

Government of India
Central Electricity Authority
Hydro Project Appraisal Division
Sewa Bhawan, R.K. Puram,
New Delhi - 110 066.

No. 201/6/2002-HPA/774

Dated 3rd October 2002.

Incharge (DE&QC)/Consultant
Nathpa Jhakri Power Corporation Ltd.
Himfed Building,
New Shimla - 171 009.


FRN/270547.

Subject: Nathpa Jhakri Hydro Electric Project (6x250 MW) - Revised Power Generation Studies.

Sir,

Reference is invited to letter No. NJPC/DID/201/DAM HT72002 dated 30th Sept. 2002 vide which revised power potential studies for Nathpa Jhakri H.E. Project corresponding to FRL of 1488.5 m. were furnished. The design energy for Nathpa Jhakri Hydro Electric Project as calculated by M/s. NJPC at 6950.88 GWh has been found to be in order.

Yours faithfully,


(S.M. Dhillon) 10/10/02
Chief Engineer (HPA)


R.K. GARGWAL
General Manager (C & S)
Satuj Jal Vidyut Nigam Ltd
Shama Niwas, New Shimla-171009

NATHPA JHAKRI HYDROELECTRIC PROJECT (1500 MW)								
POWER GENERATION IN A 90 % DEPENDABLE YEAR								
(Hydrology as per river Satluj data updated up-to May 2001 and Sholding Khad data updated upto May 1987 Head & Efficiency as per Manufacture's Data, Power & Energy values 95% of actual values as per notification dated 30th March, 1992 of Ministry of Power.								
FRL	1488.5 m (Phase-I with Dam Top At El. 1493.5m)							
Combined Efficiency	0.938							
Net Head	430.687 m							
Installed Capacity	1500.00 MW							
Design Discharge	383.50 Cumecs							
Station Availability	95.00 %							
Annual Energy Generation	6951 GWH							
PERIOD	INFLOWS IN CUMECs			POWER/ENERGY GENERATION				
	SATLUJ AT NATHPA DAM	SHOLDING AT WEIR SITE RESTRICTED TO 6 CUMECs	TOTAL	UNRESTRICTED POWER MW	ENERGY GWH	RESTRICTED TO 95% OF 1500 MW POWER MW	ENERGY GWH	
JUNE	I	296.00	6.00	272.00	1077.96	258.71	1077.96	258.71
	II	384.00	5.24	389.24	1542.59	370.22	1425.00	342.00
	III	548.00	4.66	552.66	2190.24	525.66	1425.00	342.00
JULY	I	530.00	5.36	535.36	2121.68	509.20	1425.00	342.00
	II	652.00	6.00	658.00	2607.71	625.85	1425.00	342.00
	III	664.00	6.00	670.00	2655.27	700.99	1425.00	376.20
AUGUST	I	639.00	6.00	645.00	2556.19	613.49	1425.00	342.00
	II	679.00	6.00	685.00	2714.71	651.53	1425.00	342.00
	III	507.00	6.00	513.00	2033.06	536.73	1425.00	376.20
SEPTEMBER	I	346.00	6.00	352.00	1395.01	334.80	1395.01	334.80
	II	298.00	4.23	302.23	1197.76	287.46	1197.76	287.46
	III	177.00	3.58	180.58	715.65	171.76	715.65	171.76
OCTOBER	I	130.00	2.71	132.71	525.94	126.23	525.94	126.23
	II	91.00	2.29	93.29	369.72	88.73	369.72	88.73
	III	72.00	2.48	74.48	295.17	77.93	295.17	77.93
NOVEMBER	I	68.00	2.61	70.61	279.83	67.16	279.83	67.16
	II	78.00	2.25	80.25	318.04	76.33	318.04	76.33
	III	123.00	2.23	125.23	496.30	119.11	496.30	119.11
DECEMBER	I	113.00	2.23	115.23	456.67	109.60	456.67	109.60
	II	107.00	2.02	109.02	432.06	103.69	432.06	103.69
	III	98.00	1.93	99.93	396.03	104.55	396.03	104.55
JANUARY	I	91.00	1.72	92.72	367.46	88.19	367.46	88.19
	II	87.00	1.67	88.67	351.41	84.34	351.41	84.34
	III	83.00	1.55	84.55	335.08	80.42	335.08	88.46
FEBRUARY	I	81.00	1.53	82.53	327.07	78.50	327.07	78.50
	II	78.00	1.60	79.60	315.46	75.71	315.46	75.71
	III	79.00	1.81	80.81	320.26	84.55	320.26	61.49
MARCH	I	85.00	2.05	87.05	344.99	82.80	344.99	82.80
	II	95.00	2.28	97.28	385.53	92.53	385.53	92.53
	III	100.00	3.25	103.25	409.19	108.03	409.19	108.03
APRIL	I	120.00	3.71	123.71	490.27	117.67	490.27	117.67
	II	126.00	3.99	129.99	515.16	123.64	515.16	123.64
	III	236.00	4.71	240.71	953.95	228.95	953.95	228.95
MAY	I	315.00	4.47	319.47	1266.09	303.86	1266.09	303.86
	II	320.00	6.00	326.00	1291.97	310.07	1291.97	310.07
	III	699.00	6.00	705.00	2793.98	737.91	1425.00	376.20
TOTAL					9056.58		6950.88	

generation (90% & five recent years)


R.K. AGARWAL
General Manager (C & S)

**Monthwise Distribution of Design Energy of Nathpa Jhakri HEP in
90% Dependable Year Based on 95% Installed Capacity
As approved by CEA at FRL 1488.5m**

S.No.	Month	Energy (In MU)
1	January	260.98
2	February	215.70
3	March	283.36
4	April	470.26
5	May	990.12
6	June	942.71
7	July	1060.20
8	August	1060.20
9	September	794.02
10	October	292.89
11	November	262.60
12	December	317.84
	Total	6950.88
		6951 MU



R.K. AGARWAL
General Manager (C & SO)
Satuj Jal Vidyut Nigam Ltd
Sharma Niwas, New Shimla-171009

Monthwise distribution of design energy

Monthly Details of Design Energy At FRL 1485.5 M

Month	2004-05	2005-06
April	435.34 MU	466.98 MU
May	723.80 MU	985.86 MU
June	845.13 MU	940.92 MU
July	1060.20 MU	1060.20 MU
August	1060.20 MU	1060.20 MU
September	788.49 MU	788.49 MU
October	290.84 MU	290.84 MU
November	260.77 MU	260.77 MU
December	315.63 MU	315.63 MU
January	259.17 MU	259.17 MU
February	214.19 MU	214.19 MU
March	281.37 MU	281.37 MU
Total	6535.14 MU	6924.62 MU


Overall monthly detail of design energy


R.K. AGARWAL
General Manager (C & SO)
Satluj Jal Vidyut Nigam Ltd.
Sharma Niwas, New Shimla-171009

Enclosure to L.O.M. No. S/79/02/2004/Dam/Energy/2004 - 854-55 Dated: 3-9-04										
NATHPA JHAKRI HYDROELECTRIC PROJECT (1500 MW)										
POWER GENERATION W.E.F, APRIL, 2004 TO MAR., 2005										
GENERATION W.E.F, APRIL, 2004 TO MAR., 2005 - DISCHARGE DATA USED FOR 90 % DEPENDABLE YEAR AS APPROVED BY CEA IN OCT. 2002										
Cylinder as per river Satluj data updated upto May 2001 and Sholing Khed data updated upto May 1987 Head & Efficiency as approved by CEA in Oct. 2003, Power & Energy values 95% of actual values as per notification dated 30th March, 1992 of Ministry of Power, P.W.										
PKL	1488.5 m. (Actual Reservoir EL with Dam Top At EL 1488.5m)									
Combined Efficiency	0.838									
Net Head	427.667 m									
Installed Capacity	1500.00 MW (Apr. 1, 2004 to May 8, 2004)									
	1200.00 MW (May 8, 2004 to May 17, 2004)									
	1500.00 MW (May 18, 2004 to Mar. 31, 2005)									
Design Discharge	363.80 Cumecs									
Station Availability	98.00 %									
Annual Energy Generation	8838 GWH									
PERIOD	INFLOWS IN CUMECs				POWER/ENERGY GENERATION					
	SATLUJ AT NATHPA DAM			Discharge at Nathpa Restricted Due to availability of Drafting Chambers	SHOLDING AT WWR SITE RESTRICTED TO 4 CUMECs	TOTAL RESTRICTED TO 48 CUMECs	Unrestricted POWER Generated in MW	Unrestricted ENERGY GWH (Million Units)	POWER MW RESTRICTED TO 6% OF INSTALLED CAPACITY	Or Water Availability ENERGY GWH
	1	2	3	4	5	6	7	8	9	10
April -04										
	I	130		130	5.71	122.71	486.88	116.85	486.88	116.85
	II	126		126	3.89	124.89	811.87	122.78	811.87	122.78
	III	238		203.8	4.71	207.31	818.47	188.71	818.47	188.71
May -04										
	I	218		203.8	4.47	206.47	814.53	87.74	814.53	87.74
	II	318		203.8	4.47	206.47	814.53	87.74	814.53	87.74
	III	320		203.8	8.00	208.80	820.88	167.88	820.88	167.88
	IV	320		203.8	8.00	208.80	820.88	167.88	820.88	167.88
	V	320		203.78	8.00	208.78	820.88	167.88	820.88	167.88
	VI	889		203.78	8.00	208.78	820.88	167.88	820.88	167.88
June -04										
	I	288		288	8.00	272.00	1070.45	204.81	1070.45	204.81
	II	288		203.78	8.34	208.89	1218.02	291.80	1218.02	291.80
	III	848		203.78	4.88	208.41	1213.74	292.37	1213.74	292.37
	IV	848		408	4.88	408.00	1883.87	38.28	1423.08	38.28
JULY -04										
	I	408		408	8.38	408.00	1893.87	382.83	1423.00	382.00
	II	882		408	8.00	408.00	1893.87	382.83	1423.00	382.00
	III	884		408	8.00	408.00	1893.87	420.78	1423.00	378.20
AUGUST -04										
	I	408		408	8.00	408.00	1893.87	382.83	1423.00	382.00
	II	878		408	8.00	408.00	1893.87	382.83	1423.00	382.00
	III	907		408	8.00	408.00	1893.87	420.78	1423.00	378.20
SEPT. -04										
	I	348		348	8.00	352.00	1388.28	332.47	1388.28	332.47
	II	298		298	4.23	302.23	1188.42	288.48	1188.42	288.48
	III	177		177	2.88	180.88	718.87	170.88	718.87	170.88
OCT. -04										
	I	138		138	2.71	132.71	822.28	128.38	822.28	128.38
	II	81		81	2.38	82.38	287.14	88.11	287.14	88.11
	III	72		72	2.48	74.48	293.11	77.58	290.11	77.58
NOV. -04										
	I	88		88	2.81	70.81	277.88	88.88	277.88	88.88
	II	78		78	2.38	80.28	318.82	78.80	318.82	78.80
	III	123		123	2.33	125.23	492.84	118.28	492.84	118.28
DEC. -04										
	I	113		112	2.23	118.23	482.48	108.84	482.48	108.84
	II	107		107	2.02	108.02	428.08	102.87	428.08	102.87
	III	88		88	1.93	88.82	283.27	103.82	283.27	103.82
JAN. -05										
	I	81		81	1.72	82.72	284.80	87.88	284.80	87.88
	II	87		87	1.87	88.87	348.88	83.78	348.88	83.78
	III	83		83	1.88	84.55	328.74	87.84	328.74	87.84
FEB. -05										
	I	81		81	1.82	82.82	324.80	77.88	324.80	77.88
	II	78		78	1.80	78.80	312.28	78.18	312.28	78.18
	III	78		78	1.81	80.81	318.22	81.08	318.22	81.08
MARCH -05										
	I	88		88	2.08	87.08	342.88	82.22	342.88	82.22
	II	88		88	2.28	87.28	382.84	81.88	382.84	81.88
	III	109		109	2.28	102.28	408.34	107.27	408.34	107.27
TOTAL								8780.47		8838.14



R.K. AGARWAL
 General Manager (C & SO)
 Satluj Jal Vidyut Nigam Ltd
 Sharni Niwas, New Sharni 171009

NATPHA JHAKRI HYDROELECTRIC PROJECT (1500 MW)								
POWER GENERATION IN A 90 % DEPENDABLE YEAR for the FY 2005-06								
(Hydrology as per river Satluj data updated up-to May 2001 and Sholding Khad data updated upto May 1987 Head & Efficiency as approved by CEA in Oct 2002, Power & Energy values 95% of actual values as per notification dated 30th March, 1992 of Ministry of Power)								
FRL (m)	1455.5	Intermediate Level						
Net Head	427.667	m						
Combined Efficiency	0.938							
Installed Capacity	1500.00	MW						
Design Discharge	382.80	Cumecs						
Station Availability	95.00	%						
Annual Energy Gen	6925	GWH						
PERIOD INFLOWS IN CUMECs				POWER/ENERGY GENERATION				
	BATLUJ AT NATHPA DAM	SHOLDING AT WEIR SITE RESTRICTED TO 8 CUMECs	TOTAL	UNRESTRICTED POWER MW	ENERGY GWH	RESTRICTED TO 95% OF 1500 MW POWER MW	ENERGY GWH	
APRIL	I	120	3.71	123.71	456.86	116.88	456.86	116.88
	II	128	3.99	129.99	511.57	122.78	511.57	122.78
	III	236	4.71	240.71	947.31	227.25	947.31	227.25
May	I	315	4.47	319.47	1257.27	301.74	1257.27	301.74
	II	320	5.00	326.00	1282.97	307.91	1282.97	307.91
	III	699	5.00	705.00	2774.51	722.47	1425.00	376.20
June	I	268	5.00	273.00	1070.45	259.91	1070.45	259.91
	II	384	5.24	389.24	1531.95	367.84	1425.00	342.00
	III	548	4.65	552.65	2174.98	522.00	1425.00	342.00
July	I	530	5.38	535.38	2106.90	505.68	1425.00	342.00
	II	552	5.00	558.00	2589.55	621.49	1425.00	342.00
	III	664	5.00	670.00	2826.77	695.11	1425.00	376.20
Aug	I	538	5.00	548.00	2538.39	670.13	1425.00	342.00
	II	679	5.00	686.00	2695.80	711.59	1425.00	342.00
	III	607	5.00	613.00	2018.90	532.99	1425.00	376.20
Sept	I	248	5.00	252.00	1385.28	365.72	1385.28	332.47
	II	298	4.33	302.23	1189.42	314.01	1189.42	285.48
	III	177	3.68	180.68	710.57	187.82	710.57	170.58
Oct	I	130	3.71	132.71	522.28	137.88	522.28	125.25
	II	91	3.29	93.29	367.14	96.93	367.14	88.11
	III	72	2.48	74.48	292.11	77.28	292.11	77.28
Nov	I	88	2.81	90.81	277.88	73.38	277.88	68.89
	II	78	2.25	80.25	315.82	83.38	315.82	76.80
	III	123	2.32	125.23	492.84	130.11	492.84	119.28
Dec	I	113	2.23	115.23	453.49	119.72	453.49	108.84
	II	107	2.02	109.02	429.05	112.27	429.05	102.97
	III	98	1.93	99.93	393.27	102.82	393.27	102.92
Jan	I	91	1.72	92.72	364.90	98.23	364.90	87.58
	II	87	1.57	88.57	348.95	92.13	348.95	83.75
	III	83	1.55	84.55	332.74	87.54	332.74	87.84
Feb	I	81	1.53	82.53	324.80	85.76	324.80	77.95
	II	78	1.50	79.50	313.25	82.70	313.25	76.18
	III	79	1.51	80.51	318.03	83.95	318.03	81.09
Mar	I	85	2.08	87.08	342.58	90.44	342.58	82.22
	II	95	2.28	97.28	382.84	101.07	382.84	91.88
	III	100	3.25	103.25	406.34	107.27	406.34	107.27
TOTAL					9324.41		6924.52	


R.K. AGARWAL
 General Manager (C & SO)
 Satluj Jai Vidyut Nigam Ltd. **160**
 Sharma Niwas, New Scheme 1/1009

Monthly Details of Design Energy at FRL 1485.5M

Sr. No.	Month	2006-07
1	April	466.98 MU
2	May	985.86 MU
3	June	940.92 MU
4	July	1060.20 MU
5	August	1060.20 MU
6	September	788.49 MU
7	October	290.84 MU
8	November	260.77 MU
9	December	315.63 MU
10	January	259.17 MU
11	Februry	214.19 MU
12	March	281.37 MU
	Total	6924.62 MU



R.K. AGARWAL
General Manager (C & SO)
Safal Jal Vidyut Nigam Ltd
Sharma Niwas, New Udaipur-111005

NATPHA JHAKRI HYDROELECTRIC PROJECT (1600 MW)								
POWER GENERATION IN A 90 % DEPENDABLE YEAR for the FY 2006-07								
(Hydrology as per river Saluj data updated up-to May 2001 and Sholding Khad data updated upto May 1987 Head & Efficiency as approved by CEA in Oct 2002, Power & Energy values 95% of actual values as per notification dated 30th March, 1992 of Ministry of Power)								
FRL (m)	1485.5	Intermediate Level						
Net Head	427.667	m						
Combined Efficiency	0.928							
Installed Capacity	1600.00	MW						
Design Discharge	383.80	Cumecs						
Station Availability	99.00	%						
Annual Energy Gen	8828	GWH						
PERIOD INFLOWS IN CUMECs				POWER/ENERGY GENERATION				
		SATLUJ AT NATHPA DAN	SHOLDING AT WEIR SITE RESTRICTED TO 8 CUMECs	TOTAL	UNRESTRICTED		RESTRICTED TO 95% OF 1600 MW	
					POWER MW	ENERGY GWH	POWER MW	ENERGY GWH
APRIL	I	120	3.71	123.71	486.88	118.88	486.88	118.88
	II	128	3.99	129.99	511.87	122.76	511.87	122.76
	III	236	4.71	240.71	947.31	227.38	947.31	227.38
May	I	318	4.47	319.47	1267.27	301.74	1267.27	301.74
	II	320	8.00	328.00	1282.87	307.91	1282.87	307.81
	III	699	8.00	708.00	2774.81	732.47	1426.00	378.20
June	I	288	8.00	272.00	1070.48	268.81	1070.46	268.81
	II	384	8.24	389.24	1531.88	387.84	1426.00	342.00
	III	848	4.88	892.66	2174.98	532.00	1426.00	342.00
July	I	630	8.38	636.38	2108.90	608.88	1426.00	342.00
	II	662	8.00	668.00	2589.55	621.49	1426.00	342.00
	III	664	8.00	670.00	2638.77	688.11	1426.00	378.20
Aug	I	638	8.00	646.00	2838.39	670.13	1426.00	342.00
	II	678	8.00	686.00	2995.80	711.69	1426.00	342.00
	III	807	8.00	813.00	3018.90	832.99	1426.00	378.20
Sept	I	348	8.00	352.00	1388.39	368.72	1388.39	332.47
	II	298	4.23	302.23	1188.42	314.01	1188.42	285.48
	III	177	3.68	180.68	710.67	187.82	710.67	178.88
Oct	I	130	2.71	132.71	522.28	137.88	522.28	125.38
	II	91	2.29	93.29	367.14	96.93	367.14	88.11
	III	72	2.48	74.48	293.11	77.38	293.11	77.38
Nov	I	68	2.81	70.81	277.88	73.36	277.68	68.68
	II	78	2.28	80.28	316.82	83.38	315.82	78.80
	III	123	2.23	126.23	492.84	130.11	492.84	118.28
Dec	I	113	2.23	116.23	463.49	118.72	463.49	109.84
	II	107	2.92	109.02	429.06	113.27	429.06	102.97
	III	88	1.92	92.92	393.27	103.82	381.27	103.82
Jan	I	91	1.72	92.72	364.90	98.33	364.90	87.88
	II	87	1.87	88.87	348.96	92.13	348.96	83.75
	III	83	1.68	84.68	322.74	87.84	322.74	87.84
Feb	I	81	1.83	82.83	324.80	88.76	324.80	77.95
	II	78	1.80	79.80	313.26	82.70	313.26	76.10
	III	79	1.81	80.81	318.03	83.98	318.03	81.08
Mar	I	88	2.08	87.08	342.88	90.44	342.88	82.22
	II	88	2.28	97.28	382.84	101.07	382.84	91.88
	III	100	3.28	103.28	408.34	107.27	408.34	107.27
TOTAL						9324.41		6924.62

(Signature)
R.K. AGARWAL
 General Manager (C & ST)
 Satiji Jal Vidyut Nigam Ltd.
 Sharma Niwas, New Sharma 1/1000

Monthly Details of Design Energy at FRL 1495.5M

Sr. No.	Month	2007-08	2008-09
1	April	474.41 MU	474.41 MU
2	May	995.50 MU	995.50 MU
3	June	945.51 MU	945.51 MU
4	July	1060.20 MU	1060.20 MU
5	August	1060.20 MU	1060.20 MU
6	September	800.69 MU	800.69 MU
7	October	295.14 MU	295.14 MU
8	November	264.89 MU	264.89 MU
9	December	320.82 MU	320.82 MU
10	January	263.36 MU	263.36 MU
11	Februry	217.67 MU	217.67 MU
12	March	285.98 MU	285.98 MU
	Total	6984.37 MU	6984.37 MU


R.K. AGARWAL
General Manager (C & SO)
Salluj Jal Vidyut Nigam Ltd.
Sharma Niwas, New Shamba-171009

