementation of projects

Proper project planning is essential to meet the avowed objectives within a given time frame and in a cost-effective manner. It involves preparation of a feasibility study, selection of executing agencies, specifying time schedules, and instituting mechanism for monitoring physical progress and ensuring quality control. It also involves advance planning for acquisition of land, expeditious finalisation of tenders and drawings to ensure timely start and completion of a project.

2C.2.1 Lack of planning leading to delays and losses

Lack of planning and haphazard manner of undertaking projects caused delays ranging between 17 and 86 months in case of 11completed projects

It was noticed by Audit that 11 projects were completed (between December 1992 and June 1999) at a cost of Rs.49.58 crore, and 9 projects (started from September 1991 at an estimated cost of Rs.57.75 crore) were in the process of completion as of June 2001. It was noticed in audit that the increase in cost of completed projects ranged between 67 and 83 *per cent*. The status of these projects as detailed in Annexure-19 and 20 are summarised below:

Attributes	No. of projects	Investment (Rs. in crore)			Increase in cost up to March 2001 (*per cent*)
		Envisaged	Actual	Excess	
Completed projects (Annexure-19)					
Small	2	12.36	20.59	8.23	67
Mini	9	15.80	28.99	13.19	83
Sub-total	**11**[64]	**28.16**	**49.58**	**21.42**	**76**
		Envisaged	**Actual**	**Excess**	
Projects-in-progress (Annexure-20)					
Small	5	43.02	53.31	10.29	24
Mini	4	14.73	12.46	(-) 2.27	--
Sub-total	**9**[65]	**57.75**	**65.77**	**8.02**	**14**
Grand total	**20**	**85.91**	**115.35**	**29.44**	**34**

Nine incomplete projects were behind schedule by 3 to 116 months

Further, as can be seen from the Annexure-19, the delays in case of completed projects (except two projects completed within time) ranged between 17 and 86 months. The incomplete projects (Annexure-20) were behind schedule by 3 to 116 months. Main reasons for delays were haphazard manner of undertaking the projects, lack of sequence scheduling and absence of PERT and CPM[66] techniques for monitoring each and every segment of critical areas

64 Small - Sobla I (6 MW) and Urgam (3 MW); Mini - Kanchauti (2 MW), Kulagad (1.2 MW), Chhirkila (1.5 MW), Barar (0.75 MW), Chharandeo (0.4MW), Taleshwar (0.6MW), Garaon (0.3MW), Sapteshwar (0.3MW) and Kotabagh (0.2 MW).

65 Small - Belka (3 MW), Babail (3 MW), Relagad (3 MW), Pilangad (2.25 MW) and Sheetla (3.6 MW); Mini - Jumagad (1.2 MW), Soneprayag (1.5 MW), Sobla-II (1.5 MW), and Badrinath (1.25 MW).

66 Project evaluation and review technique and critical path analysis.

for successful and timely completion of execution. This also resulted in avoidable expenditure as discussed below:

2C.2.2 Loss due to delays in acquisition of land, delayed approval of drawings etc. and consequent belated start of works

Belka[67] and Babail projects (each of 3 MW and in progress) were situated in a forest zone. Despite the fact that the Government approved these projects as far back as in September 1986, JVN started the process of forest clearance from 1988 i.e. after a delay of about 2 years. Even before forest clearance, JVN entered into agreements for Belka project in July 1988 for Rs.1.55 crore (civil works) and Rs.4.11 crore (electro-mechanical works) with FCC Projects Private Limited, Kanpur (FCC) and Punjab Power Generation Machines Limited, Chandigarh (PGM) respectively and for Babail project in September 1988 for Rs.6.22 crore (on turnkey basis including electro-mechanical works) with PGM.

In case of Belka project, construction could be taken up only from December 1996 through another civil contractor (viz. Trilok Chand Gupta, Hardwar for Rs.3.60 crore) as the earlier contract for civil works had to be rescinded (November 1991) on account of delays and lapses on the part of JVN to expedite forest clearance (obtained in April 1990) and acquisition of land thereafter (in November 1990) and delay of 18 months (15 November 1988 to 26 April 1990) in providing drawings. Due to the delay, FCC claimed (date not intimated) Rs.64.25 lakh on account of various damages against which a claim for Rs.9.83 lakh was admitted and paid (22 January 1997). The contractor had carried out minor earthwork and boring for tube wells (value of work done not intimated) only. PGM could start the work of supply, erection, commissioning, running and maintenance of this project only from January 1999 due to delay in handing over site after completing civil works. There were delays in despatch of equipment due to non carrying out of inspections by JVN, issue of despatch clearance, issue of Form 31, suspension of further supply orders for nearly 4 years, delay in approval of drawings etc. Due to these lapses, JVN had to admit (6 May 1999) claim of Rs.0.55 crore on account of insurance and storage charges, establishment charges, revamping charges etc. due to prolonged storage and price escalation. The total cost of the project consequently increased by Rs.0.65 crore. Against this, JVN paid (26 October 1999) Rs.22 lakh. Balance payment was yet to be made (September 2002).

Similarly, in case of Babail project, a claim for Rs.0.96 crore had to be admitted (March 2001). This included Rs.30 lakh on account of cost of insurance, establishment, foreign exchange variation, extension of bank guarantee etc. and Rs.0.66 crore towards price escalation on account of delay in handing over of site, delay in electric connection and non-availability of construction drawings (delay of 27 months). The total cost of the project

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[67] Discussed in paragraph 4A.6 of the Report of the Comptroller and Auditor General of India for the year ended 31 March 1999.

consequently increased by Rs.96 lakh. Payment was yet to be made (June 2001).

2C.2.3 Non-verification of water discharge data

Failure to consider actual availability of discharge of water before start of the work led to low generation of power

Designing of plant and machinery for hydel power stations depends on adequate head (height of waterfall) and water discharge. The 300 KW power plant at Sapteshwar was sanctioned in March 1989. It was designed for 0.48 cumec (cubic metre per second – MKS system) water discharge. The work started from October 1991 and the plant was commissioned in March 1994. It was constructed at a cost of Rs.2.77 crore with rainfall data only for a period of 251 days (9.08.86 to 31.05.87). The discharge of water during this period ranged between 0.26 to 0.48 cumec. The decision to construct the power station of a capacity of 300 KW on the basis of data of rainfall which was more than 4 years old was faulty *abinitio*.

It was noticed by Audit that when the plant was put to commercial load, it could operate only to a capacity ranging from 7 to 20 *per cent* during 1994-2001 due to lower availability of discharge of water that ranged between 0.03 to 0.40 cumec (except for 0.50 cumec in the month of June/July 2000) as against the planned availability of 0.48 cumec.

Management stated (January 2002) that plant could generate 300 KW subject to availability of water (rain-fed). Reply is not tenable as despite huge downpour in June 2000 and availability of dam (of one metre height) constructed for feeding the required water for operation of machine, the plant could not generate energy of 300 KW. Moreover, Management reply confirmed that on a regular basis, the plant could not generate 300 KW of power.

2C.2.4 Delays in award of tenders/finalisation of agreements

In 12 other projects, where there were no disputes in availability of land, JVN took 14 to 87 months in finalisation of tenders from the date of approval (between March 1986 and November 1998) of projects by the State Government. The detailed project report envisaged 10 months period for finalisation of tenders, against which actually 4 to 87 months were taken leading to delayed implementation of the projects.

The details are given in Annexure-21.

2C.3 Commercial viability of the projects

For a commercial organisation, it is necessary to ensure that it implements only commercially viable projects. It was noticed that only such projects subsidised by the State Government were commercially viable. Subsidy is available only in case of projects located in hills.

2C.3.1 Undertaking of commercially uneconomic projects

The Company undertook two financially unviable projects without obtaining any financial commitment for subsidy

A test check by Audit of two projects (Belka: approved by PIB on 18.9.86 and Sheetla approved by PIB on 25.11.98, located in plains) revealed that these projects were conceived on the assumption that the State Government would subsidise these projects, though subsidy would be available only to the

projects in hills. Further, the detailed project report (DPR) of Belka envisaged (September 1986) 3.78 *per cent* return (against 11.56 *per cent* prescribed by the Central Electricity Authority for project viability), the DPR of Sheetla (3.6 MW, in progress) did not envisage (September 1998) any return but indicated unit cost of generation of Rs.3.93 at 75 *per cent* water dependability and Rs.3.33 at 50 *per cent* water dependability (against sale rate of Rs.2.25 per unit, subsequently lowered to Rs.1.70 per unit from 2000-01). Both these schemes were viable only when capital cost thereof was subsidised. For this, JVN submitted the DPR with a request to subsidise them suitably.

However, these projects had to be undertaken through loans[68] at the interest rate of 14 *per cent* per annum (Rs.16.19 crore for Belka and Rs.1.94 crore for Sheetla) from the State Government.

These projects were unviable *abinitio* and should not have been undertaken at all, more so when subsidy was not available for these projects.

Management stated (January 2002) that there was no provision for subsidy for projects located in plains. Further, the objective of undertaking these projects was to strengthen distribution network and to ensure reliable supply. The reply is not tenable as undertaking of commercially unviable projects was detrimental to the interests of JVN.

2C.3.2 Undertaking of a project not approachable by road

The location of Jumagad project (1.2 MW, in progress) was on river Dhauliganga in the upper regions of Chamoli district. The project was conceived in a remote hill terrain which was not accessible by road for more than six months in a year due to heavy snowfall. This vital fact was suppressed in the DPR submitted to the Government, wherein it was stated that the project was situated on all weather highway.

The Company undertook a project not accessible by road that not only delayed it but also entailed increase in cost by 131 *per cent*

On account of this factual mismatch, the project (approved by the State Government in December 1990), undertaken from September 1991 could not be completed as of June 2001. Against the approved cost of Rs.3.12 crore envisaged in the DPR to be met out from subsidy, an amount of Rs.7.19 crore (increase by 131 *per cent*) has already been spent up to July 2001 and the Management expected the project to be completed by October 2001. However, the project is yet to be completed (September 2002).

2C.4 Execution of the projects

2C.4.1 Undue suspension of work

Government approved Charandeo hydro scheme on 27 March 1989 at total cost of Rs.1.45 crore in which the cost of generation was envisaged at Rs.0.68 per unit. JVN executed two agreements (November 1991 and March 1992) for execution of civil and electro-mechanical works at Rs.2.06 crore with completion period of 30 months.

[68] Equal to the expenditure incurred up to June 2001.

The civil work was started in December 1991. However, the contractor intimated in March 1993 that pen stock pipes were ready for inspection. The Board suo-motto estimated (December 1993) that the cost of generation would range between Rs.6 to Rs.10 per unit and considered the project unviable. The proposal placed before the Board worked out the cost of generation as Rs.1.68 per unit. Ultimately, JVN decided (August1994) to suspend the work of Charandeo on the pretext of higher cost of generation. Thus, suspension of work was unwarranted.

In March 1996, the Energy Department decided that JVN should complete the work and accordingly it was asked to submit revised DPR. The revised DPR was approved by Government in June 1996 at a revised cost of Rs.1.97 crore and the cost of generation was projected at Rs.0.97 per unit at 40 *per cent* load factor. The project was completed in June 1999 after incurring an expenditure of Rs.2.20 crore. The work of Charandeo project was delayed by 18 months resulting in the denial of the availability of electricity to the targeted population in the backward and remote areas, delaying their economic and social upliftment and loss of potential generation.

2C.4.2 Avoidable construction costs

2C.4.2.1 Excess earthwork

The Company incurred extra expenditure of Rs. 0.82 crore on excessive earthwork beyond the prescribed depth

The revised estimate of Babail project submitted (December 1999) by the Irrigation Department (ID), as incorporated by the Company in revised DPR of March 2001, provided for re-grading in depth of 2.7 mtrs in the bottom of East Yamuna Canal from chainage 32.23 kms to 34.53 kms. (2300 mtr and width 40 mtr). However, the Dehradun Division of the Company incorrectly executed re-grading up to the depth of 3.5 mtrs (excess earth cutting by a depth of 0.8 mtrs). The Company, thus, incurred an extra expenditure of Rs.0.82 crore (at the rate of 111.53 per cum) due to excessive earthwork of 73600 cum {(2300 x 40 x 3.5) *minus* (2300 x 40 x 2.7)} done beyond the prescribed depth.

2C.4.2.2 Avoidable payment towards extra lead

The disposal of surplus earth from execution of civil work at Belka project was to be done at a lead (point of earth cutting to the point of disposal of earth) up to 100 mtrs only as per agreements of 6 July 1988 and 14 November 1996. Both these agreements were rescinded after execution of minor earthwork only. Finally, the work was split-up and got executed through six agreements, three each of March 1999 and September 1999 where a higher lead of 2 kms was allowed. Further, measurement of such lead was not found recorded in the measurement books. Thus, JVN made avoidable payment of Rs.0.54 crore due to extra lead not contemplated in earlier agreements and not measured at the time of actual execution.

The Company made avoidable payment of Rs. 0.54 crore on excessive lead

Management stated (January 2002) that the lead of 1-2 kms was included as physically the land was not available for earth disposal. The reply is not tenable in the absence of measurement of actual disposal/lead in the measurement book.

2C.4.2.3 Loss due to inadequate flood protection work and under insurance

The DPR of Sobla I project (6 MW, commissioned in November 1998) was approved by the Government in 1988-89 at total cost of Rs.7.47 crore. The project was conceived taking maximum water discharge as 91 cumec and rise in water level of Sobla river up to 2 mtrs height from its bed. The DPR provided for a flood protection work for Rs.14.36 lakh to protect the project from flash flood. However, after spending Rs.5.48 crore on the project, DPR was further revised in 1993-94 for an estimated cost of Rs.16.11 crore. In the revised DPR, the flood protection work was reduced to Rs.8.68 lakh taking maximum water level of Sobla river at 1.5 mtrs. Further, in the flood of July 1971, flood level was reported at 2 mtrs above the riverbed. The machine hall floor level was also reduced from 1748 mtrs above sea level to 1732.12 mtrs above sea level. Reasons for assumption of low water level were not available in the records produced to Audit.

Thus, despite a history of floods raising water level to more than 2 mtrs from river bed, machine hall level and flood protection work were reduced to the disadvantage of the project as subsequently observed.

The Company suffered loss of Rs. 4.96 crore due to under insurance of the project

It was noticed that a flash flood occurred on 15.8.1994 in which a bridge at a height of 4.5 mtrs. was wiped out and maximum water level from the bed of river was found as 2.3 mtrs high from its bed and maximum discharge at 375 cumec. In a further down pour on 8.6.2000, the flash flood heavily damaged the project including plant and machinery and caused a loss of Rs.4.96 crore.

Thus due to the imprudent decision of Management to save cost by assuming lower flood levels, JVN was put to a loss of Rs.4.96 crore.

The estimated cost to revive the project was Rs.8 crore. The project was insured for Rs.5 crore only against actual completed cost of Rs.12.19 crore. Management stated that efforts were made to get Rs.3 crore from the Insurance Company. However, the Insurance Company had paid only Rs.1 crore so far (October 2001). The repair of the damaged work was awaited as of June 2001.

Management stated (January 2002) that it has now been decided (September 2000) to cover the full cost by insurance.

2C.4.2.4 Excess laying of pen stock pipe

Kumar Udyog, Varanasi was awarded (May 1991) the work on turn key basis for electro mechanical work including designing and commissioning of 1200 KW hydro project at Kulagad at a cost of Rs.2.01 crore. The length of pen stock pipe in the project was initially designed for 460 mtrs, keeping in view the design of turbine and allied equipment. However, in execution, the length of pen stock pipe was enhanced to 600 mtrs without any corresponding modification in the design of turbine and allied equipment. During operation of the project, it could not run to its installed capacity. It was noticed in audit that the excess length of pen stock pipe had acted as a deterrent to the efficiency of the turbine and allied equipment by creating a negative surge. To

overcome this problem of the negative surge, JVN had to install a pipe with wall arrangement (cost thereof could not be ascertained). Installation of excessive pen stock pipe involved an avoidable expenditure of Rs.5 lakh. Further, the project could not be run at more that 31 *per cent* against envisaged 50 *per cent* PLF resulting in loss of potential revenue of Rs.1.14 crore (Sl. No. 1 of Annexure-22).

2C.4.2.5 Excessive earth cutting

The two turbines (each of 1500 KW) of Belka project (under progress) were designed for a minimum head[69] of 5.20 mtrs. The height of the head was to be achieved by dismantling of Belka fall of 2.94 mtrs at chainage of 22.51 kms, Dayalpur fall of 1.66 mtrs at chainage of 22.64 kms and regrading (change of slope by earth cutting or earth filling in the bed of canal) East Yamuna Canal of 0.60 mtr by reducing the existing slope of 0.375 mtr/km to 0.25 mtr/km between 22.54 to 27.30 kms chainnage.

Expenditure of Rs.1.04 crore became wasteful due to excessive earth cutting

However, instead of reducing the slope to 0.25 mtr/km, JVN achieved a slope of 0.51 mtr/km. due to excess cutting of earth. This work, therefore, proved futile as the turbines could not be put to use due to mismatch of designed head and achieved head. This resulted in entire expenditure of Rs.1.04 crore becoming wasteful. The project is still under progress as of June 2001.

2C.5 Operational performance

2C.5.1 Shortfall in capacity utilisation

Capacity utilisation is the ratio of installed capacity to the actual generation. Shortfall in capacity utilisation of nine completed projects[70] ranged between 3 and 61 *per cent* from the date of commissioning to March 2001 as detailed below:

Year	No. of working projects	Range of capacity utilisation (*per cent*)
1996-97	4	4-37
1997-98	5	18-45
1998-99	6	10-61
1999-00	7	13-58
2000-01	9	3-54

Due to shortfall in capacity utilisation, JVN could generate only 724.98 lakh units against possible generation of 1415.87 lakh units (as envisaged in DPR) resulting in shortfall of 690.89 lakh units (Annexure-22) of energy. Other lapses relating to low capacity utilisation have been discussed in paragraph 2C.2.3 and 2C.4.2.5 *supra*.

The Management attributed (January 2002) shortfall to low PLF, non-availability of grid, forced outages etc.

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69 Height of fall from which water discharge is available to the turbine for the movement of turbine.

70 Out of 11 completed projects, one project Kotabagh was transferred from erstwhile UPSEB and one project Garon was although completed in June 1999 but put on commercial load in October 2001, hence both project could not be included.

2C.5.2 Delay in putting the project on commercial load

In the absence of an enabling clause, the contractors could not be held liable for damages for delays in putting projects on commercial load

The contractors engaged for construction of the projects were liable to complete the projects and put the same on commercial load before handing over to JVN. Further, except for rectification of defects, if any, the agreements with contractors did not stipulate any guaranteed time frame for bringing the machines on commercial load. The delay in putting seven projects (in other projects, delay was negligible) on commercial load after its successful completion ranged between 5 and 37 months resulting in loss of potential generation of 359.66 lakh units of energy valuing Rs.6.11 crore (at the sale rate of Rs.1.70 per unit). The details are given in Annexure-23.

Management attributed (January 2002) this to the problems in the controlling device i.e governors (in five projects), electro-mechanical work (in one project) and delay in evacuation of power system (in one project). Reply is not tenable as in the absence of any penalty clause in the agreements in case of failure of the contractors to put the plants on commercial load in terms of contractual obligation period, JVN could neither get these defects removed from the contractor nor recover any damages for the delay.

2C.5.3 Excessive outages

In some DPRs outages of 3 *per cent* for maintenance and periodical overhauling were provided. Against this, six projects had outages ranging between 4 and 22 *per cent*. This resulted in loss of potential generation of 51.56 lakh units valuing Rs.0.88 crore. The details are given in Annexure-24.

Management attributed (January 2002) excessive outages to non-availability of grid/rostering programme, poor maintenance of 11/33 KV lines by UPSEB, post outage of machines in the peak hours etc. The reply of Management is not tenable as no rostering is possible in grid. Further, availability of grid could have been ensured by approaching higher management of UPSEB/UPPCL. As regard, mismatch of frequency between grid and power station, suitable equipments to avoid mismatch could have been installed.

2C.6 Power evacuation system - transmission and distribution network

2C.6.1 Wasteful expenditure on monitoring and remote control system for power evacuation

Injudicious decision for procurement of monitoring and remote control system from a sick Company resulted in a loss of Rs. 25 lakh

Monitoring and remote control system (MRC) was to serve as a monitoring and control mechanism of four projects (Kanchauti, Chhirkila, Sobla I and Kulagad) from generation end to Dharchula Sub-station for further transmission to UPPCL's grid. The system was to be operated through a double circuit line connecting these powerhouses and was possible only after completion of the projects, including power evacuation system.

It was noticed by Audit that even before completion of power houses, power evacuation system and without examining techno-economic feasibility, JVN procured (between December 1989 and November 1992) MRC equipment at a cost of Rs.35 lakh from UPTRON India Limited, Lucknow whereas the projects were actually completed after a period of 14 to 70 months from the

date of supply of MRC. Subsequently, the system could not be commissioned as supplier company became sick in 1992-93. The part of system valuing Rs.10 lakh could be used as power line carrier communication through ABB in December 1999.

Thus, injudicious decision of JVN to procure the MRC 14 to 70 months before successful commissioning of these projects resulted in loss of Rs.25 lakh.

Management stated (January 2002) that the equipment supplied by UPTRON was of no use and therefore could not be installed.

2C.6.2 Erection of double circuit line instead of single circuit line

Construction of double circuit line instead of required single resulted in infructuous expenditure of Rs. 1.53 crore

The original DPRs of these projects (as discussed in para 6.1 above) envisaged (March 1986 and April 1987) construction of only single circuit 33 KV transmission line for power evacuation. However, construction of a double circuit transmission line (DCTL) was conceived (1989) for the purpose of control through MRC. With MRC becoming unusable (1992) due to failure on the part of the Management to commission the projects in scheduled time frame, construction of DCTL should not have been undertaken.

JVN, however, constructed (1991-97) double circuit line (instead of a single circuit) with higher specification towers at a cost of Rs.3.07 crore. The second circuit line was constructed only after June 1993. At this point of time, JVN was fully aware that MRC could not be put to use and as such there was no need to construct the second circuit line. Hence, an expenditure of Rs.1.53 crore on construction of second circuit became infructuous.

Management stated (January 2002) that second circuit line was necessary to avoid the utilisation of power in case of breakdowns. The reply is indicative of the fact that the second circuit line was constructed despite knowing that it would remain idle except for its occasional use in case of breakdowns only.

2C.6.3 Excess expenditure on poles of higher specifications

As per norms of UPPCL, SP-55 type poles are required for laying of 33 KV line that are sufficient to obtain 6.113 metre ground clearance. The Indian Electricity Rules also provided for a minimum ground clearance of 6.1 meters along and across the street. However, JVN spent (1997-2000) Rs.68.14 lakh on 342 towers of higher specification against the admissible cost of Rs.23.77 lakh on SP-55 poles. Incidentally UPPCL had earlier constructed (1997-2000) 33 KV lines on SP-55 poles in the same terrain. This resulted in excess expenditure of Rs.44 lakh.

Management stated that higher specification towers were used on account of difficult hilly terrain. Reply is not tenable as UPPCL had already constructed 33 KV lines on SP-55 poles in the same terrain.

2C.6.4 Electrification of non-existent villages

Electrification was to be done in the villages notified by census 1991. However against agreement No.34/1994-95 dated 15.3.1995, JVN electrified

22 nos. of villages during 11/96 to 6/98 at a cost of Rs.1.80 crore (November 2001) by Kashmiri Lal & Company Limited (KCPL), Ranikhet. It was noticed by Audit that Narain Ashram, Kheladhura and Tawaghat do not exist in the list of villages provided by census/erstwhile UPSEB/UPPCL. Further, Tantagaon and Roton were shown by KCPL to be two villages whereas list of census disclosed that Tantagaon Roton as one village instead of two.

Out of the cost of Rs.1.80 crore, an expenditure of Rs.1.21 crore was variable and chances of fraudulent claim of Rs.22 lakh (being stated to have been incurred on four non-existent villages) could not be ruled out.

Management stated (January 2002) that villages like Narain Ashram, Kheladhura, Rautang and Tawa Ghat were the tokes (Hamlets) of the villages. The reply is not tenable as the agreement was for electrification of villages and not for tokes.

2C.7 Mismanagement leading to financial losses

JVN did not maintain project wise receipt and utilisation of fund nor did it maintain project-wise allocation and the funds were utilised in a haphazard manner. It also did not maintain cash flow analysis to ascertain the required fund for expenditure. This resulted in refund of subsidy, avoidable liability of interest, non-realisation of cost of energy, loss due to non-revision of tariff, excess payment of sales tax and non-recovery of advances leading to loss of Rs.18.85 crore discussed in succeeding paragraphs:

2C.7.1 Liability for refund of subsidy

JVN could not monitor progress of works resulting in withdrawal of subsidy in case of three mini hydro projects (Charandeo 400 KW, completed in June 1999 and Taleshwar 600 KW completed in June 1999 and Pilangad 2250 KW, in progress sanctioned by the Government in 3/89, 3/89 and 10/93 respectively). The Ministry of Non-Conventional Energy Sources (MNES) had approved (March 1994) a subsidy of Rs.40.53 lakh for these projects. The first installment (Rs.4.05 lakh) was released in March 1994. The Government decided (June 1994) to stop the work and transfer them to private sector in June 1994. Till then, an expenditure of Rs.0.80 crore was incurred on two projects (Charandeo: Rs.37.19 lakh and Taleshwar: Rs.43.17 lakh). As no entrepreneurs turned up (April 1995), Government decided (March 1996) to re-start the work through JVN. Accordingly, revised estimates were submitted in May 1996 to Government for approval. Further subsidy was not released to it.

Meanwhile, MNES stipulated (April 1996) that JVN should refund subsidy along with interest if it failed to forward/revalidate orders for civil and electro-mechanical works by 30.6.1996. Again, in May 2001, MNES demanded refund alongwith penal interest as JVN failed to execute any agreement till the stipulated date. Thus, liablity for refund of subsidy worth Rs.40.53 lakh plus interest devolved on JVN. No refund had been made as of December 2001.

Management stated (January 2002) that it was practically not possible to complete the process of tendering and bids within a short span of three months available after receipt of direction from MNES. The reply is not tenable as the bill of quantity, specification for work etc. were known as per tender/contract of suspended work and three months period was more than the stipulated period of one month for submission of offers and another month for finalisation of bids as provided under financial rules.

2C.7.2 Avoidable interest liability

For Belka project, JVN took (1986-87) a loan of Rs.3.58 crore at the rate of 14.5 *per cent* per annum. Against this, there was no expenditure in two years i.e. in 1986-87 and 1987-88. Despite the fact that a cash flow analysis has to be prepared and loans obtained based on such anticipated expenditure to avoid loss of interest, JVN drew loans each year which were more than required expenditure. A part of this was being kept in short term deposits, details of which were not available separately for loans. At the close of March 2001, loans aggregating Rs.17.43 crore were outstanding against an expenditure of Rs.14.70 crore.

By not ensuring that loans were drawn based on expenditure requirements, JVN incurred avoidable interest liability of Rs.7.21 crore due to poor financial management. The details are given in Annexure-25.

Management stated (January 2002) that Forest Department gave clearance of land after a prolonged delay, which enhanced the interest liability. The reply is not tenable as JVN had the option to draw the loans only after ensuring that it was required to be utilised for the project. Further, the clearance from Forest Department was received in April 1990 but JVN did not plan its work so that interest liability was minimised to the extent possible.

2C.7.3 Non-realisation of sale proceeds of energy

In the absence of MOU/PPA, the Company could not realise Rs.10.90 crore

JVN was supplying energy to UPSEB from 1990-91 out of the energy generated by it for which no formal agreement was entered. UPSEB did not make any payment except for Rs.1.60 crore (date of receipt not available) out of Rs.12.50 crore payable leaving a balance of Rs.10.90 crore up to 1998-99. Position thereafter could not be ascertained for want of reconciliation.

An MOU was signed in March 2000 that was made effective from January 2000. As per the MOU, the formal P.P.A. was to be signed within three months and till then payment was to be made at the rate of Rs.1.70 per unit. However, no formal P.P.A. was signed as of June 2001 nor any payment was received from UPSEB/UPPCL (June 2001)

2C.7.4 Loss due to non-revision of tariff for villages

JVN was supplying energy to 516 consumers of villages of Dharchula Tehsil through its transmission and distribution network under the license sanctioned by the State Government at a lump sum rate of Rs.50 per month per connection as per the tariff at par with UPPCL. Meanwhile, Uttar Pradesh State Power Regulatory Commission (SRC) was constituted (14 January 2000) by the State Government that revised the tariff from 9 August 2000 to

Rs.154.60 per month per connection (fixed charges Rs.25 and Rs.1.80 per unit for 72 units per month as a minimum for unmetred supply). However, JVN did not revise its tariff from 9 August 2000 at par with UPPCL. This resulted in loss of Rs.8.10 lakh from 9 August 2000 to 8 November 2001 on account of non-revision of tariff.

JVN neither obtained licence for sale of electricity nor did it implement the tariff approved by SRC. Thus, it made itself liable for penalty under the SRC Act.

Management stated (January 2002) that it could not make compliance of the orders of SRC due to non-receipt of revised tariff.

Conclusion

The activities of JVN were marked by lack of planning leading to delays and losses on excessive earthwork, avoidable and wasteful expenditure in procurement of material and construction of power stations. Operational performance was marked by shortfall in capacity utilisation and excessive outages. Further, in power evacuation system, JVN incurred infructuous expenditure on monitoring and remote control system and construction of transmission line with uncalled for higher specification. JVN needs to undertake only those projects that are viable and an endeavour should be made to complete the projects in time by close monitoring of execution of project.

The replies to certain paras have been received from Management, however, reply to the Review is yet to be received from the Company and the Government (September 2002).