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NORTHERN REGION GRID REPORT FOR THE MONTH OF DECEMBER 2002

A) Summary Report

Northern Region Power System went through a historical change with the implementation of Availability Based Tariff (ABT) in the Region w.e.f 1st December, 2003.

The implementation of ABT had a considerable effect in improving frequency profile in the Region and the average system frequency during the month of December 2002 was 49.92 Hz and frequency remained between 49.0 & 50.5 Hz for 82.95% of the time. This shows that there was appreciable increase in the period when frequency remained in this normal band as prescribed by the IEGC (Indian Electricity Grid Code), However

large number of fluctuations from low to high & vice versa signifies the importance of implementation of free governor operation on all generating units in the region.

Overall voltage profile in the grid during the month has been satisfactory on most of the 400 kV buses. However in the J&K valley area high and low voltages particularly at 400 kV Uri HEP & Wagoora S/S were experienced due to sudden load throw-off/ excessive MVAR drawal by J&K system on several occasions.

HVDC Rihand-Dadri pole-II which was out since 28.10.2002 due to B-Phase converter transformer problem at Rihand end was brought back into service on 19.12.2002.

The last week of the month experienced large number of tripping occurred on account of inclement and extremely foggy weather conditions. On 23.12.2002 at 04.42 hrs due to such conditions system disturbance occurred causing total collapse of BBMB/Punjab/HP/J&K and part of Haryana. The system was restored by 09.50 hrs. The detailed report of incident is given at Annexure-4.

2. Commissioning New Units/Lines/Transformers During the Month :

---NIL---

3. Frequency Profile :

Maximum frequency	51.44	Hz	at	03.13	hours on	31.12.2002
Minimum frequency	48.16	Hz	at	18.05	hours on	07.12.2002
Average frequency	49.94	Hz				

Frequency distribution in %

Hz	< 48.5	<49.0	49.0-50.5	> 50.5
% of time	0.11	2.01	82.95	15.04

Frequency Variation Index

Monthly Average	2.15
Maximum	4.67
Minimum	1.33

4. Power Supply Position :**a. Average Energy/day (Net)**

State / U.T.	Demand met MU/Day	Requirement MU/Day	Shortage MU/Day	Shortage %
Punjab	61.63	69.35	7.72	11.13
Haryana	47.04	52.64	5.60	10.64
Rajasthan	68.00	74.51	6.51	8.74
U.P.	102.23	129.35	27.12	20.97
Uttanchal	10.27	10.45	0.18	1.72
Delhi	46.44	47.38	0.94	1.98
Chandigarh	2.62	2.62	0.00	0.00
H.P.	9.59	9.59	0.00	0.00
J & K	19.06	21.48	2.42	11.27
N.F.F./Rail	1.99	1.99	0.00	0.00
Total	368.91	429.36	60.45	14.08

b. Peak MW

State / U.T.	MAX. Demand met MW	MAX. Requirement MW	Shortage MW	Shortage %
	A	B	D	(D/B)*100
Punjab	3552	4052	500	12.34
Haryana	2641	2962	321	10.84
Rajasthan	3453	3880	427	11.01
U.P.	5024	6700	1676	25.01
Uttanchal	626	750	124	16.53
Delhi	2588	2905	317	10.91
H.P.	696	696	0	0.00
J & K	980	1250	270	21.60
Chandigarh	155	155	0	0.00
N.F.F./Rail	75	75	0	0.00
Region	19490	21455	1965	9.16

Diversity Factor = **1.07**

* Approximate and Estimated

2
2
2

5. **Schedule Vs Drawal By the Constituents :**

(All figs in M.U)

State / U.T.	Schedule	Actual Drawal	OD/UD
Punjab	670.46	692.92	22.46
Haryana	653.06	760.03	106.97
Rajasthan	859.12	850.36	-8.76
U.P.	1394.97	1251.05	-143.92
Uttaranchal	140.89	162.28	21.39
Delhi	763.10	715.72	-47.38
H.P.	231.92	263.87	31.95
J & K	480.10	566.15	86.05
Chandigarh	85.64	81.65	-3.99
N.F.F./Rail	53.24	62.56	9.32

6. **Inter Regional Exchanges**

		Energy M.U.	Peak MW
<u>Import</u>			
a)	From WR over HVDC Vindhyachal B/B	0	0
b)	From WR to over 220 kV Ujjain-Kota	0	0
c)	From ER over HVDC Sasaram B/B	205.24	484
d)	From ER over 220 kV Dehri-Sahupuri	0	0
<u>Export</u>			
d)	To WR over HVDC Vindhyachal B/B	134.43	450
e)	To WR (MP) over 220 kV Auraiya-Malanpur	44.62	72
f)	To ER (Bihar) over 220 kV/132kV lines	9.24	30
g)	To Nepal over 132 kV Tanakpur-Mahendernagar	6.57	12

B). Detailed Report

I. Details of Installed/Effective Capacity at the end of December 2002

	STATION	INSTALLED CAPACITY (MW)		EFFECTIVE CAPACITY	
A	NTPC				
(a)	Badarpur TPS	3x100+2x210	720.00	3x95+2x210	705.00
(b)	Singrauli STPS	5x200+2x500	2000.00	5x200+2x500	2000.00
(c)	Rihand STPS	2x500	1000.00	2x500	1000.00
(d)	Dadri NCTPS	4x210	840.00	4x210	840.00
(e)	Unchahar TPS	2x210 + 2x210	840.00	2x210 + 2x210	840.00
(f)	Tanda TPS	4x110	440.00	4x110	440.00
(g)	Anta GPS	3x88.71+1x153.20	419.33	3x88.71+1x153.20	419.33
(h)	Auraiya GPS	4x111.19+2x109.30	663.36	4x111.19+2x109.30	663.36
(i)	Dadri GPS	4x130.19+2x154.51	829.78	4x130.19+2x154.51	829.78
(j)	Faridabad GPS	2x137.75 +1x156.07	431.57	2x137.75 +1x156.07	431.57
	Sub-Total		8184.04		8169.04
B	NHPC				
(a)	Bairasiul	3x60	180.00	3x60	180.00
(b)	Salal Stage - I	3x115	345.00	3x115	345.00
(c)	Salal Stage - II	3x115	345.00	3x115	345.00
(d)	Tanakpur HPS	3x40	120.00	3x31.4	94.20
(e)	Chamera HPS	3x180	540.00	3x180	540.00
(f)	URI	4x120	480.00	4x120	480.00
	Sub-Total		2010.00		1984.20
C.	NPC				
(a)	RAPS -A	2x220	440.00	1x100+1x200	300.00
(b)	RAPS -B	2x220	440.00	2x220	440.00
(c)	NAPS	2x235	470.00	2x220	440.00
	Sub-Total		1350.00		1180.00
Total Central Sector (A + B + C)			11544.04		11333.24
2	BBMB				
(a)	Bhakra Complex				
(i)	Bhakra (L)	5x108	540.00	5x108	540.00
(ii)	Bhakra (R)	5x157	785.00	5x157	785.00
(iii)	Ganguwal	1x29.25+1x27.63+1x26.7	83.58	1x29.25+1x27.63+1x26.7	83.58
(iv)	Kotla	1x29.25+1x24.2+1x28.12	81.57	1x29.25+1x24.2+1x28.12	81.57
	Sub-Total		1490.15		1490.15
(b)	Dehar	6x165	990.00	6x165	990.00
(c)	Pong	2x60 + 4x66	384.00	2x60 + 4x66	384.00
	Total BBMB		2864.15		2864.15

3	CHANDIGARH				
(a)	Diesel Gen Sets		2.00		1.40
4	DELHI				
	THERMAL				
(a)	Indra Prastha	3x62.5+1x60	247.50	3x62.5+1x60	247.50
(b)	Rajghat	1x15+2x67.5	150.00	1x14+2x67.5	149.00
(c)	Gas Turbines	6x30+3x34	282.00	6x30+3x34	282.00
(d)	Pragati Gas Turbines	2x108	216.00	2x108	216.00
	Total DELHI		895.50		894.50
5	HARYANA				
	HYDRO				
(a)	Western Yamuna Canal (WYC)	6x8	48.00	6x8	48.00
	Total Hydro		48.00		48.00
	THERMAL				
(b)	Faridabad (New)	3x60	180.00	3x55	165.00
(c)	Panipat	4x110+2x210	860.00	4x110+2x210	860.00
	Total Thermal		1040.00		1025.00
(d)	Magnum Diesel (IPP)	4x6.3	25.20	4x6.3	25.20
	Total Haryana		1113.20		1098.20
6	HIMACHAL PRADESH				
	HYDRO				
(a)	Giri	2x30.00	60.00	2x30.00	60.00
(b)	Bassi	4x15.00	60.00	4x15.00	60.00
(c)	Binwa	2x 3.00	6.00	2x 3.00	6.00
(d)	Rongtong	4x 0.50	2.00	4x 0.50	2.00
(e)	Andhra	3x 5.65	16.95	3x 5.65	16.95
(f)	Micro Hydel+Killar+Thirot		8.75		8.75
(g)	Nogli	2x 0.25+4x0.50	2.50	2x 0.25+4x0.50	2.50
(h)	Bhabha (H)	3x40.00	120.00	3x40.00	120.00
(i)	Baner (H)	3x 4.00	12.00	3x 4.00	12.00
(j)	Gaj (H)	3x 3.50	10.50	3x 3.50	10.50
(k)	Sal -2	1x 2	2.00	1x 2	2.00
(l)	Gumma	.	3.00	3	3.00
(m)	Ghanvi	2x11.25	22.50	2x11.25	22.50
(n)	Diesel Gen. Sets		0.00		0.00
(o)	Malana(IPP)	2x43	86.00	2x43	86.00
	Total HP		412.20		412.20
7	J & K				
	HYDRO				
(a)	Lower Jhelum	3x35.0	105.00	3x35.0	105.00
(b)	Upper Sindh	2x11.30+3x35.0	127.60	2x11.30+3x35.0	127.60
(c)	Ganderbal	2x3+2x4.5	15.00	2x3+2x4.5	15.00
(d)	Mohra	2x4.5	9.00	2x4.5	9.00
(e)	Chenani	5x4.66 +2X1.0 +3x2.5	32.80	5x4.66 +2X1.0+3x2.5	32.80
(f)	Stakna	2x2.0 +3x1.25 +2.0	9.75	2x2.0 +3x1.25 +2.0	9.75
(g)	Small Hydel		3.54		3.54
(h)	Sewa	3x3.0	9.00	3x3.0	9.00
	Total Hydro		311.69		311.69

J & K (Contd.)				
(h)	GAS TURBINES			
	Pampore GT St - I	3x25.0	75.00	3x25.0
	Pampore GT St - II	4x25.0	100.00	4x25.0
9h)	Total Gas		175.00	175.00
(I)	Diesel Gen. Sets		8.94	7.18
	Total J & K		495.63	493.87
8	PUNJAB			
(a)	HYDRO			
	Jogindernagar/ Shanan	4x15+1x50	110.00	4x15+1x50
(b)	Upper Behari Doab Canal (UBDC)	3x15+3x15	90.00	3x15+3x15
(c)	Mukerian	6x15+6x19.5	207.00	6x15+6x19.5
(d)	Anandpur Sahib (APS)	4x33.5	134.00	4x33.5
(e)	Ranjit Sagar HPS	4x150	600.00	4x150
(f)	Small Hydel		4.10	4.10
	Total Hydro		1145.10	1145.10
(g)	THERMAL			
	Guru Nanak Dev TPS (Bhatinda)	4x110	440.00	4x110
(h)	Guru Gobind Singh TPS (Ropar)	6x210	1260.00	6x210
(i)	Lehra Mohabbat TPS	2x210	420.00	2x210
(j)	Jhalkeri Rice Straw Fired	1x10	10.00	1x10
	Total Thermal		2130.00	2130.00
	Total Punjab		3275.10	3275.10
9	RAJASTHAN			
(a)	HYDRO			
	Mahi Bajaj Sagar	2x25+2x45	140.00	2x25+2x45
(b)	Rana Pratap Sagar (RPS)	4x43	172.00	4x43
(c)	Jawahar Sagar (JS)	3x33	99.00	3x33
(d)	Anoopgarh	6x1.5	9.00	6x1.5
(e)	Small Hydro		14.85	14.85
	Total Hydro		434.85	434.85
(f)	THERMAL			
	Kota TPS	2x110+3x210	850.00	2x110+3x210
(g)	Suratgarh TPS	4x250	1000.00	4x250
(g)	Ramgarh GT	1x3	3.00	1x3
(i)	Ramgarh GT EXT.	1x35.5	35.50	1x35.5
	Total Thermal		1888.50	1888.50
(J)	Wind farm		14.01	14.01
	Total Rajasthan		2337.36	2337.36

10	UP				
	HYDRO				
(a)	Rihand	6x50.0	300.00	6x50.0	300.00
(b)	Obra	3x33.0	99.00	3x33.0	99.00
(c)	Matatilla	3x10.0	30.00	3x10.0	30.00
(d)	Ganga Canal				
	Bhola	4x.375+2x.6+		4x.375+2x.6+	
	Salara	2x1.5+		2x1.5+	
	Nirgazni	2x2.5	10.70	2x2.5	10.70
(e)	Khara	3x24.0	72.00	3x24.0	72.00
(f)	Sobla & small hydro	6 +12.2	18.20	6 +12.2	18.20
	Total Hydro		529.90		529.90
	THERMAL				
(g)	Obra	5x50	250.00	4x40	160.00
(h)	Obra Extn. - I	3x100	300.00	3x94	282.00
(i)	Obra Extn. - II	5x200	1000.00	5x200	1000.00
(j)	Panki	1x32	32.00	1x32	32.00
(k)	Panki Extn.	2x110	220.00	2x105	210.00
(l)	Harduaganj - A	3x30	90.00	0	0.00
(m)	Harduaganj - B	2x50+2x60	220.00	1x40+2x55	150.00
(n)	Harduaganj - C	2x60+1x110	230.00	2x60+1x105	225.00
(o)	Paricha	2x110	220.00	2x110	220.00
(p)	Anpara - A	3x210	630.00	3x210	630.00
(q)	Anpara - B	2x500	1000.00	2x500	1000.00
	Total Thermal		4192.00		3909.00
	Total UP		4721.90		4438.90
11	UTTRANCHAL				
	HYDRO				
(a)	Khatima	3x13.8	41.40	3x13.8	41.40
(b)	Ramganga	3x66.0	198.00	3x66.0	198.00
(c)	Ganga Canal				
	Chitwa	2x1.5+		2x1.5+	
	Mohamedpur	3x3.1+		3x3.1+	
	Pathri	3x6.8	32.70	3x6.8	32.70
(d)	Yamuna (I & IV)				
	- Dhalipur	3x17.00+		3x17.00+	
	- Dhakrani	3x11.25+		3x11.25+	
	- Kulhal	3x10.00	114.75	3x10.00	114.75
(e)	Chibro	4x60.0	240.00	4x60.0	240.00
(f)	Khodri	4x30.0	120.00	4x30.0	120.00
(g)	Chilla	4x36.0	144.00	4x36.0	144.00
(h)	Maneri Bhali	3x30.0	90.00	3x30.0	90.00
	Total Hydro		980.85		980.85
	Total Region (1 to 11)		28641.93		28129.77

SUMMARY OF THE EFFECTIVE GENERATING CAPACITY(MW)

Agency / Source	Hydro	Thermal	Gas/Diesel/Wind	Nuclear	Total	% of Total
NTPC	0.00	5825.00	2344.04	0.00	8169.04	29.04%
NHPC	1984.20	0.00	0.00	0.00	1984.20	7.05%
NPC	0.00	0.00	0.00	1180.00	1180.00	4.19%
BBMB	2864.15	0.00	0.00	0.00	2864.15	10.18%
CHANDIGARH	0.00	0.00	1.40	0.00	1.40	0.00%
DELHI	0.00	396.50	498.00	0.00	894.50	3.18%
HARYANA	48.00	1025.00	25.20	0.00	1098.20	3.90%
HIMACHAL	412.20	0.00	0.00	0.00	412.20	1.47%
J&K	311.69	0.00	182.18	0.00	493.87	1.76%
PUNJAB	1145.10	2130.00	0.00	0.00	3275.10	11.64%
RAJASTHAN	434.85	1850.00	52.51	0.00	2337.36	8.31%
UP	529.90	3909.00	0.00	0.00	4438.90	15.78%
UTTRANCHAL	980.85	0.00	0.00	0.00	980.85	3.49%
Total	8710.94	15135.50	3103.33	1180.00	28129.77	100.00%
% of TOTAL	30.97%	53.81%	11.03%	4.19%	100.00%	

Notes The above table does not take into account the shares of a state in power stations located in the neighbouring state. Such details are :

- (i) Haryana has one-third share in unit Nos. 2, 3, 4 at Indraprastha power stations of DVB viz. 62.5 MW.
- (ii) HP has 25 % share in the Dhalipur, Dhakrani, Chibro and Khodri power houses of Uttranchal viz. 111.20 MW and 20 % share in the Kulhal and Khara hydro power houses viz. 20.40 MW. However, these shares are limited to actual physical drawals over designated transmission lines.
- (iii) HP has a fixed energy share every month in the Shanani Power House of PSEB. 0.38 LU/Day to 2.22 LU/Day.
- (iv) HP has 4.6 % share in Ranjit Sagar Dam project of PSEB viz. 27.60 MW.
- (iv) The shares of Rajasthan in Chambal and Satpura projects are as under :

CHAMBAL

PROJECT	LOCATED	INSTALLED CAPACITY (MW)
Gandhi Sagar	M.P.	5 x 23 = 115
Rana Pratap Sagar	Rajasthan	4 x 43 = 172
Jawahar Sagar	Rajasthan	3 x 33 = 99
	Total	386

Rajasthan has 50 % share in the Chambal Projects viz. 193 MW.

SATPURA

PROJECTS	LOCATED	INSTALLED CAPACITY (MW)
Satpura TPS	M.P.	5x62.5+200.0+3x210.0 = 1142.50

Rajasthan has 40 % share in the first five units of Satpura TPS viz 125 MW.

II. BREAKUP OF HYDRO CAPACITY (MW) IN NORTHERN REGION AS ON 31.12.2002

Agency / Source	Run-of -the -river	Reservoir	Total
NHPC	1444.20	540.00	1984.20
BBMB	1155.15	1709.00	2864.15
DELHI	0.00	0.00	0.00
HARYANA	48.00	0.00	48.00
HP	412.20	0.00	412.20
J&K	311.69	0.00	311.69
PUNJAB	545.10	600.00	1145.10
RAJASTHAN	262.85	172.00	434.85
UP	229.90	300.00	529.90
UTTRANCHAL	782.85	198.00	980.85
TOTAL	5191.94	3519.00	8710.94
PERCENTAGE	59.60%	40.40%	100%

III. Frequency Profile During December 2002

Date	% of Time Frequency								
	< 48.00	< 48.50	< 49.00	<49.50	49.0-50.5	> 50.00	> 50.50	> 51.00	>51.50
01	0.00	0.00	1.12	8.07	80.52	66.77	18.36	2.13	0.00
02	0.00	0.00	1.59	13.32	93.85	51.55	4.56	0.00	0.00
03	0.00	0.00	0.31	19.27	93.23	39.88	6.46	0.13	0.00
04	0.00	0.17	3.52	19.47	94.18	37.89	2.30	0.00	0.00
05	0.00	0.00	0.77	12.37	92.55	48.70	6.68	0.29	0.00
06	0.00	0.00	02.89	29.52	95.17	25.47	01.94	0.00	0.00
07	0.00	0.48	6.34	26.41	91.70	25.21	1.97	0.00	0.00
08	0.00	0.00	0.00	9.47	81.64	54.40	17.58	0.30	0.00
09	0.00	0.00	01.24	13.23	84.60	47.88	14.15	01.05	0.00
10	0.00	0.33	3.06	31.85	93.76	37.29	3.19	0.33	0.00
11	0.00	0.33	2.49	25.64	95.00	28.12	2.51	0.00	0.00
12	0.00	0.22	0.90	11.26	92.58	41.07	6.52	0.52	0.00
13	0.00	0.04	2.85	19.13	91.12	34.10	6.04	0.37	0.00
14	0.00	0.11	0.44	14.69	91.35	46.27	8.21	0.49	0.00
15	0.00	0.00	0.00	10.33	92.94	58.29	07.06	00.50	0.00
16	0.00	00.71	05.09	31.82	93.80	33.76	01.11	0.00	0.00
17	0.00	00.37	03.81	31.13	95.41	26.49	00.79	0.00	0.00
18	0.00	0.08	1.28	18.00	97.05	35.13	1.67	0.00	0.00
19	0.00	0.26	1.32	14.49	89.07	48.69	9.62	0.24	0.00
20	0.00	0.00	2.31	19.00	92.22	36.68	5.47	0.21	0.00
21	0.00	0.00	0.64	18.17	94.00	36.94	5.35	0.65	0.00
22	0.00	0.00	0.00	8.13	82.56	65.42	17.44	0.56	0.00
23	0.00	0.06	6.38	30.85	74.60	45.04	19.02	1.92	0.00
24	0.00	0.00	02.48	15.10	90.38	48.60	07.14	00.32	0.00
25	0.00	0.00	0.62	8.95	73.41	62.15	25.97	0.89	0.00
26	0.00	0.04	3.94	27.58	75.52	43.06	20.54	4.31	0.00
27	0.00	0.18	2.32	21.00	89.40	44.00	8.28	0.00	0.00
28	0.00	0.00	01.54	13.05	87.58	53.02	10.88	0.00	0.00
29	0.00	0.00	0.59	15.29	90.72	52.41	8.69	0.04	0.00
30	0.00	00.03	01.82	11.46	77.66	54.52	20.52	01.65	0.00
31	0.00	0.00	01.21	09.75	59.35	67.53	39.44	17.63	0.00
Max	0.00	0.48	6.38	31.85	97.05	67.53	39.44	17.63	0.00
Min	0.00	0.00	0.00	8.07	59.35	25.21	1.67	0.00	0.00
Average	0.00	0.09	2.03	18.01	87.72	45.98	11.21	1.42	0.00

Frequency (Hz)				Average Frequency	Frequency Variation Index
Maximum		Minimum			
Freq	Time	Freq	Time		
51.28	17.04	48.72	11.47	50.13	2.01
50.92	5.39	48.64	6.25	49.96	1.45
51.08	21.51	48.84	18.41	49.88	1.69
50.88	17.39	48.40	17.22	49.82	1.92
51.04	22.05	48.60	6.44	49.95	1.54
50.68	17.09	48.72	10.04	49.72	2.28
50.80	18.59	48.16	18.05	49.71	2.62
51.08	5.36	49.02	12.20	50.09	2.09
51.22	17.06	48.83	17.09	49.98	2.04
51.24	17.05	48.40	18.08	49.78	2.56
50.88	13.06	48.36	6.47	49.75	2.17
51.08	18.25	48.36	18.15	49.92	1.44
51.08	17.07	48.48	11.20	49.84	1.96
51.20	0.17	48.28	20.19	49.93	1.69
51.24	17.12	49.00	10.04	50.02	1.33
50.76	19.03	48.24	15.16	49.72	2.65
50.84	21.59	48.32	18.11	49.69	2.53
50.80	17.03	48.42	18.14	49.81	1.53
51.16	7.02	48.44	18.17	49.95	1.81
51.08	7.06	48.56	6.36	49.84	1.98
51.08	16.05	48.88	22.42	49.88	1.59
51.08	17.11	49.04	10.09	50.11	1.71
51.40	0.20	48.62	8.38	49.87	3.81
51.24	23.18	48.52	12.28	49.93	1.81
51.12	23.54	48.72	08.35	50.15	2.35
51.32	4.08	48.48	18.19	49.92	3.68
50.96	4.09	48.20	10.09	49.88	2.15
50.84	4.09	48.56	9.04	49.99	1.75
51.04	18.04	48.92	18.42	49.95	1.83
51.20	23.40	48.48	11.06	50.06	2.34
51.44	3.13	48.68	22.30	50.31	4.67
51.44		49.04		50.31	4.67
50.68		48.16		49.69	1.33
51.07		48.58		49.92	2.15

IV. Voltage Profile

Date	400 KV Dadri Voltage (KV)				400 KV Kanpur Voltage (KV)				220 KV BTPS Voltage (KV)				400 KV Moga Voltage (KV)			
	Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum	
	Voltage	Time	Voltage	Time	Voltage	Time	Voltage	Time	Voltage	Time	Voltage	Time	Voltage	Time	Voltage	Time
01	414	04.10	384	17.15	411	23.28	382	11.54	216	04.08	202	18.19	420	23.25	388	15.26
02	416	04.12	386	18.20	411	01.47	384	18.21	215	00.11	197	18.19	411	01.27	379	18.18
03	415	01.42	384	06.40	410	01.40	382	06.49	214	00.27	198	06.52	417	23.26	386	17.49
04	412	22.59	382	11.23	410	23.19	382	06.13	211	01.00	197	11.00	410	09.04	386	17.26
05	416	04.08	384	18.21	411	02.54	382	18.29	211	01.00	197	11.00	413	04.07	382	17.47
06	418	04.11	386	09.59	411	23.00	384	09.50	212	02.00	201	19.00	412	04.10	382	18.13
07	416	04.30	388	10.11	411	00.47	386	17.47	212	02.00	200	11.00	410	08.04	386	12.51
08	416	21.59	388	18.13	411	23.28	386	11.47	210	11.14	203	12.18	409	23.01	388	12.19
09	418	04.14	388	06.58	413	04.25	389	06.58	208	00.58	195	18.08	415	04.09	383	18.08
10	419	03.41	386	06.55	413	22.59	386	06.56	209	04.05	192	18.11	409	04.07	384	10.59
11	416	04.10	386	18.22	413	04.29	389	18.23	212	04.14	191	18.51	410	04.10	379	16.43
12	414	01.28	382	18.14	410	01.27	380	18.15	213	04.13	195	18.16	411	04.28	379	18.15
13	414	04.22	396	07.00	410	22.56	384	18.13	213	04.22	194	18.11	408	22.57	381	18.11
14	418	03:59	384	10:29	411	03:59	382	18:30	215	04:02	195	10:30	419	04:01	386	18:23
15	414	02.29	384	10.22	410	00.59	384	10.29	213	02.29	198	10.28	408	02.32	386	18.22
16	416	01.00	382	10.08	411	00.58	382	15.15	213	01.00	196	10.08	409	00.58	382	10.25
17	414	00.59	382	16.21	410	00.59	382	18.13	214	04.28	196	18.12	409	04.22	381	16.20
18	412	02.03	382	18.15	410	00.53	382	18.14	214	23.59	196	18.12	416	21.59	378	18.15
19	416	21.49	382	18.17	410	02.15	380	18.19	214	00.42	190	18.17	411	08.24	379	18.18
20	418	00.45	388	09.15	411	00.59	386	09.12	215	02.46	198	18.20	411	02.45	381	12.41
21	416	04.13	384	09.59	411	16.24	386	09.20	212	00.59	196	18.17	408	16.03	383	10.30
22	418	01.59	388	10.14	413	17.29	393	10.14	215	04.07	201	10.14	411	01.47	386	18.19
23	418	01:57	380	11:26	419	04:31	386	17:00	215	00.18	0	08:17	411	04:29	0	08:52
24	416	23.16	388	07.28	411	23.16	384	12.28	213	23.59	197	11.24	409	20.32	382	16.53
25	416	01:29	388	10:17	413	01:26	391	11:53	213	01:29	201	10:17	409	01:21	383	10:16
26	426	04.15	380	14.59	422	04.08	384	14.19	216	04.16	196	16.57	406	23.59	376	14.37
27	418	01.12	380	10.02	413	00.55	388	10.01	215	03.34	194	09.50	410	01.03	376	10.01
28	416	01.56	388	18.29	413	01.28	389	18.29	214	04.21	198	10.37	400	23.51	390	22.16
29	414	01.53	388	18.24	411	00.59	388	18.23	213	00.58	201	18.21	405	12.46	378	18.22
30	413	00.57	386	09.41	412	00.54	404	09.33	214	01.43	197	09.48	405	02.11	382	10.07
31	428	04.52	386	18.25	424	03.54	397	18.29	220	04.11	200	18.29	409	08.00	386	18.00
Max	428		396		424		404		220		203		420		390	
Min	412		380		410		380		208		0		400		0	

V. Regional Power Supply Position

(All Figs In MUs)

Date	Availability (Gross) MW	Peak Hrs. Requirement MW	Shortage/ Restriction MW	Availability (Gross) MW	Off Peak Hrs. Requirement MW	Shortage/ Restriction*	Regional Availability MU
01	18163	19910	1747	16004	16194	190	363
02	18812	20404	1592	15597	15787	190	372
03	18184	20406	2222	15788	15978	190	372
04	18271	20660	2389	15697	15887	190	376
05	18967	20690	1723	15548	16668	1120	380
06	18747	21130	2383	16442	16632	190	372
07	18318	20818	2500	15744	16304	560	374
08	18957	20744	1787	15651	16011	360	373
09	18919	21252	2333	15544	15904	360	374
10	18594	20978	2384	15849	16209	360	373
11	19240	21455	2215	15331	15891	560	373
12	19322	20905	1583	15762	16322	560	383
13	19068	21238	2170	16125	17035	910	385
14	18603	20276	1673	15835	16375	540	378
15	19077	20538	1461	15943	16133	190	378
16	18918	20845	1927	15545	15735	190	378
17	18856	20907	2051	15752	15942	190	376
18	18971	20978	2007	15991	16181	190	373
19	19346	21438	2092	15757	15857	100	374
20	19092	21254	2162	15602	15792	190	377
21	19007	20967	1960	15861	16051	190	389
22	19058	20978	1920	15777	16137	360	375
23	17400	20370	2970	15275	15935	660	311
24	18466	20644	2178	15136	15496	360	367
25	18954	20660	1706	14638	14738	100	373
26	18593	20693	2100	14636	14736	100	357
27	19148	21329	2181	15163	15523	360	386
28	19218	20834	1616	15577	15937	360	385
29	19200	20548	1348	15213	15778	565	377
30	19490	20995	1505	15642	16132	490	381
31	18370	19321	951	14130	14475	345	328
Maximum	19490	21455	2970	16442	17035	1120	389
Minimum	17400	19321	951	14130	14475	100	311
Average	18817	20780	1962	15566	15928	362	372

Note: * Shortage / Restriction figures are as given by the constituents.

VI. Daily Peak/Off-Peak Demand Met By Constituents (Sheet 1 of 2)

State	Punjab		Haryana		Rajasthan		Delhi		Uttar Pradesh	
Date	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
01	2849	2527	2641	1972	2988	2958	2394	1193	5024	4865
02	3098	2451	2453	1781	3269	2873	2536	1190	4344	4585
03	3016	2510	1953	1865	3143	3006	2489	1174	3821	4793
04	2914	2581	2565	1936	3369	2833	2351	1191	4039	5045
05	3142	2549	2387	1963	3365	2913	2547	1209	4353	4107
06	3552	2490	2481	1988	3453	2863	2304	1301	4285	5011
07	3275	2586	2145	1916	3235	2959	2116	1222	4293	4544
08	2998	2501	2553	1921	3284	2903	2429	1247	4088	4395
09	3274	2371	2324	1828	3339	2958	2422	1220	4170	4451
10	3112	2555	2455	1898	3292	3010	2505	1238	4042	4485
11	3337	2576	2602	1689	3314	2938	2094	1216	4339	4317
12	3461	2474	2076	2004	3265	2994	2512	1173	4588	4478
13	3372	2477	2457	1946	3394	2938	2563	1266	4222	4735
14	3357	2365	2119	1868	3034	2993	2445	1255	4503	4724
15	3316	2410	2440	1959	3250	2872	2428	1235	4377	4613
16	3032	2482	2036	1890	3058	2854	2496	1193	4629	4578
17	3396	2473	1849	2149	3359	2939	2440	1188	4644	4579
18	3152	2392	2325	2085	3225	2960	2386	1232	4359	4919
19	3437	2408	2134	1854	3313	3000	2361	1171	4706	4599
20	3157	2258	2603	1975	3352	2945	2382	1237	4424	4336
21	3150	2332	2426	2058	3259	2991	2444	1160	4432	4920
22	3129	2257	2435	2036	3258	3072	2418	1255	4410	4477
23	2401	2132	2028	2047	3021	2921	2443	1227	4416	4470
24	2962	2156	2268	1889	3253	2925	2398	1207	4637	4121
25	3075	1946	2235	1881	3279	3023	2471	1222	4263	4069
26	2889	2271	2244	1491	3299	2949	2440	1238	4520	4283
27	3174	2172	2365	1908	3085	2965	2478	1270	4587	4378
28	3123	2215	2569	1891	3240	2811	2507	1236	4450	4505
29	3188	2361	2525	2021	3028	2468	2497	1278	4391	4555
30	3127	2260	2343	1934	3245	3040	2588	1267	4706	4521
31	3045	2215	1841	1654	2577	2214	2577	1212	3890	4156
Maximum	3552	2586	2641	2149	3453	3072	2588	1301	5024	5045
Minimum	2401	1946	1841	1491	2577	2214	2094	1160	3821	4069
Average	3145	2379	2319	1913	3221	2906	2434	1223	4386	4536

VI. Daily Peak/Off-Peak demand Met By Constituents (Sheet 2 of 2)

State	Uttaranchal		Chandigarh		Himachal Pradesh		Jammu & Kashmir	
Date	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
01	573	348	100	90	493	270	840	743
02	579	346	100	90	506	262	860	763
03	601	308	100	90	494	280	853	747
04	617	337	100	90	461	278	910	773
05	594	352	100	90	509	270	910	773
06	553	314	100	90	502	293	870	760
07	616	348	100	100	492	300	712	833
08	603	322	100	100	391	285	712	833
09	599	346	100	100	506	274	850	750
10	599	346	110	90	488	271	845	785
11	591	324	110	90	519	281	844	851
12	611	311	100	90	515	279	873	872
13	580	317	100	90	514	262	980	820
14	570	345	100	90	511	269	860	739
15	556	359	100	90	504	276	857	741
16	616	311	100	90	488	264	896	737
17	623	324	100	90	522	279	894	728
18	524	321	100	90	517	268	894	728
19	607	280	100	90	486	265	812	759
20	550	298	100	90	495	277	812	759
21	575	327	100	90	501	284	819	802
22	585	338	100	90	636	297	888	802
23	557	322	100	90	518	268	819	802
24	594	351	100	90	521	282	850	760
25	599	313	100	90	635	258	850	760
26	599	313	100	90	635	258	864	782
27	616	358	100	90	673	328	828	815
28	625	327	100	90	520	325	852	811
29	625	356	100	90	496	287	811	837
30	626	322	100	90	581	296	811	837
31	558	355	100	90	696	323	877	765
Maximum	626	359	110	100	696	328	980	872
Minimum	524	280	100	90	391	258	712	728
Average	591	330	101	91	527	281	850	783

VII Daily Energy Consumption By Constituents

(All Figs In MUs)

Date	Punjab	Haryana	Rajasthan	Delhi	UP	Uttaranchal	Chandigarh	HP	J & K	Total
01	62.863	45.692	67.172	45.088	104.986	9.886	2.320	9.131	19.174	366.282
02	62.796	46.953	67.106	46.254	101.163	10.010	2.540	8.928	18.956	364.456
03	63.817	48.974	66.263	45.887	100.988	10.042	2.610	9.222	19.208	366.691
04	65.702	47.604	66.922	45.807	101.807	10.586	2.650	8.978	19.514	369.210
05	66.528	48.022	68.171	47.283	103.519	10.507	2.620	9.513	18.761	374.593
06	65.817	49.015	68.036	45.424	108.010	10.410	2.550	9.480	18.761	377.243
07	65.465	47.394	67.715	44.594	99.599	10.031	2.580	9.543	18.742	365.372
08	63.082	46.787	70.559	45.311	101.592	10.204	2.350	9.423	19.557	368.805
09	65.069	46.078	68.406	46.337	100.708	10.380	2.610	9.400	18.964	367.631
10	64.490	47.931	67.828	47.660	96.404	10.380	2.730	9.348	19.131	365.461
11	65.172	45.892	69.258	46.913	96.490	10.333	2.780	9.376	19.496	365.219
12	66.131	49.992	66.740	47.513	101.958	10.025	2.740	9.441	19.566	373.655
13	64.922	51.008	71.569	47.818	105.443	10.248	2.760	9.343	19.741	382.382
14	66.167	50.048	72.604	46.196	103.565	10.338	2.650	8.935	18.656	378.798
15	63.810	49.734	68.817	45.900	107.849	10.385	2.410	8.700	18.843	376.329
16	63.254	46.851	67.620	46.910	103.760	10.450	2.290	9.466	19.101	369.702
17	61.689	46.596	68.198	46.474	102.110	10.046	2.740	9.281	18.904	365.587
18	61.938	47.099	70.611	46.262	103.938	10.046	2.720	9.338	18.884	370.406
19	62.169	49.882	65.723	46.583	109.849	10.135	2.700	9.711	18.025	374.368
20	61.181	48.909	68.945	47.055	108.579	9.520	2.690	9.651	19.092	375.223
21	61.126	52.201	73.179	46.108	104.499	10.074	2.700	9.273	19.020	377.770
22	59.559	50.034	69.087	43.613	104.095	10.879	2.650	10.457	19.020	369.034
23	39.451	38.237	65.015	36.221	98.805	9.529	2.420	8.445	15.160	313.152
24	55.150	43.433	67.563	50.595	101.830	10.752	2.230	10.465	19.122	361.200
25	58.282	47.171	68.051	46.598	98.969	10.192	2.840	9.408	19.122	360.083
26	55.080	37.185	66.313	48.656	96.589	10.697	2.650	9.786	19.135	345.731
27	58.983	48.864	72.094	49.199	99.465	10.399	2.730	11.367	19.727	372.389
28	60.771	50.076	69.023	47.976	104.294	10.569	2.710	10.335	20.100	375.435
29	58.633	47.719	68.110	47.234	104.206	10.532	2.480	9.720	19.746	368.191
30	60.750	48.946	67.131	49.522	106.468	10.674	2.750	10.049	19.746	375.577
31	60.659	33.966	54.193	46.560	87.603	10.004	2.980	11.858	19.805	326.938
Maximum	66.528	52.201	73.179	50.595	109.849	10.879	2.980	11.858	20.100	382.382
Minimum	39.451	33.966	54.193	36.221	87.603	9.520	2.230	8.445	15.160	313.152
Average	61.629	47.042	68.001	46.437	102.230	10.267	2.619	9.593	19.058	366.546
Month Total	1910.507	1458.291	2108.020	1439.550	3169.141	318.263	81.180	297.369	590.783	11362.914

VIII. Schedule VS Actual Drawals of Northern Regional Constituents (Sheet 1 of 2)

Date	Punjab		Haryana		Rajasthan		Delhi		Uttar Pradesh		Uttaranchal	
	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual
1-Dec-2002	21587	24916	21803	20423	29335	28244	22787	24179	45023	42340	4334	4713
2-Dec-2002	21523	22766	21487	21727	28191	27841	23034	23734	45288	43836	4530	4676
3-Dec-2002	21310	21921	21335	18627	27039	27600	21504	23485	45333	42406	4371	4913
4-Dec-2002	21257	22884	20723	20485	26522	25057	22955	24124	43974	39706	4250	5261
5-Dec-2002	21753	23718	21372	22198	28142	27391	23492	24050	44894	40168	4184	5296
6-Dec-2002	21665	22892	20898	20164	26568	28408	23456	23171	44746	43819	4193	5187
7-Dec-2002	20593	22657	21437	23139	27360	26974	24203	23286	45008	44298	4677	5083
8-Dec-2002	20665	21597	21587	25647	29710	27461	25193	22756	45419	44368	4924	5727
9-Dec-2002	20981	21846	20564	24771	28775	26347	25400	24143	45645	43189	4835	5885
10-Dec-2002	20797	20628	21078	25338	28489	26498	27696	25378	44569	45858	4660	5866
11-Dec-2002	21426	20924	21937	25293	28876	26550	27747	24752	44460	48770	4617	5021
12-Dec-2002	22174	23190	22064	25004	28801	27580	27694	24746	46372	47179	4470	4445
13-Dec-2002	22958	24784	22813	26188	30253	27329	26844	23832	46224	45029	4040	4445
14-Dec-2002	21961	24066	20779	25965	28534	26928	24623	22395	44402	38932	3733	4459
15-Dec-2002	21025	21721	20018	26574	27590	27600	24154	21400	45432	39207	4294	4277
16-Dec-2002	22152	22194	20261	27871	28346	27931	24378	20765	45428	39396	3949	4114
17-Dec-2002	22532	22776	20376	29238	28981	27125	24447	21047	45400	38241	4835	5199
18-Dec-2002	22370	24519	20182	24250	28682	27949	24082	20663	45581	38094	4838	5738
19-Dec-2002	22279	24055	19979	25743	28706	27919	24450	21762	45916	36596	4825	5761
20-Dec-2002	22451	23463	20100	28087	28915	27609	24240	22345	45854	36867	4413	4864
21-Dec-2002	23001	24231	21428	28585	28796	28918	24840	20839	44054	36644	4454	4772
22-Dec-2002	21948	25144	21488	27728	27945	27426	24851	22479	43714	35833	4628	5764
23-Dec-2002	20476	15807	20295	24718	26224	29398	23359	15206	39043	32396	3879	4623
24-Dec-2002	21453	19754	20545	23022	26762	26123	25495	26599	42077	33161	4829	5674
25-Dec-2002	21348	23713	20101	23885	26319	28155	23835	23125	42261	33755	4650	5571
26-Dec-2002	20205	15649	20257	24032	26319	25718	23521	24365	40734	37887	4519	5831
27-Dec-2002	21597	19443	21223	26286	26662	26984	25272	25244	46886	41962	4735	5834
28-Dec-2002	21806	21489	21233	25449	27539	27834	25545	23733	47777	42988	4754	6002
29-Dec-2002	22022	18812	21907	23914	27931	35790	24437	22711	47538	40499	4850	5969
30-Dec-2002	22107	21896	21865	29380	28063	27119	25000	24839	48999	40678	5264	5769
31-Dec-2002	21040	29468	21926	16304	18748	20552	24563	24570	46916	36943	5353	5538
Total MU	670.462	692.923	653.061	760.035	859.123	850.358	763.097	715.723	1394.967	1251.045	140.887	162.277
Max. MWH	23001	29468	22813	29380	30253	35790	27747	26599	48999	48770	5353	6002
Min MWH	20205	15649	19979	16304	18748	20552	21504	15206	39043	32396	3733	4114
Avg. MWH	21628	22352	21066	24517	27714	27431	24616	23088	44999	40356	4545	5235

VIII. Schedule vs Actual Drawals of Northern Regional Constituents (Sheet 2 of 2)

Date	Himachal Pradesh		Jammu & Kashmir		Chandigarh		NFF		Railways	
	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual
1-Dec-2002	8217	7693	16195	18018	3048	2325	206	650	1758	1402
2-Dec-2002	7542	7863	15888	18197	2803	2543	206	614	1809	1281
3-Dec-2002	7532	7819	15872	18214	2848	2612	206	634	1423	1328
4-Dec-2002	6501	8383	15562	18346	2634	2653	206	640	1492	1344
5-Dec-2002	7066	8640	15831	18273	2662	2617	206	610	1484	1313
6-Dec-2002	7494	8527	15965	19263	2733	2552	206	622	1407	1297
7-Dec-2002	7523	8503	15907	18256	2713	2575	206	619	1686	1394
8-Dec-2002	7509	8274	15854	18612	2661	2345	206	629	1524	1475
9-Dec-2002	7315	8372	15824	18494	2429	2608	206	494	1531	1392
10-Dec-2002	7483	8235	15473	18222	2911	2726	206	403	1524	1311
11-Dec-2002	7507	8142	14730	18777	2730	2777	206	557	1524	1368
12-Dec-2002	7566	8350	14947	18552	2951	2743	206	626	1524	1356
13-Dec-2002	7543	8300	14933	18708	2773	2759	206	630	1524	1303
14-Dec-2002	7271	8115	14315	17961	2763	2645	206	638	1524	1392
15-Dec-2002	7368	8148	15509	18335	2920	2412	206	650	1524	1449
16-Dec-2002	7459	8614	15221	18251	2702	2744	206	629	1558	1541
17-Dec-2002	7400	8398	14404	18102	2661	2722	206	614	1464	1559
18-Dec-2002	7175	8646	14346	18610	2534	2695	206	613	1465	1448
19-Dec-2002	7072	8853	14440	17374	2533	2689	206	619	1464	1380
20-Dec-2002	7549	8851	14453	18413	2632	2696	206	610	1513	1284
21-Dec-2002	7359	8761	14416	18428	2889	2651	206	620	1464	1336
22-Dec-2002	7649	8501	15960	18060	2805	2416	206	624	1466	1475
23-Dec-2002	6915	7571	14111	14563	2684	2225	228	325	1418	1411
24-Dec-2002	7109	9051	13775	18190	2709	2837	228	376	1488	1378
25-Dec-2002	7446	8557	14945	17902	2779	2649	206	567	1541	1395
26-Dec-2002	7660	8833	15839	18417	2853	2731	228	541	1191	1314
27-Dec-2002	7771	9088	16658	18801	2860	2787	228	599	1488	1421
28-Dec-2002	7848	8999	16706	18693	2854	2713	228	609	1481	1466
29-Dec-2002	7940	8834	16792	18736	2816	2477	228	606	1488	1503
30-Dec-2002	8037	9260	17052	18925	2866	2750	228	604	1488	1561
31-Dec-2002	8090	9690	18181	18452	2881	2978	228	608	1449	1506
Total MU	231.916	263.871	480.104	566.145	85.637	81.652	6.562	18.180	46.684	43.383
Max. MWH	8217	9690	18181	19263	3048	2978	228	650	1809	1561
Min MWH	6501	7571	13775	14563	2429	2225	206	325	1191	1281
Avg. MWH	7481	8512	15487	18263	2762	2634	212	586	1506	1399

IX Schedule vs Actual Injection of ISGS (Sheet 1 of 3)

Date	Singrauli		Rihand		Dadri(T)		Unchahar-I		Unchahar-II		Dadri GPS	
	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual
1-Dec-2002	44040	44359	21840	21821	11944	13083	8040	8272	8082	8319	14035	13014
2-Dec-2002	44040	44354	21840	21892	13566	12752	8526	8549	8288	8415	16544	16653
3-Dec-2002	44040	44521	21840	21926	10785	8912	8829	8764	8768	9082	17301	17700
4-Dec-2002	44040	44564	21840	21912	12572	12674	8829	9022	8618	8792	14415	14632
5-Dec-2002	44040	44317	21840	21880	12533	12628	8494	8618	7631	8137	16450	16693
6-Dec-2002	40422	40804	21840	21936	12267	12892	8583	8819	7667	8524	15840	17170
7-Dec-2002	43140	43471	20496	19932	12565	13070	9075	9136	7752	8435	15820	16925
8-Dec-2002	44040	44309	20178	20304	12744	13155	9091	9090	8896	8850	17766	18010
9-Dec-2002	44040	44240	21840	21867	15566	15899	9077	9179	8751	8763	17632	18022
10-Dec-2002	39002	39283	21840	21861	16178	17087	9045	9096	8706	8824	17670	18077
11-Dec-2002	38585	38842	21840	21938	16267	17746	9050	9076	8830	9042	17747	18566
12-Dec-2002	43815	44202	21692	21900	16201	17067	8908	8913	8339	8703	17656	17938
13-Dec-2002	43815	44212	21692	21869	16182	16351	8710	8794	8367	8324	17850	18186
14-Dec-2002	43815	44177	21692	21774	16182	16403	4512	4551	7910	7929	17809	18139
15-Dec-2002	43815	44220	21692	21871	16182	16235	5985	5831	8024	8240	17545	17790
16-Dec-2002	43815	44223	21692	21880	16182	16819	8832	9017	8469	8934	17068	17279
17-Dec-2002	43815	44218	21692	21909	16111	16995	9108	9175	8663	9084	18061	18412
18-Dec-2002	44040	44246	21692	21930	16182	16816	8759	8783	8597	8903	18037	18281
19-Dec-2002	44040	44345	21692	21821	16267	16507	9091	9152	6158	6066	18056	18141
20-Dec-2002	44040	44364	21692	21855	16182	16653	9132	9205	4325	4287	18083	18378
21-Dec-2002	44040	44271	21692	21875	14905	15357	9108	9259	4370	4367	14281	14055
22-Dec-2002	44040	44284	21692	21609	14684	14912	7957	8172	3986	4096	17122	17141
23-Dec-2002	43956	40477	11309	10623	14557	15274	7799	8171	3953	3976	12572	7638
24-Dec-2002	44040	44224	16065	16103	15631	15889	8958	9058	4208	4210	13747	13681
25-Dec-2002	43703	43430	21224	21175	14642	14828	7803	7953	4058	4101	13403	13147
26-Dec-2002	39808	40217	19648	19894	14642	15141	7769	8414	7366	7759	10970	11780
27-Dec-2002	43648	43986	21396	21399	15544	15964	8858	9108	7786	8531	15071	15248
28-Dec-2002	42691	43098	21634	21646	16400	16560	8866	9054	8208	8551	17037	17269
29-Dec-2002	40846	41426	21403	21556	16117	16214	8954	9131	8376	8873	17795	18183
30-Dec-2002	43603	43976	21403	21219	16060	16471	8929	8937	8322	8527	17467	17573
31-Dec-2002	39016	39698	19582	19817	15385	14573	7520	7363	6722	7702	16644	15523
Total MU	1333.830	1340.358	649.510	650.994	461.225	470.927	262.197	265.662	228.196	236.346	507.494	509.244
Max. MWH	44040	44564	21840	21938	16400	17746	9132	9259	8896	9084	18083	18566
Min MWH	38585	38842	11309	10623	10785	8912	4512	4551	3953	3976	10970	7638
Avg. MWH	43027	43237	20952	21000	14878	15191	8458	8570	7361	7624	16371	16427

IX. Schedule vs Actual Injection of ISGS (Sheet 2 of 3)

Date	Anta GPS		Auraiya GPS		NAPS		RAPS-B		Bairasiul	
	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual
1-Dec-2002	6330	6361	9718	9582	10200	10090	8000	8483	475	534
2-Dec-2002	6342	6382	8119	8057	10176	10067	4800	4807	475	520
3-Dec-2002	6293	6330	7547	7573	10152	10046	4800	4828	475	548
4-Dec-2002	6299	6362	7500	7502	10080	10118	4800	4632	475	515
5-Dec-2002	6348	6403	7598	7657	10128	10130	8203	8370	475	533
6-Dec-2002	6344	6396	8228	8475	10200	10149	9600	9760	446	528
7-Dec-2002	6350	6368	8943	9064	10224	10071	9600	9722	387	505
8-Dec-2002	6219	6276	9796	9733	10224	10089	9600	9784	387	495
9-Dec-2002	6155	6233	9659	9523	10152	10189	9600	9786	446	507
10-Dec-2002	6043	6156	9616	9561	10152	10177	9600	9838	446	487
11-Dec-2002	6301	6349	9738	9692	10248	10132	9600	9881	416	501
12-Dec-2002	6076	6218	9767	9743	10224	10132	9600	9938	446	499
13-Dec-2002	6317	6350	9985	9923	10224	10086	9600	9963	446	490
14-Dec-2002	6316	6332	8868	8770	10200	10139	9600	9986	446	483
15-Dec-2002	6306	6343	9685	9349	10176	10176	9600	9968	446	503
16-Dec-2002	6273	6319	8878	8650	10176	10134	9600	9892	416	473
17-Dec-2002	6334	6325	9848	9820	10248	10101	9600	9892	446	452
18-Dec-2002	6328	6296	9552	9309	10200	10091	9600	9891	416	470
19-Dec-2002	6318	6304	13112	12991	10152	10119	9600	9929	475	527
20-Dec-2002	6289	6276	14722	14627	10176	10061	9600	9903	475	513
21-Dec-2002	6278	6293	14497	14479	10152	10124	9600	9938	431	491
22-Dec-2002	6058	6063	14265	14265	10152	10220	9600	10019	416	483
23-Dec-2002	6104	6212	14249	13909	10200	10161	9600	9947	505	479
24-Dec-2002	6275	6379	14620	14579	10272	10170	9600	10004	416	459
25-Dec-2002	6255	6127	14291	13950	10248	10229	9600	10072	416	470
26-Dec-2002	6244	6200	12231	12716	10248	10157	9600	9942	417	451
27-Dec-2002	6269	6287	14136	13992	10296	10221	9600	9901	446	447
28-Dec-2002	6326	6376	14420	14076	10272	10244	9600	9968	387	434
29-Dec-2002	6858	6790	14300	14138	10296	10273	9600	10043	357	408
30-Dec-2002	8913	8870	14341	13999	10320	10315	9600	10059	357	402
31-Dec-2002	7834	7953	13470	12709	10320	10274	9600	10090	415	475
Total MU	198.995	199.929	345.699	342.413	316.488	314.685	280.203	289.236	13.478	15.082
Max. MWH	8913	8870	14722	14627	10320	10315	9600	10090	505	548
Min MWH	6043	6063	7500	7502	10080	10046	4800	4632	357	402
Avg. MWH	6419	6449	11152	11046	10209	10151	9039	9330	435	487

IX. Schedule vs Actual Injection of ISGS (Sheet 3 of 3)

Date	Salal		Tanakpur		Chamera		Uri		Bhakra Complex		Dehar		Pong	
	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual	Schedule	Actual
1-Dec-2002	2734	2823	816	849	4320	4410	1923	2123	19325	19398	3548	3399	3336	3205
2-Dec-2002	2646	2743	816	854	4095	4274	1923	2109	19349	19292	3548	3536	3336	3806
3-Dec-2002	2646	2737	848	893	2610	3037	1923	2081	19197	19146	3557	3528	3336	3431
4-Dec-2002	2646	2753	833	869	2340	2571	1865	2099	19155	19139	3289	3255	3436	3364
5-Dec-2002	2646	2744	840	868	2340	2517	1907	2112	19126	19106	3273	3208	3392	3292
6-Dec-2002	2540	2667	798	825	2340	2616	1795	2072	19133	19102	3378	3319	3559	3447
7-Dec-2002	2535	2634	800	821	2340	2516	1923	2134	19150	19132	2712	2781	3552	3440
8-Dec-2002	2355	2482	767	791	2340	2509	1823	2055	19220	19249	3019	2884	3350	3345
9-Dec-2002	2554	2641	782	801	2340	2482	1795	1974	18802	18636	3008	2954	3625	3542
10-Dec-2002	2474	2612	770	805	2340	2656	1852	2083	18555	18539	3140	3081	3536	3429
11-Dec-2002	2430	2591	732	772	2340	2655	1784	2021	18573	18555	3197	3141	3358	3272
12-Dec-2002	2535	2663	723	757	1890	1915	1769	1977	18618	18655	3026	2943	2963	3028
13-Dec-2002	2646	2754	721	752	1890	2027	1812	2054	19196	19185	3342	3038	3066	2963
14-Dec-2002	2428	2567	653	678	1890	1963	1823	2007	19477	19396	3035	2992	3011	2948
15-Dec-2002	2520	2665	720	756	1620	1760	1866	2068	19348	19258	3224	3181	3011	2955
16-Dec-2002	2520	2666	732	767	1620	1869	1838	2097	19338	19227	3597	3532	3091	3007
17-Dec-2002	2495	2616	720	751	1620	1813	1838	2057	19233	19288	3619	3522	2950	2580
18-Dec-2002	2435	2555	705	722	1620	1799	1851	2083	19233	19193	3619	3374	2538	2630
19-Dec-2002	2418	2545	682	722	1620	1698	1851	2120	18720	18740	2933	3233	2652	2576
20-Dec-2002	2505	2644	688	742	1620	1823	1925	2253	18528	18515	3356	3126	2983	2876
21-Dec-2002	2398	2526	696	765	1620	1781	2194	2425	20416	20184	3206	3438	2719	2174
22-Dec-2002	2510	2615	720	780	1620	1765	2249	2549	20416	20232	3206	2947	1636	1580
23-Dec-2002	2439	2448	720	776	1620	1924	2378	2060	20206	18918	2981	3367	1606	2739
24-Dec-2002	2355	2482	708	764	1868	2059	2171	2367	20206	20054	2981	2679	1606	857
25-Dec-2002	2415	2540	672	716	1620	1763	2157	2359	20206	20058	2539	2419	962	845
26-Dec-2002	2520	2629	720	771	4590	4549	2147	2298	20051	20081	2539	2505	962	906
27-Dec-2002	2364	2510	686	730	1755	1881	2186	2351	20051	19928	2539	2645	962	1143
28-Dec-2002	2280	2390	650	697	1260	1332	2129	2270	19935	20016	2906	2692	1112	1350
29-Dec-2002	2333	2395	709	743	1463	1529	2047	2183	20510	20398	2906	3219	1431	953
30-Dec-2002	2231	2219	696	689	1170	1249	2018	2144	20097	20046	2981	2879	1022	1327
31-Dec-2002	2363	2241	652	685	1710	1689	2036	2032	19896	19064	2749	1628	1412	965
Total MU	76.916	80.097	22.775	23.911	65.431	70.431	60.798	66.617	603.266	599.730	96.953	94.445	79.511	77.975
Max. MWH	2734	2823	848	893	4590	4549	2378	2549	20510	20398	3619	3536	3625	3806
Min MWH	2231	2219	650	678	1170	1249	1769	1974	18528	18515	2539	1628	962	845
Avg. MWH	2481	2584	735	771	2111	2272	1961	2149	19460	19346	3128	3047	2565	2515

X. Daily Generation Details of State Sector Stations

(All Figs In MUs)

Date	Punjab(T)	Punjab(H)	Haryana(T)	Haryana(H)	Rajasthan(T)	Rajasthan(H)	UP (T)	UP (H)	Uttaranchal(H)	Delhi	HP	J & K	Total
01	30.381	7.671	14.697	0.454	34.419	0.491	46.306	3.100	6.029	7.652	2.176	1.881	155.453
02	31.642	8.345	15.390	0.485	34.676	0.518	43.383	3.484	6.073	9.378	1.712	1.663	156.946
03	33.460	8.578	16.310	0.431	35.551	0.457	44.668	3.317	6.017	10.412	1.783	1.486	162.670
04	33.577	9.030	16.110	0.449	37.176	0.839	45.841	3.984	5.878	10.397	1.588	1.486	166.554
05	33.625	9.135	15.119	0.392	36.126	0.817	46.830	3.954	5.878	10.066	1.552	1.486	165.178
06	33.713	9.296	17.725	0.410	35.949	0.359	44.398	3.206	5.781	9.980	1.519	1.486	164.020
07	34.029	9.595	17.777	0.407	36.188	0.310	41.195	3.672	5.467	8.782	1.548	1.486	160.654
08	33.067	9.330	15.004	0.450	39.409	0.307	43.581	3.560	5.250	9.535	1.548	1.486	162.726
09	33.457	9.707	14.702	0.408	37.312	0.665	44.433	4.795	5.188	9.488	1.610	1.486	163.449
10	34.671	9.588	16.153	0.452	36.095	0.681	37.471	5.244	5.188	9.165	1.610	1.486	158.003
11	35.278	9.233	14.922	0.406	37.435	0.716	35.286	5.760	6.168	9.812	1.610	1.486	158.313
12	34.625	8.918	18.126	0.476	36.599	0.198	40.302	5.321	6.308	10.187	1.610	1.486	164.378
13	30.840	9.334	17.505	0.528	39.939	0.501	45.166	4.794	6.715	11.277	1.610	1.486	169.906
14	33.634	8.899	17.232	0.372	41.053	0.491	46.306	3.100	6.758	11.335	1.534	1.663	172.590
15	33.788	8.971	16.177	0.344	37.606	0.033	54.717	2.327	6.642	11.005	1.362	1.663	174.853
16	30.926	10.086	12.258	0.000	36.277	0.284	50.532	3.248	6.943	11.198	1.526	1.663	165.159
17	30.258	9.454	10.437	0.000	37.055	0.218	52.016	2.592	5.475	11.327	1.434	1.663	162.145
18	28.390	8.933	16.353	0.000	37.269	0.149	51.947	3.089	5.014	11.205	1.641	1.663	165.870
19	29.995	8.350	17.949	0.000	33.490	0.149	56.143	1.856	5.137	10.748	1.461	1.663	167.159
20	28.450	9.126	14.651	0.000	37.267	0.000	54.702	1.902	5.092	10.475	1.366	1.663	164.913
21	28.133	9.316	16.442	0.000	40.298	0.000	55.330	2.638	6.074	11.294	1.411	1.663	172.817
22	27.181	8.174	16.193	0.000	37.295	0.000	55.355	2.628	5.964	10.589	1.411	1.663	166.671
23	16.815	6.862	8.733	0.000	31.622	0.000	51.314	2.950	5.855	9.595	1.475	1.663	137.093
24	28.298	7.074	15.367	0.000	37.357	0.149	54.486	2.709	5.837	14.510	1.419	1.663	169.078
25	28.892	6.467	17.089	0.000	35.852	0.149	56.060	2.969	5.741	10.894	1.419	1.663	167.405
26	32.105	6.899	6.931	0.000	36.623	0.149	52.150	4.732	5.810	9.760	1.419	1.663	158.440
27	32.335	7.148	15.731	0.000	40.948	0.149	49.443	3.194	5.930	9.975	1.419	1.663	168.135
28	32.952	6.707	17.460	0.000	38.948	0.000	51.460	1.445	5.654	10.431	1.365	1.663	168.286
29	32.848	6.684	17.993	0.000	28.728	0.358	51.638	2.061	5.686	10.648	1.346	1.663	159.854
30	30.237	8.235	13.507	0.000	36.117	0.000	53.371	2.721	5.505	10.530	1.346	1.663	163.432
31	23.911	6.751	14.718	0.000	28.155	0.000	44.429	1.034	5.368	10.602	1.346	1.663	138.177
Maximum	35.278	10.086	18.126	0.528	41.053	0.839	56.143	5.760	6.943	14.510	2.176	1.881	174.853
Minimum	16.815	6.467	6.931	0.000	28.155	0.000	35.286	1.034	5.014	7.652	1.346	1.486	137.093
Average	31.016	8.448	15.315	0.209	36.414	0.295	48.395	3.270	5.820	10.395	1.522	1.607	162.914
Month Total	961.510	261.894	474.758	6.465	1128.836	9.134	1500.257	101.385	180.425	322.251	47.174	49.828	5050.329



XI. Performance Of Generating Stations

S.No.	Power Station	Effective Capacity MW	Energy Generated during Dec, 2002 (Ex Bus MU)	Cummulative from 01.01.2002 (Ex-bus MU)
1	CENTRAL SECTOR			
A	NTPC (Thermal)			
(a)	Badarpur TPS	705.00	400.28	3680.94
(b)	Singrauli STPS	2000.00	1340.36	11226.73
(c)	Rihand STPS	1000.00	650.994	5192.21
(d)	Dadri NCTPS	840.00	470.93	4233.66
(e)	Unchahar-I TPS	420.00	265.66	2052.38
(f)	Unchahar-II TPS	420.00	236.35	2070.27
(g)	Tanda TPS	440.00	133.84	1529.06
(h)	Anta GPS	419.33	199.93	1933.55
(i)	Auraiya GPS	663.36	342.41	3182.95
(j)	Dadri GPS	829.78	509.24	3766.81
(k)	Faridabad GPS	431.57	176.82	2006.64
	Total NTPC	8169.04	4726.82	40875.20
B	NHPC			
(a)	Bairasiul	180.00	15.08	526.42
(b)	Salal	690.00	80.10	2737.77
(c)	Tanakpur HPS	94.20	23.91	350.25
(d)	Chamera HPS	540.00	70.43	1908.63
(e)	Uri HPS	480.00	66.62	1961.26
	Total NHPC	1984.20	256.14	7484.32
C	NPC			
(a)	RAPS -A	300.00	92.49	1009.64
(b)	RAPS -B	440.00	289.24	2263.16
(c)	NAPS	440.00	314.69	2391.38
	Total NPC	1180.00	696.41	5664.18
2	JOINTLY OWNED (BBMB)			
(a)	Bhakra Complex	1490.15	599.73	5295.66
(b)	Dehar	990.00	94.45	2908.87
(c)	Pong	384.00	77.98	635.14
	Total BBMB	2864.15	772.15	8839.67
3	DELHI			
(a)	Indra Prastha	247.50	48.69	387.29
(b)	Rajghat	149.00	60.05	564.60
(c)	Gas Turbines	282.00	97.73	884.60
(d)	Pragati Gas	216.00	114.40	471.62
	Total DELHI	894.50	320.87	2308.10
4	HARYANA			
(a)	WYC	48.00	6.14	199.03
(b)	Faridabad (New)	165.00	78.41	632.93
(c)	Panipat	860.00	401.73	3207.88
(d)	Magnum Diesel(IPP)	25.20	0.00	59.04
	Total Haryana	1098.20	486.28	4098.88

contd/-

5	HP			
(a)	Giri	60.00	8.34	138.47
(b)	Bassi	60.00	7.42	247.71
(c)	Binwa	6.00	0.96	18.38
(d)	Rongtong (+Nogli+Micro+Thirot+Sal-2)	15.25	2.24	18.88
(e)	Andhra	16.95	2.23	63.25
(f)	Bhabha (H)	120.00	20.93	490.43
(g)	Baner (H)	12.00	0.97	26.36
(h)	Gaj (H)	10.50	0.94	31.52
(i)	Gumma	3.00	0.40	
(j)	Ghanvi	22.50	2.58	72.87
(k)	Malana (IPP)	86.00	0.00	310.03
	Total HP	412.20	46.99	1417.89
6	J & K			
(a)	Lower Jhelum	105.00	0.00	3.33
(b)	Upper Sindh	127.60	15.41	265.64
(c)	Ganderbal	15.00	1.50	18.41
(d)	Mohra	9.00	0.00	0.00
(e)	Chenani	32.80	2.09	54.33
(f)	Stakna	9.75	0.00	0.00
(g)	Small Hydel	3.54	0.00	0.00
(h)	Sewa	9.00	0.00	0.00
(i)	Diesel gen set	7.18	0.00	0.00
(j)	Pampore GT St - I	75.00	6.08	8.97
(k)	Pampore GT St - II	100.00	12.78	23.09
	Total J & K	493.87	37.86	373.76
7	PUNJAB			
(a)	Jogindernagar/ Shanan	110.00	11.18	426.92
(b)	UBDC	90.00	25.38	319.44
(c)	Mukerian	207.00	73.17	677.78
(d)	Anandpur Sahib (APS)	134.00	81.14	660.54
(e)	Ranjit Sagar HPS	600.00	71.46	919.74
(f)	Small Hydel	4.10	0.80	7.33
(g)	GNDTPS (Bhatinda)	440.00	190.67	1729.98
(h)	GGSTPS (Ropar)	1260.00	631.38	5875.09
(i)	Jhalkeri Rice Straw Fired	10.00	0.00	0.00
(j)	Lehra Mohabbat TPS	420.00	137.04	2016.52
	Total Punjab	3275.10	1222.21	12633.34
8	RAJASTHAN			
(a)	Mahi Bajaj Sagar	140.00	3.83	14.02
(b)	Rana Pratap Sagar (RPS)	172.00	2.00	8.06
(c)	Jawahar Sagar (JS)	99.00	1.38	14.84
(d)	Anoopgarh	9.00	0.67	3.89
(e)	Small Hydro	14.85	1.47	4.05
(f)	Kota TPS	850.00	554.39	4323.86
(g)	RAMGARH GT	3.00	0.00	
(h)	RAMGARH GT EXT	35.50	19.69	155.34
(i)	Suratgarh TPS	1000.00	653.28	4776.65
(j)	Wind Farm	14.01	1.69	35.50
	Total Rajasthan	2337.36	1238.39	9336.21

contd/-

9	U.P.			
	<u>HYDRO</u>			
(a)	Rihand	300.00	50.87	457.67
(b)	Obra	99.00	19.97	189.27
(c)	Matatilla	30.00	12.25	83.68
(d)	Ganga Canal	10.70		
(e)	Small hydro	18.20		
(f)	Khara	72.00	17.59	350.45
	Total U.P. (Hydro)	529.90	100.69	1081.08
	<u>THERMAL</u>			
(e)	Obra	1442.00	471.52	4247.03
(f)	Panki	242.00	91.01	611.55
(g)	Harduaganj	375.00	67.68	558.62
(h)	Paricha	220.00	41.43	578.22
(i)	Anpara	1630.00	744.49	7662.18
	Total U.P. (Thermal)	3909.00	1416.13	13657.60
	Total U.P.	4438.90	1516.81	14738.68
10	UTTRANCHAL			
(a)	Khatima	41.40	10.74	130.09
(b)	Ramganga	198.00	18.01	99.87
(c)	Ganga Canal	32.70	12.41	106.59
(d)	Yamuna (I & IV)	114.75	24.13	511.87
(e)	Chibro	240.00	31.54	760.23
(f)	Khodri	120.00	15.46	352.72
(g)	Chilla	144.00	33.85	534.37
(h)	Maneri Bhali	90.00	34.48	369.31
	Total Uttranchal	980.85	180.62	2865.05
11	CHANDIGARH			
	Diesel gen set	1.40		
	Total Region	28129.77	11501.55	110635.29

Notes : 1. The ex-bus generations are either actual values or based on the following assumptions in respect of auxiliary consumption

-----Hydro and diesel/gas power stations in open cycle-----1.0%

-----Gas power stations in combined cycle-----3.0%

-----Coal fired power stations

IP ----12% Rajghat----11% Faridabad----13.5% Suratgarh----10.0%

Panipat----12.0% RTP----7.5% GNDTP----10.5% Tanda----12.5%

Lehra Mohabbat----10.5% KTPS----10% UP----12.5%

XII. Inter Regional Exchanges During December 2002 (Sheet 1 of 2)

1 OF 2

Date	Wiith WR Over Vindhyachal HVDC B/B {Export (-)/Import(+)}							With WR Over Auraiya - Malanpur {Export(-)/Import(+)}						
	Peak MW	Off Peak MW	Max Import	Max Export	Energy Import	Energy Export	Net	Peak MW	Off Peak MW	Max Import	Max Export	Energy Import	Energy Export	Net
	MW	MW	MW	MW	MU	MU	MU	MW	MW	MW	MW	MU	MU	MU
01	0	-300	0	300	0.00	4.02	-4.02	-55	-55	0	60	0.00	1.53	-1.53
02	0	-300	0	300	0.00	2.95	-2.95	-50	-45	0	60	0.00	1.50	-1.50
03	0	-300	0	300	0.00	3.75	-3.75	-61	-53	0	60	0.00	1.42	-1.42
04	0	-300	0	300	0.00	2.55	-2.55	-68	-55	0	72	0.00	1.48	-1.48
05	-75	-300	0	300	0.00	3.33	-3.33	-62	-57	0	72	0.00	1.48	-1.48
06	0	-340	0	340	0.00	3.15	-3.15	-61	-57	0	72	0.00	1.41	-1.41
07	0	-360	0	360	0.00	3.25	-3.25	-55	-54	0	68	0.00	1.44	-1.44
08	-50	-360	0	360	0.00	3.98	-3.98	-61	-57	0	68	0.00	1.46	-1.46
09	0	-400	0	450	0.00	3.24	-3.24	-61	-57	0	68	0.00	1.51	-1.51
10	0	-360	0	360	0.00	3.30	-3.30	-54	-55	0	62	0.00	1.67	-1.67
11	0	-360	0	360	0.00	3.34	-3.34	-54	-55	0	62	0.00	1.31	-1.31
12	-50	-360	0	360	0.00	3.78	-3.78	-70	-70	0	70	0.00	1.68	-1.68
13	-50	-360	0	360	0.00	4.14	-4.14	-62	-62	0	70	0.00	1.48	-1.48
14	0	-360	0	360	0.00	3.88	-3.88	-65	-65	0	65	0.00	1.56	-1.56
15	-50	-360	0	360	0.00	4.89	-4.89	-59	-58	0	62	0.00	1.54	-1.54
16	0	-360	0	400	0.00	3.55	-3.50	-65	-65	0	62	0.00	1.57	-1.57
17	-60	-360	0	450	0.00	4.63	-4.63	-67	-67	0	67	0.00	1.63	-1.63
18	0	-360	0	450	0.00	5.40	-5.40	-58	-62	0	68	0.00	1.62	-1.62
19	0	-450	0	450	0.00	6.60	-6.60	-58	-62	0	68	0.00	1.59	-1.59
20	0	-450	0	450	0.00	6.32	-6.32	-60	-65	0	68	0.00	1.44	-1.44
21	0	-450	0	450	0.00	4.43	-4.43	-62	-59	0	71	0.00	1.59	-1.59
22	0	-450	0	450	0.00	5.02	-5.02	-64	-64	0	67	0.00	1.64	-1.64
23	0	-450	0	450	0.00	5.96	-5.96	-62	-65	0	65	0.00	1.63	-1.63
24	0	-450	0	450	0.00	3.82	-3.82	-63	-63	0	65	0.00	1.52	-1.52
25	0	0	0	350	0.00	1.76	-1.67	-61	-54	0	64	0.00	1.39	-1.39
26	0	-350	0	450	0.00	4.95	-4.95	-61	-60	0	64	0.00	1.40	-1.40
27	0	-450	0	450	0.00	4.64	-4.64	-62	-60	0	64	0.00	1.36	-1.36
28	0	-450	0	450	0.00	5.33	-5.33	-63	-59	0	71	0.00	1.67	-1.67
29	0	-450	0	450	0.00	5.94	-5.94	-46	-58	0	69	0.00	1.35	-1.35
30	0	-450	0	450	0.00	4.62	-4.62	-46	-58	0	69	0.00	0.02	-0.02
31	0	-450	0	450	0.00	7.90	-7.90	-46	-26	0	57	0.00	0.76	-0.76
Maximum	0	0	0	450	0.00	7.90	-1.67	-46	-26	0	72	0.00	1.68	-0.02
Minimum	-75	-450	0	300	0.00	1.76	-7.90	-70	-70	0	57	0.00	0.02	-1.68
Average	-11	-371	0	394	0.00	4.34	-4.33	-59	-58	0	66	0.00	1.44	-1.44
Total					0.00	134.43	-134.28					0.00	44.62	-44.62

XII. Inter Regional Exchanges During December 2002 (Sheet 2 of 2)

2 of 2

Date	With WR Over Ujjain - Kota {Export(-)/Import(+)}							With ER {Export(-)/Import(+)}						
	Peak MW	Off Peak MW	Max Import	Max Export	Energy Import	Energy Export	Net	Peak MW	Off Peak MW	Max Import	Max Export	Energy Import	Energy Export	Net
	MW	MW	MW	MW	MU	MU	MU	MW	MW	MW	MW	MU	MU	MU
01	0	0	0	0	0.00	0.00	0.00	110	130	394	20	3.75	0.48	3.27
02	0	0	0	0	0.00	0.00	0.00	346	385	400	20	9.56	0.48	9.08
03	0	0	0	0	0.00	0.00	0.00	385	385	400	20	8.63	0.44	8.18
04	0	0	0	0	0.00	0.00	0.00	80	200	300	20	7.45	0.32	7.13
05	0	0	0	0	0.00	0.00	0.00	100	180	389	20	9.11	0.41	8.70
06	0	0	0	0	0.00	0.00	0.00	419	388	419	20	9.61	0.46	9.15
07	0	0	0	0	0.00	0.00	0.00	421	384	421	20	9.96	0.40	9.56
08	0	0	0	0	0.00	0.00	0.00	374	374	390	20	9.76	0.45	9.32
09	0	0	0	0	0.00	0.00	0.00	0	374	390	20	2.75	0.40	2.35
10	0	0	0	0	0.00	0.00	0.00	456	340	480	30	10.16	0.70	9.46
11	0	0	0	0	0.00	0.00	0.00	471	455	480	27	9.63	0.29	9.34
12	0	0	0	0	0.00	0.00	0.00	470	455	480	27	11.13	0.25	10.89
13	0	0	0	0	0.00	0.00	0.00	470	470	476	27	11.01	0.38	10.63
14	0	0	0	0	0.00	0.00	0.00	179	484	484	27	6.34	0.35	5.99
15	0	0	0	0	0.00	0.00	0.00	147	183	184	20	3.74	0.00	3.74
16	0	0	0	0	0.00	0.00	0.00	0	153	153	20	1.51	0.32	1.19
17	0	0	0	0	0.00	0.00	0.00	66	153	153	20	2.40	0.32	2.08
18	0	0	0	0	0.00	0.00	0.00	66	184	185	20	2.30	0.29	2.01
19	0	0	0	0	0.00	0.00	0.00	0	179	191	20	3.12	0.27	2.84
20	0	0	0	0	0.00	0.00	0.00	66	179	191	20	3.63	0.30	3.33
21	0	0	0	0	0.00	0.00	0.00	179	380	380	20	6.94	0.31	6.63
22	0	0	0	0	0.00	0.00	0.00	180	368	380	20	6.53	0.30	6.24
23	0	0	0	0	0.00	0.00	0.00	179	429	429	20	5.07	0.31	4.76
24	0	0	0	0	0.00	0.00	0.00	0	453	453	20	4.99	0.22	4.76
25	0	0	0	0	0.00	0.00	0.00	180	71	450	20	5.40	0.49	4.92
26	0	0	0	0	0.00	0.00	0.00	193	50	450	20	4.01	0.32	3.69
27	0	0	0	0	0.00	0.00	0.00	192	408	410	0	7.05	0.00	7.05
28	0	0	0	0	0.00	0.00	0.00	163	413	413	0	7.23	0.00	7.23
29	0	0	0	0	0.00	0.00	0.00	163	413	413	0	7.20	0.00	7.20
30	0	0	0	0	0.00	0.00	0.00	163	408	413	0	6.75	0.00	6.75
31	0	0	0	0	0.00	0.00	0.00	371	422	472	0	8.54	0.00	8.54
Maximum	0	0	0	0	0.00	0.00	0.00	471	484	484	30	11.13	0.70	10.89
Minimum	0	0	0	0	0.00	0.00	0.00	0	50	153	0	1.51	0.00	1.19
Average	0	0	0	0	0.00	0.00	0.00	213	318	375	18	6.62	0.30	6.32
Total					0.00	0.00	0.00				558	205.24	9.24	196.00

XIII. Progress Of Installation Of Shunt Capacitors As On 31.12.2002

(ALL FIGS IN MVar)

CONSTITUENT	REQUIREMENT AT THE END OF 2002-03	CAPACITORS AS ON 31.12.2002	CAPACITORS ADDITION DURING		ADDITIONAL REQUIRED DURING 2002-03
		INSTALLED	2001-02	2002 - 03	
Chandigarh	116	92	7	0	24
Delhi	2932	2731	397	98	201
Haryana	2797	2489	416	137	308
H.P.	319	263	57	58	56
J & K	924	147	12	0	777
Punjab	5107	4673	199	43	434
Rajasthan	2695	2671	59	194	24
U.P.	5225	4933	485	242	292
Uttranchal	286				286
BBMB	396	381	0	0	15
TOTAL	20797	18380	1632	772	2417

SOURCE: Minutes of 336th OCC meeting of NREB held on 07th January, 2003.

XIV. Hydraulic Data For Reservoirs During December 2002

Item	Bhakra	Pong	Rihand	R.P.S.	Gandhi Sagar (M.P.)
Full Reservoir Level (m) (FRL) (ft)	514.50 1688.00	433.12 1421.00	268.22 880.00	352.65 1157.00	402.64 1321.00
Min. Draw Down Level (m) (MDDL) (ft)	445.62 1462.00	384.05 1260.00	252.98 830.00	342.90 1125.00	381.00 1250.00
Level on last day of December 2002 (m)	486.04 1594.63	403.93 1325.24	261.61 858.30	347.21 1139.14	379.94 1246.53
Level on last day of December 2001 (m)	485.86 1594.04	407.57 1337.17	265.39 870.70	347.65 1140.58	382.34 1254.41
Live Capacity as on (mhmt) last day of December 2002(maft)	0.33 2.69	0.20 1.66	0.26 2.10	0.06 0.50	0.00 0.00
Live Capacity as on (mhmt) last day of december 2001(maft)	0.32 2.57	0.30 2.46	0.44 3.55	0.06 0.52	0.03 0.25
Energy content as on last day of December 2002 (MU)	1220.00	275.00	750.00	118.00	0.00
Energy content as on last day of December 2001 (MU)	1200.00	425.00	825.00	120.00	50.00
Maximum level (m) (ft) (date)	495.54 1625.80 01.12.2002	403.93 1325.24 01.12.2002	262.55 861.40 01.12.2002	347.21 1139.14 31.12.2002	381.46 1251.52 01.12.2002
Minimum level (m) (ft) (date)	486.04 1594.63 31.12.2002	401.39 1316.91 31.12.2002	261.61 858.30 31.12.2002	346.48 1136.76 01.12.2002	379.94 1246.53 31.12.2002

Energy content of Bhakra : Total Energy content at Bhakra, Ganguwal and Kotla power stations

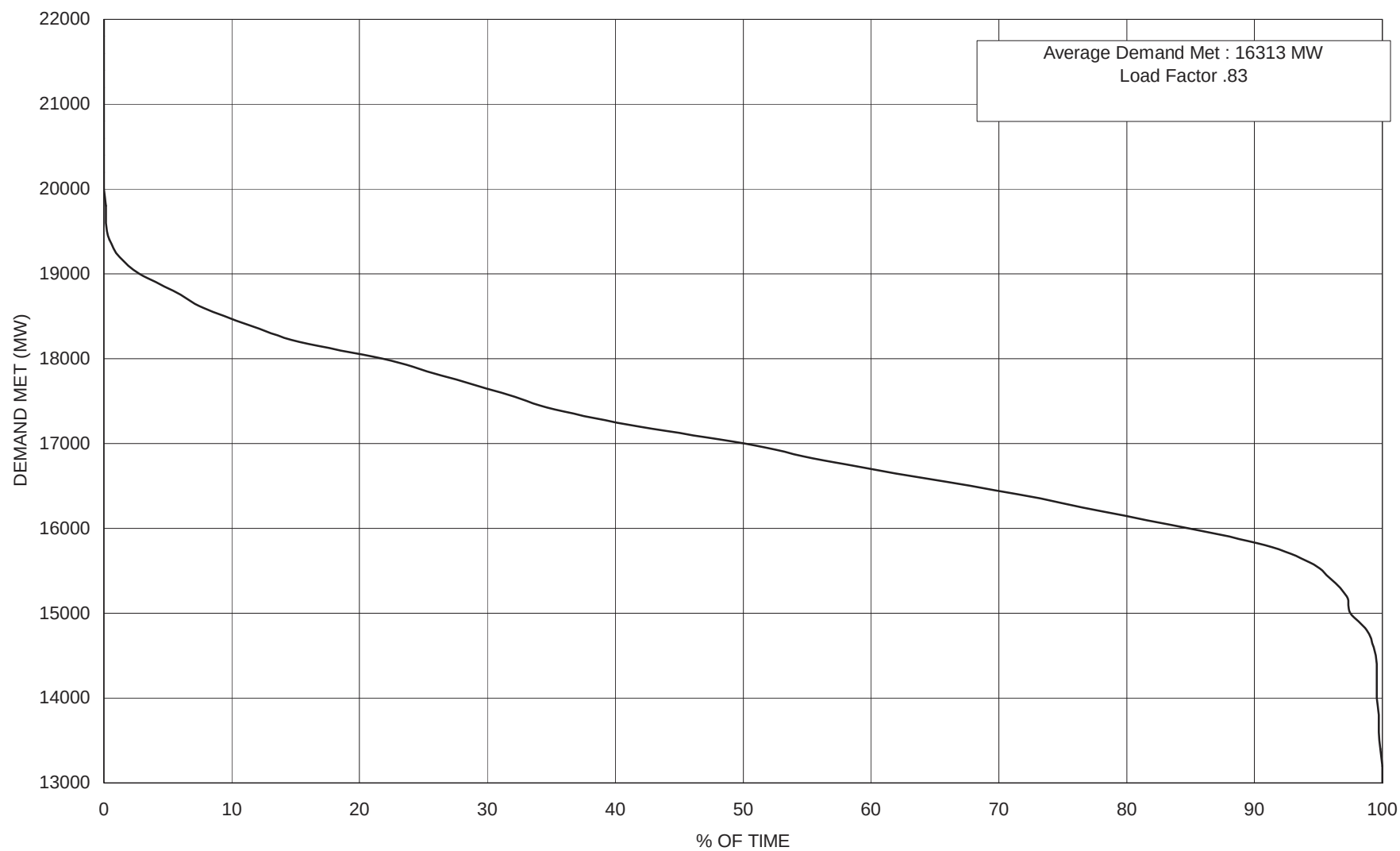
Energy content of Rihand : Total Energy content at Rihand & Obra power stations

Energy content of RPS : Total Energy content of Rana Pratap Sagar and Jawahar Sagar Power Stations.

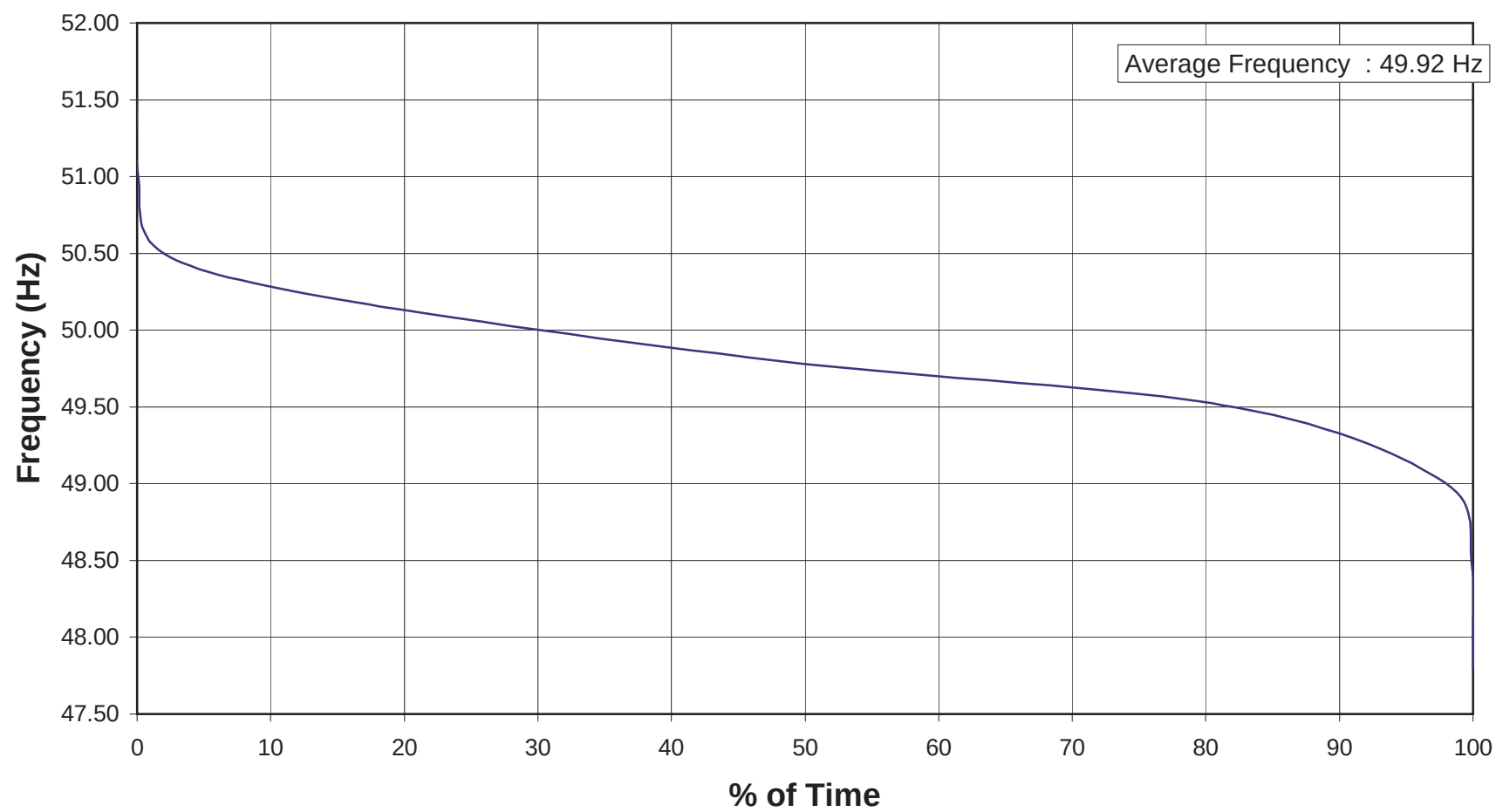
Energy Content of G. Sagar : Total Energy content at Gandhi Sagar, RP Sagar

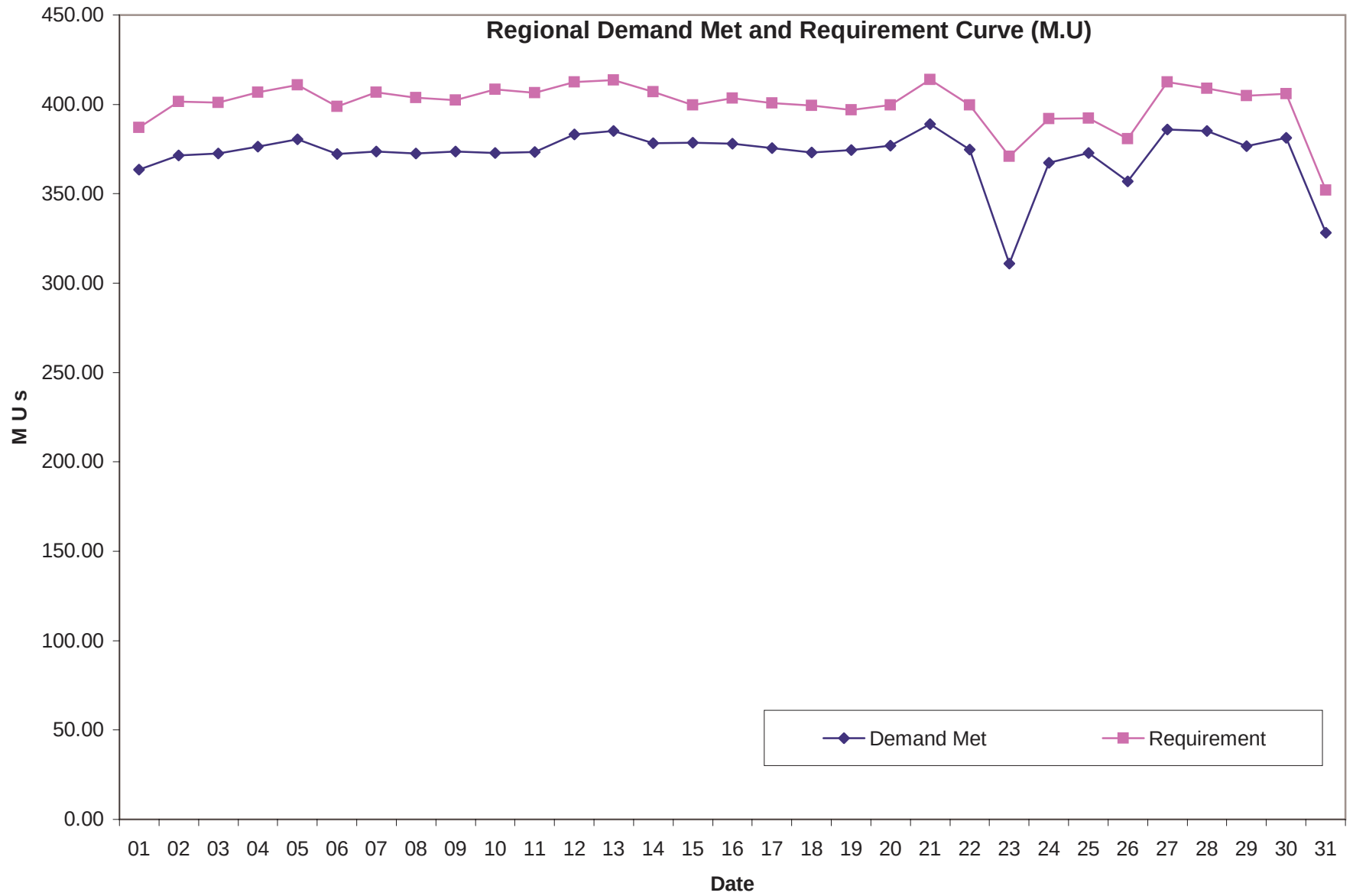
and Jawahar Sagar Power Stations.

Load Duration Curve For Northern Region For December 2002



Frequency Duration Curve for Norther Region





Report of Grid Disturbance in Northern region on 23rd December, 2002

A grid incident occurred in the Northern Region during the night of 22nd –23rd December , 2002 due to tripping of a large number of circuits on account of heavy fog and bad weather conditions. In the incident the sub-system consisting of generation at BBMB, Punjab, HP, J&K and a part of Haryana separated out from rest of the Grid and collapsed. Due to heavy fog, there were a number of trippings in the UP system also. However, the overall UP system remained intact with the system of Delhi, Rajasthan and Uttranchal along with the generation at singrauli /Rihand /anpara complex as well as in western UP area viz. at Dadri , NAPS etc., thereby a major Grid disturbance was averted.

1. ANTECEDENT CONDITIONS: (At 02.25 hrs)

System frequency : 50.35 Hz.
Total Generation Availability: 15500 MW

II. SEQUENCE OF EVENTS:

i) Between 0225 hrs-0445 hrs. The following circuits tripped during this period due to inclement and heavy foggy weather conditions :

0225 hrs.	400 kV Agra-Muradnagar
0328 hrs.	400 kV Dadri-Mandola-II
0353 hrs.	400 kV Dadri-Muradnagar
0400 hrs.	400 kV Dadri-Mandola-I
04.16 hrs.	400 kV Panki-Muradnagar
0429 hrs.	400 kV Dadri-Malerkotla
04.38 hrs.	400 kV Dadri-panipat

ii)

At around 04.42 hrs.

- 400 kV bassi-Hissar line tripped on E/F.
- 220 kV Samaypur-Charkhi Dadri S/C tripped on E/F.
- 220 kV Khetri-Charkhi Dadri ckt-I and 220 kV Hissar-Khetri S/C tripped on O/L. and 220 kV Khetri-Charkhi Dadri ckt-II tripped on power swing.

- Tripping of above lines resulted in separation of BBMB/Punjab/Haryana/HP/J&K/Chandigarh sub system from the rest of the Grid. However part of BBMB subsystem comprising Ballabgarh/Samaypur remained tied up with UP subsystem and survived. Rest of the Grid experienced high frequency and gas units at Dadri GPP tripped.
- 400 kV Ratangarh-Suratgarh TPS ckt-II tripped on O/V protection , resulted in tripping 220 kV Ratangarh-Suratgarh D/C and 220 kV Ratangar-Suratgarh TPS D/C on power swing. All the running units at Suratgarh tripped.

(iii) **At 08.15 hrs. in Delhi System**

- 220 kV Ballabgarh-samaypur ckt-II tripped on E/F. However there was delay in clearing the fault.This resulted in tripping of the following ckts.
 - i) 220 kV BTPS-Ballabgarh D/C
 - ii) 220 kV Samaypur-Faridabad D/C
 - iii) 220 kV Ballabgarh-Samaypur ckts I & III
 - iv) 400 kV Kanpur-Ballabgarh
- Tripping of 220 kV samaypur-Faridabad D/C resulted in tripping of GT's at Faridabad GPP.
- Tripping of 220kV BTPS-Ballagarh D/C resulted in tripping of 220 kV BTPS-Alwar on O/L resulted in formation of Island in Delhi.
- Islanded Delhi system could not survive because of Load-Generation mismatch.

(C) **RESTORATION**

04.50 hrs	Unit # 6 at Bhakra right bank started and auxiliary supply was restored
04.57 hrs	Unit # 1 at Bhakra left bank started
05.03 hrs	Bhakra # 8 at Bhakra right bank started
05.04 hrs	Bhakra-Jamalpur-I closed
05.12 hrs	Bhakra- Ganguwal-IV closed
05.14 hrs	Ganguwal-Dhulkote-I closed
05.36 hrs	
& 05.43 hrs	Jamalpur-Dhandri I&II charged
08.43 hrs	400 kV Bhiwani-Hissar charged but tripped at 05.44 hrs
08.44 hrs	400 kV Dehar-Bhiwani charged but tripped
08.57 hrs	400 kV Dehar-Bhiwani closed
09.21 hrs	400 kV Bhiwani-Hissar line closed and BBMB system synchronized with the rest of the Grid

(D) **RESTORATION OF DELHI SYSTEM**

— Following synchronization/restoration took place at BTPS

08.35 hrs	IP Extn.-I
08.40 hrs	Bllabgarh-I
09.00 hrs	Ballabgarh-II
09.36 hrs	Alwar
10.12 hrs	Mehrauli-II
10.13 hrs	Okhla-II
12.20 hrs	IP Extn-II

Units at BTPS were svnchronized by 12.35 hrs.

05.14 hrs	Ganguwal-Dhulkote-I closed
05.36 hrs	
& 05.43 hrs	Jamalpur-Dhandri I&II charged
08.43 hrs	400 kV Bhiwani-Hissar charged but tripped at 05.44 hrs
08.44 hrs	400 kV Dehar-Bhiwani charged but tripped
08.57 hrs	400 kV Dehar-Bhiwani closed
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10.13 hrs	Okhla-II
12.20 hrs	IP Extn-II

Units at BTPS were synchronized by 12.35 hrs.