

Shram Shakti Bhawan, Rafi Marg,
New Delhi, the 13.12.2006

To

✓ The Chairman & Managing Director,
SJVNL, 501, Bhikaji Cama Bhawan,
New Delhi

Subject: Report of the Standing Committee to analyze the reasons for the time and cost overruns in implementation of Nathpa Jhakri Hydroelectric Project

Sir,

I am directed to forward herewith a copy of the report of the Standing Committee to analyse the reasons for the time and cost overruns in implementation of Nathpa Jhakri HE Project for taking further necessary action in the matter. The Action Taken Report on the recommendations/suggestion made by the Standing Committee may please be sent to this Ministry immediately. The revised draft PIB memo for RCE-III of Nathpa Jhakri HE Project may also be sent to this Ministry immediately for consideration of the PIB.

This may kindly be treated as Most Immediate.

Yours faithfully,

(L.D. Sehra)

Under Secretary to the Govt. of India
Tel:23714169

Copy alongwith a copy of the report of the Standing Committee forwarded for necessary action to:-

1. Chairperson, CEA, Sewa Bhawan, R.K. Puram, New Delhi
2. Chairman, CWC, Sewa Bhawan, R.K. Puram, New Delhi
3. Director General, Geological Survey of India, Pushpa Bhawan, 2nd Floor, Madangir Road, New Delhi-110062 (K. Y. P. Sharda, Div.)
4. Sh. J.K. Puri, Chief Advisor (Cost), Department of Expenditure, Ministry of Finance, Room No. 207, IInd Floor, C-Wing, Lok Nayak Bhawan, New Delhi.
5. Sh. Shatrughan Lal, Dy. Advisor (PAMD), Planning Commission, Yojna Bhawan, New Delhi
6. Sh. C.S. Rangaraj, Joint Advisor, Infrastructure and Project Monitoring Division, Ministry of Statistics and Programme Implementation, Sardar Patel Bhawan, Sansad Marg, New Delhi.

Copy also forwarded to :

- i) Sr. PPS to AS(P) / PS to JS(II) / PS to JS(FA), Ministry of Power

R.K. ASARWAL
General Manager (C & SO)
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REPORT
OF THE
STANDING COMMITTEE
CONSTITUTED IN THE
MINISTRY OF POWER,
GOVT. OF INDIA,
TO ANALYZE THE REASONS FOR
TIME AND COST OVERRUNS
IN THE EXECUTION OF
NATHPA JHAKRI HYDRO - ELECTRIC
PROJECT - NJHEP (6 X 250 MW)
IN HIMACHAL PRADESH
BY SJVNL (NJPC)

NOVEMBER, 2006


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GOVERNMENT OF INDIA
MINISTRY OF POWER


REPORT OF THE STANDING COMMITTEE ON TIME AND COST OVERRUNS
IN RESPECT OF 3RD REVISED COST OF NATHPA JHAKRI
HYDROELECTRIC PROJECT (1500 MW).

1. INTRODUCTION

1.1 In order to analyze time and cost overrun for the purpose of fixing responsibility in respect of 3rd revised cost estimate of Nathpa Jhakri Hydroelectric Project (1500 MW) in Himachal Pradesh implemented by Satluj Jal Vidyut Nigam Limited - SJVN (formerly Nathpa Jhakri Power Corporation Limited, the Standing Committee was constituted by the Ministry of Power with the following composition;

1. Special Secretary, Ministry of Power
Chairperson. -
2. Joint Secretary (Hydro), Ministry of Power
Member -
3. Chief Adviser (Cost), Deptt. of Expenditure
Member -
4. Deputy Adviser, M/o Statistics & Programme Implementation - Member
5. Deputy Adviser, Planning Commission - Member
6. Joint Secretary & Financial Adviser, Ministry of Power - Special invitee.

1.2 The Standing Committee first met on August 13, 2003 and discussed various issues relating to time and cost over-runs implied in RCE-III. In the second meeting of the Standing Committee held in January 2004 it was decided to constitute a sub-committee comprising of Joint Secretary (Hydro), JS&FA, Power and other members of the Standing Committee to thoroughly examine the reasons of change in scope, additional provisions and effect of flood leading to time overrun. The sub-committee deliberated on 8.4.04, 20.5.04, 13.9.04, 23.11.04 and 13.3.05 and discussed with the concerned agencies including CEA and the officials from SJVN. Subsequently a study team comprising of Shri C. S. Rangarajan, Deputy Adviser, Department of Programme Implementation and Shri Shatrughan Lal, Deputy Adviser (PAMD), Planning Commission visited the project at dam, powerhouse, HRT, surge shaft sites etc. on 19-21 March 2005 and held detailed discussions with the concerned officials of SJVN at Corporate and project offices as well as local people. The Standing Committee during its deliberations on dated March 08, 2006, decided to refer the issue relating to development of instabilities in the De-silting Chambers, to the Expert Committee constituted to examine the geological surprises, which has submitted its report forwarded by MOP vide its letter no. 13 / 15 / 2002 - H - II (Vol. IV), dated April 25, 2006, copy of which is placed herewith at Annexure - I. The Sub-Standing Committee has also thoroughly gone into the details of the reasons of time and cost overrun as well as issues raised by the members during deliberations.


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2.0 BACKGROUND

2.1 The first Project Report on Nathpa Jhakri Project was prepared by the Himachal Pradesh Authority in Jan' 1974 after technical examination in the then CW&PC and the project was approved by the Technical Advisory Committee in December, 1974. The Detailed Project Report for Nathpa Jhakri Project (6x170 MW) was subsequently prepared by Himachal Pradesh State Electricity Board (HPSEB) in May, 1979 taking into account results of further investigation which was accorded Techno Economic Clearance (TEC) by CEA in Feb. 1980. With the up gradation of the project from 1020 MW to 1500 MW, the HPSEB submitted the revised DPR in April 1986, and TEC for the same was accorded in August, 1986, by CEA. Government of India sanctioned the Project in April 1989 at an estimated cost of Rs 1678.02 crores (at September, 1988 price level) to be completed in 7 years by March 1996 by Nathpa Jhakri Power Corporation (NJPC).

2.2 The Nathpa Jhakri HEP mainly comprised of 62.5 m. high concrete gravity dam on Satluj river and underground desilting complex comprising four chambers (each 525x16.31x27.5 m size), a 10.58 m. dia. and 27.39 km. long head race tunnel, 3 steel line pressure shafts, a 301 m high surge shaft, an underground powerhouse having 6 Francis turbine units of 250 mw each to utilize a design discharge of 405 cubic and design head of 425 m. and 982 m. long of 10.15 m. dia tail race tunnel to discharge the water back to the river Satluj. This is the largest hydro project in India having largest HRT, desilting complex and surge shaft. The salient features of the project are at Annex - II.

2.2 SJVN (NJPC) officially took over NJHEP in August 01, 1991, following an agreement between GOI and GOHP during July 1991 to implement the project under central sector. However, NJPC took over the project effectively during February 1992 due to an agitation by the employees of HPSEB. The major civil works were awarded during June-Sep. 1993 and the construction works commenced in early 1994. The execution of the project got delayed at the pre-construction stage itself, due to problem in finalization of tender documents, selection of the type of turbine and award of major civil works. Govt. of India, therefore, sanctioned first RCE in June 1993 for Rs. 4337.95 crores (3/93 PL) with a revised completion schedule of December 1998.

While the project was under execution, certain unforeseen geological conditions encountered in the HRT, the powerhouse cavern and a major rockslide of about 10 lakh cum. at Nathpa dam site followed by adverse impact of a severe flash flood in August 1997. This had necessitated revision of the project cost and completion schedule. Govt. of India accordingly sanctioned 2nd RCE in May 1999 for Rs. 7666.31 crores (6/98 PL) with a revised completion schedule of March 2002.

This report examines the time & cost overruns beyond the RCE-II i.e. cost of Rs. 7666.31 crores (6/98 PL) and completion schedule of March, 2002.

2.3 The project was in an advanced stage of implementation with civil works progressing well including substantial progress made in erection of various equipment under electro-mechanical packages. However, an unprecedented catastrophic flash flood in the river Satluj on early hours of 1st August 2000 had caused extensive damages in dam, desilting chambers, part of HRT and the powerhouse apart from damage to the bridges, converts, roads, contractors facilities etc. Besides, the instabilities were also seen in the desilting chambers necessitating additional support measures leading to additional cost. The SJVN has after accounting for the damages, formulated RCE-III, which was considered by the pre-PIB in July 5, 2004. The pre-PIB recommended RCE-III at Rs. 8187.71 crores based on the actual expenditure as on May 2004 and balance is committed provisions liability on the project. However, SJVN during October 2005, has submitted the reassessed RCE - III cost as Rs. 8379.88 Crores.

2.4 Nathpa Jhakri HEP designed to generate 6950.88 of energy in a 90% dependable year, has since been commissioned with all six units commencing from October 2003 to May 2004. After the successful completion and commissioning of prestigious 1500 MW, Nathpa Jhakri HEP in Himachal Pradesh, it has already generated 13442.90 MU of electrical energy and earned total revenue of Rs. 3160.58 Crores up to July 23, 2006. Nathpa Jhakri HEP has been dedicated to the Nation by Hon'ble Prime Minister of India on May 28, 2005 in the presence of Hon'ble Union Minister of Power in the function presided over by Hon'ble Chief Minister of Himachal Pradesh.

2.5 From the date of original sanction of the project in April 1989, the originally sanctioned cost has exceeded by about 399.39% and as against completion schedule of 7 years, project has been completed in 15 years implying a delay of 114%. The Standing Committee has examined cost and time overruns involved in RCE-III with reference to RCE-II sanctioned by GOI. The summarized data indicating date of sanctions, project cost, approved schedules excess cost and time overrun since beginning of the project is given in the following table;

Stages	Sanctioned date	Project Cost	Excess cost	Completion Date	Time over-run (months)
Original approval	April 1989	1678.02		March, 96	
RCE-I (at stage of award of contracts)	June 1993	4337.95	2659.93	Dec, 98	33
RCE-II	May 1999	7666.31	3328.36	March, 02	39
RCE-III	Proposed	8379.88	713.57	May, 04 (actual)	26
Total	-	-	6701.86 (399.39%)		98 (114%)


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3.0 ANALYSIS OF COST OVERRUN:

3.1. As per information furnished by SJVN, the latest sanctioned cost (RCE - II) of Rs. 7666.31 crores, has increased to Rs. 8379.88 Crores registering an increase of Rs. 713.57 Crores, which is 9.31 % over the latest sanctioned cost. Item-wise cost variance is given at Annex - III. The Cost variance analysis indicates that as against 9.31 % of total increase in the Project cost, there were substantial increases in Dam, Intake & Desilting Chambers (38.20%), Gates & Hoists (12.39%), Land (102.56%), Buildings (30.20%), Environment & Ecology (782.57%), Establishment (39.67%), and IDC (15.17%). These increases in the costs are mainly attributed to additional provisions, change in design parameters and aftereffects of unprecedented flash flood of Aug. 01, 2000, apart from fiscal factors. The increase of Rs. 713.57 Crores in cost is attributed to the following factors:

Sl. No	Description	Increase from RCE-II to RCE-III (INR Crores)	% of increase in cost	
			Of total increase	Of sanctioned RCE-II
1	Financial Reasons :			
a	Price Variation	143.85	20.16	1.88
b	Foreign Exchange Variation	82.75	11.60	1.08
C	Statutory Reasons	4.74	0.66	0.06
1	Sub Total (1) :-	231.35	32.42	3.02
2	Change in scope	-	-	-
3	Addition/deletion			
i)	i) Quantity Variation	-228.01	- 31.95	- 2.97
ii)	ii) Inadequate Provisions/ Over estimation	-229.04	- 32.10	- 2.99
iii)	iii) Change in Design	59.05	8.28	0.77
iv)	iv) Unforeseen/ Addl. Works/ Liabilities	452.28	63.38	5.90
3	Sub-Total (3)	54.28	7.61	0.71
4	Other reasons			
a)	EOT / DRB / Other Claims	9.09	1.27	0.12
b)	Establishment	159.050	22.29	2.07
c)	Interest During Construction	263.21	36.89	3.43
d)	Other Financing Charges	0.77	0.11	0.01
e)	Deduct: Reimburs. of Customs Duty	- 4.18	- 0.59	- 0.06
	Total	713.57	100.00 %	9.31 %

3.3 Price Escalation: The total increase on account of price variation is Rs. 143.85 crores (1.88% of latest approved cost), out of which, the increase within approved project time cycle (PTC) is Rs. 101.21 crores and beyond approved PTC is Rs. 42.64 crores, which is due to a delay of 26 months. When checked

with price inflation of 32.5% of WPI and 28.3% of CPI during intervening period (June 1998 to June 2004), an average price escalation in the major civil & electro-mechanical works comes to around 3.2% per year, which is reasonable. The Committee was informed that there was no ceiling for price escalation in the civil works contract; hence it increased with the lapse of time, while a ceiling of 20% was provided towards escalation in electro-mechanical items. The escalation was payable on 85% of the labour component, oil & lubricant, steel and other material in domestic currency and on the expatriate labour, material and construction plant, etc. in foreign currency as per indices for different components. The price escalation has been taken on the actual basis already paid for civil packages as well as for electro-mechanical packages till May 18, 2004.

3.4 Foreign Exchange Variation: The total increase on account of F.C. variations is Rs. 82.75 crores, out of which, the increase within approved PTC is Rs. 68.04 Crores and beyond approved PTC is Rs. 14.71 Crores. The approved cost of Rs. 7666.31 crore (June, 1998 price level) had foreign currency component of Rs. 2256.78 crore at the prevailing exchange rates of nine foreign currencies as on June 30, 1998. For instance, the then US dollar rate was at 1 USD = Rs. 42.43. To arrive at Foreign Currency Exchange fluctuations as on end June 30, 2004, only actuals have been taken into consideration, on each currency up to May 18, 2004 / June 30, 2004 and no foreign currency fluctuations for future dates have been considered. The FE component in "Civil Works including Gates & Hoists and Consultancy Charges" is 28.38 %, whereas in "Electro-mechanical Packages" it is 61.42%. On an overall basis, the Foreign Currency component comes to 25.18 % of the total cost of the project.

3.5 Statutory Reasons (Taxes and Duties): The total increase on account of statutory reasons is Rs. 4.74 Crores, out of which, the increase within approved PTC is Rs. 4.30 Crores and beyond approved PTC is Rs. 0.38 Crores. The impact of changes in foreign currencies exchange rates, imposition of additional levies on construction materials and concrete and requirement of replacement supplies; on the taxes and duties on the basis of tax rates and exchange rates prevailing upto May 18, 2004 vis-à-vis those prevailing during June 1998 work out as follows :

Description	(Rs. in Crore)		
	At June, 98 PL	At Sep., 02 PL	Increase / Decrease
Electro-Mechanical	212.25	207.73	(-) 4.52
Civil	19.76	29.02	9.26
TOTAL	232.01	236.75	4.74

3.6 - Quantity Variations & Inadequate Provisions: There has been a substantial decrease under the heads quantity variations (Rs. 228.01 crores) & inadequate provisions / over estimation (Rs. 229.04 crores) due to the fact that now all the project works i.e. major civil, infrastructure and electro-mechanical

